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Hendrik Van den Berg

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# The Economics of Immigration

Theory and Policy

*Second Edition*

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Örn B. Bodvarsson • Hendrik Van den Berg

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Theory and Policy

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# Chapter 1

## Introduction to Immigration Economics

**Abstract** This introductory chapter emphasizes the complexity of immigration, in contrast to popular labor market model of immigration described in the introduction to Part I above. This chapter discusses a variety of cases of immigration, lists the push, pull, stay, and stay away influences on immigration, outlines a brief history of immigration, and categorizes the different forms of immigration. The complexity of immigration suggests that the simple neoclassical labor market model is not accurate; a broader and more inter-disciplinary approach to studying the economics of immigration is called for.

*Jacques Chirac, Prime Minister of France:* If there were fewer immigrants, there would be less unemployment, fewer tensions in certain towns and neighborhoods, and lower social cost.

*Liberation [A Paris newspaper]:* That has never been formally proven.

*Chirac:* It is easy to imagine, nevertheless.

From an October 30, 1984 interview (Quoted in Simon, 1989, p. 208).

In the small Irish village of Carrigaholt, the traditional pub is named the Long Dock. The owners are from a family that has resided in Carrigaholt as long as records have been kept. The only thing that has changed in recent years is the personnel. The two bartenders are Lithuanians, and the tables are waited on by two Poles. The kitchen staff is entirely Latvian. The visiting American writer, Thomas Lynch, notes that on St. Patrick's day, 2006, the crowd in the Long Dock seems to be enjoying the pints of stout as usual (Lynch, 2006).

Lynch describes the scene at the Long Dock as "a sign of the times." For generations, Irish had emigrated to other countries in large numbers, but in 2006 foreigners were flooding to Ireland. The booming Irish economy boasted one of the highest per capita incomes in Europe in 2006. According to Lynch, whose ancestors left Carrigaholt a century ago,

Like the young of Carrigaholt and its surrounding towns, the young of Krakow and Vilnius are coming and going as they please now, citizens of the European Union and the global villages. Bartenders without borders, they travel light between cultures, common markets and currencies, picking up languages, finding in the eyes of strangers the shared lights of humanity. (Lynch, 2006)

Carrigaholt is not the only place where the Irish pub is adjusting to immigration. On that same St. Patrick's day in 2006, in Milford, Michigan, in the United States, a crowd is gathered at O'Callaghan's, a popular local Irish-style pub. O'Callahan's is a reasonable replica of an Irish pub, complete with a dart board, blarney, stew, and beer-battered fish. There is even a television screen showing curling and rugby games from Ireland. Guinness Stout is being served pint after pint by the owners and staff, all of them Palestinians. As in Carrigaholt, the noisy crowd seems oblivious to the nationality of the staff.

## 1.1 The Late Twentieth-Century Immigration Explosion

Immigration is a prominent economic and political issue in Europe, North America, Australia, New Zealand, and many other high-income countries. Today, over 200 million people, or about 3 % of the world's population, live outside their country of birth. Immigration has grown rapidly in recent decades, a trend that, if continued, will result in the number of immigrants approaching 4–5 % of the world's population within a generation. Immigration is one of the international economic activities that define the phenomenon often referred to as *globalization*. As more and more immigrants move from one country to another in search of better jobs, preferred lifestyles, and more promising opportunities, the lives of the people already residing in the immigrant *destination countries* often change in unwelcome and unanticipated ways. For one thing, the international movement of people subjects workers to greater labor market competition. The movement of workers also affects the incomes that accrue to other factors of production. More broadly, immigration can cause conflicts between local cultures and the cultures of foreigners.

Imagine the conflict faced by the citizens of Barcelona, the capital of the autonomous region of Catalonia in Spain. The Catalonians have recently won substantial political autonomy from the national government after decades of political efforts, and there has been a revival of the Catalonian language and culture under this autonomy. However, the region of Catalonia and the country of Spain are part of the European Union, which now allows the free movement of Europeans among all the member countries. The attractive city of Barcelona and the towns along Catalonia's Mediterranean coast have attracted increasing numbers of immigrants from elsewhere in Europe. Also, growing numbers of unauthorized or, in the popular vernacular, "illegal" immigrants from Russia, Pakistan, North Africa, and above all Latin America have come to work and live in Barcelona, leading a former head of the Catalonian parliament to claim that "Catalonia's collective identity was under threat by the influx of illegal immigrants" (Crawford, 2001). Spain's national government quickly issued statements to counter these widely quoted remarks, however, claiming that "Foreign labour is necessary and will become increasingly so in a country with the lowest birth rate in Europe and a rapidly aging population" (Crawford, 2001). There is often a conflict between those who fear their local culture will be altered and business interests who seek less

costly workers. Immigration thus tends to pit one interest group against another in the political arena where immigration policy is discussed and formulated.

Over the latter decade of the twentieth century and the beginning of the twenty-first century, the United States has received over one million new immigrants per year from mostly developing countries in Latin America, Eastern Europe, and Asia. In the state of Wisconsin, the so-called Land of Bratwurst that was the destination for immigrants from Germany and Scandinavia a century ago, the Hispanic population has tripled over the last 25 years and now numbers over 200,000. “Milwaukee feels like home,” one immigrant from Peru proudly claims (Thomas, 2000). According to a *Wall Street Journal* report, managers at the new 3Com factory in Morton Grove, Illinois, were forced to deal with the more than 20 different languages spoken by its 1,200 employees. It is easy to imagine the plight of the manager of one of the production lines at 3Com, a 33-year-old refugee from Vietnam, Thai Chung, who is himself barely fluent in English, when he has to give instructions to a janitor to clean up an oil spill. Thai Chung finds the man does not speak any English. Suspecting that he is Polish, Chung calls on another assembly line worker to interpret for him. She is Serbian, however, and unable to communicate with the janitor. “I’m not even sure he’s Polish,” she tells Mr. Chung. “I don’t know what he is.” The janitor eventually cleans up the oil spill, but it is not clear how he got the message. Stella Foy, one of the few American-born workers on the line sums up the usual management style: “Around here you point a lot” (Aeppel, 1998).

The economic recessions following the 2007–2008 global financial crisis and the lingering economic problems in many European Union economies have substantially shifted immigration flows and attitudes towards immigrants in many countries. In the USA, for example, arrests and deportations of unauthorized immigrants have grown from near zero during the 1990s to several hundred thousand per year after 2008. Interestingly, this massive crackdown on unauthorized immigration has occurred during the administration of President Obama, whose political party was perceived as being more sympathetic towards accommodating long-time unauthorized immigrants. Similarly, throughout Europe immigration policies are changing towards limiting further entry to immigrants and deporting unauthorized immigrants. Shortly after taking office in 2012, the socialist government in France has approved the dismantling of a number of previously tolerated encampments of unauthorized Roma immigrants and their deportation back to Romania. Also, the EU is not moving forward in extending the Schengen agreement, which allows the completely free flow of people among signatory countries, to new members such as Bulgaria and Romania.

### 1.1.1 *The Complexity of Immigration*

Opinions on immigration vary widely because immigration is a very complex phenomenon with many different effects on many people at home and abroad. Several very distinct economic characteristics of immigration can be easily

distinguished. On the one hand, immigration implies the movement of factors of production from one country to another. The movement of labor changes the relative quantities of factors available in economies and, therefore, the returns to all factors of production. This labor market effect causes conflicting opinions about the desirability of immigration. Workers in the destination country who compete directly with immigrant workers will often tend to view immigrants unfavorably, while people who hire immigrant workers have a more favorable opinion of immigration. Unlike machines and buildings, however, people are more than just factors of production. Immigrants are also consumers, and their arrival in a country boosts demand for all factors of production, including immigrants' own labor. Thus, the arrival of immigrants may not have the dreaded downward effect on the wages of competing workers after all. People are often carriers of new ideas and knowledge, and immigration can help to spread ideas and knowledge from one country to another. This spread of ideas and knowledge is the key to economic growth and long-term improvements in living standards. On the other hand, when people with different backgrounds and traditions come together, difficult cultural clashes can occur.

For these and many other reasons, immigration evokes even more emotion and controversy than do international trade and international investment, the other international economic activities that comprise globalization. In most countries, groups of people actively lobby their governments to impose greater curbs on immigration. As large as the number of immigrants has become, there would be many more immigrants if countries did not intentionally restrict immigration.

### ***1.1.2 Not Everyone Likes Immigrants***

The idea that immigration is a threat to employment for native workers is well established among workers everywhere. For example, Peter Umber of Germany's Federal Institute of Labor, an organization that actively works to neutralize German companies' increased interest in hiring foreign high-tech workers, argued that "by keeping foreigners from coming into our labor market, we intend to preserve these jobs for people who already live in Germany" (Zachary, 2000). When, in 2002, the German government suggested that engineers and computer specialists from countries such as India be permitted to work in Germany to fill the shortage of high-tech workers, one of Germany's major political parties made immigrants a major issue with the slogan "Kinder Statt Inder," which translates to "children instead of Indians."

### ***1.1.3 Economists' Perspective***

Two economists, Julian Simon and Stephen Moore, conducted a small survey among leading economists in the mid-1980s, and they reported that all of these economists said that immigration has either a "very favorable" or "slightly

favorable” effect on economic growth.<sup>1</sup> None said that immigration’s effect on raising living standards was “slightly” or “very unfavorable.”<sup>2</sup> Over the past decade, as the issue of immigration has become more prominent, economists have been called on more often to weigh in on the discussion of immigration. Their conclusions seem to have become more nuanced. Some economists in the field of immigration economics now even hold much more cautious views on immigration. For example, George Borjas of Harvard University argues that the massive Hispanic immigration to the USA in the late 1990s will not have the same benign economic consequences as did earlier immigration episodes in the USA. Bacon (2008) sees immigration as a component of corporate globalization, a process that creates incentives for people to migrate but often maintains legal restrictions on immigrants that force them to break laws and suffer the oppressive consequences of working illegally in foreign countries. Nevertheless, most economists tend to view immigration more favorably than the overall populations in the USA, Europe, or other immigrant destinations. This book will clarify these contrasting views.

This is not to say that only economists favor immigration. Despite the condemnation of immigrants recorded in the surveys sampled above, people in many countries still tend to agree that, in principle, the freedom to move from one country to another is a basic human right. And, despite all the controversy and calls for reduced immigration, no one in the USA has yet seriously proposed taking down the Statue of Liberty that stands in New York harbor to welcome immigrants. Recently, Canada even established a Ministry of Immigration to promote immigration and coordinate programs to help immigrants assimilate into Canadian society.

This book surveys what economists know about the complex issue of immigration. Some of what you will learn may surprise you, but you will be pleased to find that economists and social scientists actually have studied many of the economic and social effects of immigration on both the sending and destination countries. Many of the apparent contradictions can be explained. Above all, you will enjoy learning about this important economic, social, and very human phenomenon.

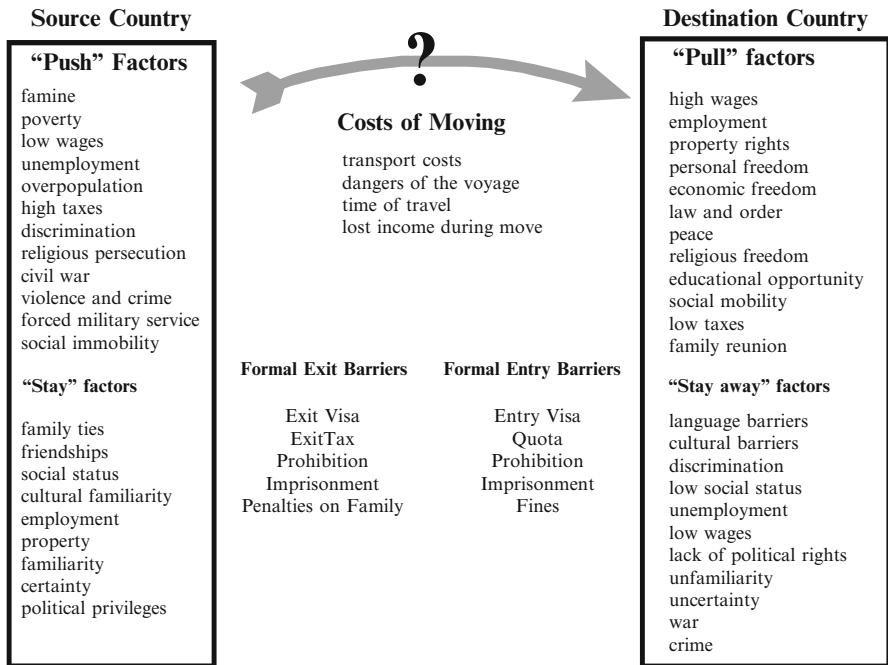
## 1.2 The Determinants of Immigration

Economic incentives to immigrate may be a function of undesirable conditions in the source country or they may be related to attractive conditions in the destination country. Immigrants are often attracted by the lure of higher income. Other attractions include better career opportunities, greater freedom to innovate, better schooling for children, less discrimination, and lower levels of taxation. Of course, there are many other reasons why people become immigrants: civil rights, political

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<sup>1</sup> As quoted in Carlson (1997).

<sup>2</sup> Reported in Simon (1995).



**Fig. 1.1** The immigration decision

rights, religious freedom, law and order, social mobility, personal safety, climate, and peace all make a destination country attractive to potential immigrants. The many incentives that influence immigration fall into four categories: (1) negative incentives that *push* people to emigrate, (2) positive incentives that *pull* immigrants to the destination country, (3) positive incentives that induce people to *stay at home*, and (4) negative incentives that cause people to *stay away* from a foreign country. When the *stay* and *stay away* factors are strong relative to the *push* and *pull* factors, immigration is unlikely to occur on a large scale. On the other hand, when the push and pull factors are strong relative to the stay and stay away factors, immigration will grow, as has occurred worldwide over the last few decades. Figure 1.1 displays the many *push*, *pull*, *stay*, and *stay away* factors that have been discussed in the immigration literature.

### 1.2.1 Many Factors Discourage Immigration

Despite huge income differences across countries, there are many reasons why people decide not to emigrate. For one thing, relocating internationally can be very costly. There are the out-of-pocket costs of moving from one country to another, as well as the opportunity costs incurred during the period of transition between

departure and their arrival in new homes and jobs in the destination country. For example, in 1650 ocean passage from England to one of the North American colonies cost the equivalent of half a year's wages for a farm worker (*The Economist*, 2001, 10 May). Then there are the obvious dangers of crossing oceans and passing through hostile territory. In the 1800s, European immigrants seeking to settle in Oregon, in the Northwestern United States, had to survive an ocean voyage on a sailing ship followed by a grueling 2,000-mile wagon train journey that took months and claimed many lives. For some immigrants the journey is still dangerous today: In 2000, 369 illegal immigrants died crossing the desert to reach the United States from Mexico; in 2010 an estimated 500 persons died crossing deserts to reach the USA from Mexico.<sup>3</sup> Countless African immigrants have drowned in the Mediterranean trying to cross into the European Union.

The cost of setting up a household in a new location is often large as well. Immigrants may lose social capital when they move to a new country with a new culture. They may not be able to deal with unfamiliar social and economic institutions as well as they could deal with the more familiar institutions in their native country. They may face discrimination in the destination country that translates into lower income and more subtle costs in the form of lower life satisfaction. The psychological costs of leaving friends and family behind, adjusting to a different culture, and being treated as an "outsider" are likely to affect the immigration decision. After all, as psychology, experimental economics, and the so-called happiness studies have amply demonstrated, human beings are social animals who greatly value interaction with other human beings and their status in society.<sup>4</sup> Lastly, psychology and experimental economics also find strong evidence that a simple fear of the unknown will tend to keep many people from leaving their native countries, despite often difficult circumstances there.

That immigration is a difficult decision to carry out is also clear from the widespread evidence that immigrants tend to move to where they already have family and where their countrymen moved earlier. Recent studies of immigration show that family ties have a much stronger influence on the migration decision than do employment opportunities.<sup>5</sup> Friends and family who have already made the move to a new location can help subsequent immigrants overcome cultural and language barriers, find work, and settle in the new community.

The difficulties that immigrants face in the destination country imply that they are often different from the native-born in terms of their skills, motivation, education, and social behavior. Because the act of moving from one country to another generally involves risk, temporary hardship, and difficult changes in culture, language, and lifestyle, immigrants tend to be especially ambitious, more willing to

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<sup>3</sup> *The Economist* (2001, 24 May); the estimate for 2010 is by the Mexican Foreign Ministry. See also: Rose (2012).

<sup>4</sup> See, for example, Blanchflower and Oswald (2000); Kahneman and Tversky (2000); Haidt (2006); or Camerer, Lowenstein, and Prelec (2005).

<sup>5</sup> Zawodny (1997). See also Murayama (1991) and Kahan (1978).

take risks, harder working, more open to new ideas, and energetic. Evidence suggests that this romantic view of immigrants as exceptional people may be a bit of an exaggeration, but immigrants are seldom “average” relative to the population they left behind or the ones they join.

Finally, most potential destination countries make it difficult for immigrants to enter the country. Some source countries make it hard for people to leave. The role of immigration policy has grown to where it may be the single most important determinant of worldwide immigration flows. In today’s global economy, the pecuniary costs of moving from one country to another have fallen substantially. Also, improved communications and the prior movement of compatriots have increasingly lowered the social and psychological costs of immigration. The rapid increase in unauthorized immigration is a clear reflection of the growing incentives for people to emigrate and how these incentives increasingly clash with government-imposed barriers to international migration. The main determinant of immigration is the disparity in real incomes between countries. Standard economic theory predicts that immigration will arbitrage away international differences in incomes. People will tend to move from low- to high-income countries, thus increasing the supply of labor in the high-income countries and reducing the supply of labor in the low-income countries. For example, immigration to Western Europe and the United States, respectively, has exceeded one million people per year over the past decade. In contrast, we see very few people immigrating to Haiti or Ethiopia.

### ***1.2.2 Considering the Full Set of Push, Pull, Stay, and Stay Away Factors***

The relationship between the volume of immigration and income differences is not linear. Migration from the very poorest countries of the world is actually quite small, which suggests that income levels in source countries, and not just differences in income across countries, also influence the volume of immigration. Immigration is costly and takes a long time, which simply makes immigration unaffordable for most people from very poor countries. Furthermore, people from very poor countries are less likely to have the communications and job skills necessary to be successful in higher income countries. Also, many high-income countries severely restrict the entrance of immigrants with little education, which characterizes most people in the world’s poorest countries.

Some countries have prohibited their citizens from leaving; for example, before the fall of the Berlin wall, many communist states did not permit their citizens to emigrate to other countries. North Korean border guards apparently still have instructions to shoot anyone attempting to cross its border to South Korea. There are also language and cultural barriers to immigration, as well as people’s psychological resistance to change.

### ***1.2.3 Shifts in Economic Forces Influence Immigration***

Several factors have combined to increase the number of migrants over the last two centuries:

- Rapid economic growth and technological progress since 1800 have drastically lowered transport costs and eliminated the dangers of long voyages, making it much easier for people to immigrate.
- Economic growth since 1800 has varied greatly from country to country, resulting in huge discrepancies in incomes that encourage people to immigrate.
- Improved communications, also part of rapid technological progress of the past 200 years, has made people more aware of the income discrepancies across countries.
- The twentieth-century surge in population growth in developing economies has greatly expanded the young, working-age population, the age group most likely to immigrate.

These same factors are likely to cause further increases in immigration in future decades. In addition, there are new factors that will influence immigration in the future, including the growing agglomeration of economic growth in certain parts of the world, the corporate push to impose agricultural technologies that end up destroying rural communities, the localized economic and social effects of anthropomorphic climate change, and disruptive political effects. Can you think of other broad economic and social trends that are likely to influence the international movement of people?

The mere globalization of economic activity has increased the need for people to move between countries in greater numbers. In order to produce for world markets, operate factories, market and distribute products, and take advantage of all available knowledge and technology, multinational firms increasingly view the market for labor as an international one, not a national one. Even nonprofit organizations and universities, among others, maintain operations in more than one country and routinely move managers, operatives, professors, and students across borders.

### ***1.2.4 Immigration Is a Complex Phenomenon***

This discussion of the incentives for, and against, immigration still has not adequately described all the economic effects of immigration. Immigration is a complex phenomenon. The tendency for economists to view immigrants only as workers means economic analysis often fails to recognize that immigrants are also consumers and that immigrants purchase goods and services provided by others at the same time that their labor adds to the productive capacity of the economy. Immigrants also contribute to economic growth even as they add to the congestion in labor markets and public services in the short run. In the long run, immigration causes the societies of both the source and destination countries to shift

to different growth paths. The economic analysis of immigration thus requires more than the static labor market models economists have often used in the past. The analysis of immigration requires dynamic models that incorporate economic growth and innovation, general equilibrium models that account for both the demand and supply sides of the economy, and more complex interdisciplinary models that incorporate institutions, business organization, political economy, and social relationships.

The study of immigration transcends the traditional scope of mainstream economics. Studies of immigration must move beyond the narrow economic perspective of mainstream economics and focus also on the sociological, psychological, demographic, or political aspects of immigration. Traffickers often exploit immigrants, charging high fees to carry them in overcrowded boats and trucks to other countries where they may end up working as virtual slaves in illegal factories. Many countries have waged long and hotly debated arguments over whether growing immigrant populations will cause their societies to lose their traditional cultures. Such debates inevitably reflect various national biases against foreign cultures, and opportunistic politicians often reduce immigration to an “us versus them” issue. Mainstream neoclassical economic analysis simply cannot deal with these issues. Unless economics expands its field of analysis, it will never be able to contest the many unfounded beliefs about immigrants that remain popular because, as Jacques Chirac says in the quote at the start of the chapter, they are “easy to imagine.” An equally imaginary neoclassical model that describes immigrants as nothing more than units of labor cannot enlighten the political debate.

## 1.3 A Brief History of Immigration

Scientists have found ample evidence suggesting that the human race originated in Eastern Africa some 150,000 or so years ago and then spread across the face of the earth. Many living species have migrated from one part of the earth to another. Humans have been especially active migrants, however. Unlike most animal species, which have tended to concentrate in certain regions and climates, humans are exceptionally adaptable. Starting about 60,000 years ago, they began to migrate throughout the world. Today, humans live on every continent and in nearly every one of the world’s climates, landscapes, and altitudes.

### 1.3.1 *Early Migrations*

Early human migrations can be reconstructed using genealogical markers in DNA that permit scientists to trace the spread of humans backwards in time. When people move, they take their genes along and pass them on to their descendants in their new homes. Thus, every present-day population retains clues about its predecessors.

When this type of scientific analysis is combined with evidence found by anthropologists, archeologists, and paleontologists, as well as the roots of the world's languages that have been traced by linguists, a fascinating story of human migration emerges.<sup>6</sup> This research suggests that all humans alive today descended from earlier *homo sapiens* who lived in Africa over 60,000 years ago. These people, in turn, descended from *homo sapiens* living in what is today Ethiopia some 150,000 years ago. *Homo sapiens*, in turn, descended from the *homo heidelbergensis* who lived in various parts of the world nearly 1 million years ago. The remains of human ancestors, and what are likely to be other descendants who evolved from our human ancestors, dating back several million years have been found in Ethiopia, Java, Asia, and elsewhere in the world.<sup>7</sup>

People have always migrated across the face of the earth. They probably moved from one location to another for a variety of reasons, such as climate changes, glaciation, natural disasters, depletion of game, the growth of population relative to available resources, or threats from other humans or animals. Because there were no political boundaries, these movements of people are usually referred to as *migrations* rather than *immigration*. Natural barriers such as oceans, deserts, and mountain ranges slowed the spread of humans across the earth. Because there were humans living in all corners of the world by 20,000 years ago, it is obvious that there were no physical barriers that humans did not succeed in overcoming.

The very earliest migration was probably on foot over land. The first human seafaring must have taken place well over 40,000 years ago, because human remains over 40,000 years old have been found in Australia and other distant islands. The migration of people to the Western Hemisphere occurred in several waves between 10,000 and 30,000 years ago, probably across the Bering Strait from Asia. Given humans' capacity for traveling on water, migration to the Western Hemisphere did not necessarily have to coincide with the often-mentioned land bridge during the last ice age. People could have sailed or paddled small boats across the narrow Bering Strait at any time. Europe was probably occupied by seminomadic groups of humans as early as 40,000 years ago.

Growth of the human population increased when new technologies of farming, irrigation, animal husbandry, specialization, exchange, and urbanization increased humans' ability to use the earth's resources to sustain life. Beginning about 10,000 years ago, farming and urbanization created more permanent settlements, in contrast to the more mobile hunters and gatherers of earlier human societies. Permanent settlements, in turn, led to the geographic identification of societies, subject to uniform sets of institutions and surrounded by political boundaries. These boundaries, at least to some degree, restricted the movement of people even as they served to link people to political entities. Citizenship and national origin became a characteristic used to identify people. A new term to describe the migration of people across political boundaries was invented: *immigration*. In the

<sup>6</sup> See, for example, Wells (2003); Wade (2003); Owens and King (1999).

<sup>7</sup> A timeline of the likely paths of human evolution is given in Zimmer (2005).

end, the new boundaries have not necessarily been restrictive to human migration; the economic and social development that accompanied the permanent settlements and political boundaries also served to spur technological progress that ultimately ended up improving communications and transportation, increasing commercial contacts among the different nations, and generally integrating the world into what we now often call the *global economy*.

The availability or scarcity of natural resources no doubt stimulated many of the early migrations when people lived as hunters and gatherers. More recently, the driving force behind immigration is the variation in economic growth across countries. With the increasing complexity of economic organization and modern societies, economic performance has differed greatly from one country to another. The increased interaction between economies has also led to colonization and exploitation of one economy by another, further contributing to the diverging well-being of people living in different countries. The income differences have led people living in poor countries to seek ways to move, permanently or temporarily, to countries whose economies provide their residents with higher standards of living.

### 1.3.2 *Recent Immigration*

The movement of people appears to have increased in modern times. The massive movement of people from Europe and Africa to the Western Hemisphere between 1500 and the present stands out as the greatest migration of modern times. It is estimated that about 75 million Europeans left their native countries and emigrated to what are now Canada, the United States, Argentina, Brazil, and many smaller countries in Latin America and the Caribbean. More than 10 million Africans were taken as slaves to the Western Hemisphere during the period from 1500 to 1900. The greatest number went to the Caribbean (4 million) and Brazil (3.6 million).

The largest single migration of people in the twentieth century took place between India and Pakistan in 1947. The partitioning of India after independence from Great Britain caused about seven million Muslims to move from what is today India into that portion of the former British colony of India that became Pakistan, and about an equal number of Hindus were moved in the opposite direction from what is now Pakistan into India. At the close of World War II, almost six million Japanese moved back to Japan from China (Manchuria), Korea, and Formosa, areas occupied by Japan during the first half of the twentieth century.

Immigration increased rapidly towards the end of the twentieth century. Canada, Australia, New Zealand, and the United States, received large inflows of immigrants from Europe throughout the post-World War II period. Australia and Canada each received more than two million immigrants between 1946 and 1964. A number of Western European countries, which had supplied so many people to the rest of the world from 1600 through the early twentieth century, themselves began to experience large inflows of immigrants from elsewhere in Europe after World War II and, after 1960, from North Africa. Even Ireland, which sent over four

**Table 1.1** Foreign-born population and labor force: 2009, 2010

	<u>% of population</u>	<u>% of population</u>
	2010	2009
<i>Europe</i>		
Austria	15.7	16.3
Belgium	13.9 <sup>a</sup>	13.8
Denmark	7.7	6.9
France	8.6 <sup>b</sup>	11.6
Germany	13.0	9.4
Ireland	17.3	10.0
Italy	8.0 <sup>a</sup>	11.3
Luxembourg	37.6	48.6
Netherlands	11.2	11.5
Spain	14.8	18.5
Sweden	14.5	11.2 <sup>c</sup>
Switzerland	26.6	26.3
United Kingdom	11.5	12.9
<i>Traditional immigrant destinations</i>		
Australia	28.6	26.9
Canada	19.9	21.2 <sup>c</sup>
United States	12.9	16.2

Source: OECD (2012), *International Migration Outlook*, Paris: OECD; OECD (2012), Key Statistics on Migration in OECD Countries, Stocks and Flows of Immigrants, 2000–2009, downloaded from [www.oecd/migration/ketstatisticsonmigrationinoecdcountries.htm](http://www.oecd/migration/ketstatisticsonmigrationinoecdcountries.htm)

<sup>a</sup>2009

<sup>b</sup>2008

<sup>c</sup>2006

million immigrants to the Western Hemisphere in the second half of the nineteenth century, began receiving large inflows of immigrants toward the end of the twentieth century. Because of this immigration, in 2004 Ireland's population surpassed four million for the first time since 1871 (Hundley, 2004). Eight million Germans expelled from Eastern Europe after World War II settled in West Germany, and one million ethnic French moved to France during Algeria's war of independence in the late 1950s. The US invasion of Iraq in 2003, and the political chaos that followed, led about two million Iraqis to flee to Syria, Jordan, Egypt, and other nearby countries. According to the United Nations High Commissioner for Refugees (UNHCR), conflicts around the world still swell the ranks of people involuntarily living outside their native lands to over ten million people.

The collapse of the Soviet Union and other communist governments in Eastern Europe has, since 1990, resulted in a large flow of immigrants from the Commonwealth of Independent States and Eastern Europe to the high-income Western European economies. Over one million immigrants legally enter European countries each year, and perhaps another 500,000 asylum seekers and unauthorized immigrants enter each year as well (*The Economist*, 1998). Immigration has greatly changed the populations of many European countries, indicated in Table 1.1 by the

high percentages of foreigners living in each country. For example, Switzerland's population and labor force is about 25 % foreign-born, and Luxembourg's labor force is over one-third foreign-born.

Immigrants do not only move to the developed countries of Europe and North America. An estimated seven million Pakistanis, Filipinos, Indians, Palestinians, Egyptians, and other foreigners work in Saudi Arabia. An estimated five million foreigners live and work as construction workers, domestics, and day laborers in the oil-rich Gulf states on the Arabian Peninsula (Allen, 2000). The newly industrialized Asian economies of Singapore, Malaysia, and Thailand also have attracted immigrants from populous countries such as Indonesia, Bangladesh, Pakistan, and India.

## 1.4 There Are Many Types of Immigrants

The common image of immigrants is that they are *settlers*, people who enter another country in order to remain there permanently. Many immigrants today still fall into this category, especially those who immigrate legally to countries such as Canada, Australia, New Zealand, and the United States. But, among the millions of people who move across borders each year, many fall into other categories.

### 1.4.1 Not All Immigrants Are Permanent Settlers

A second category of immigrants consists of *contract workers*, who are people that move to another country on a temporary basis in order to perform a specific type of work. Contract workers may work just for a tourist season or a harvest season, such as Italian hotel workers in Switzerland or Mexican agricultural workers in the United States. Or, they may remain in the country for a number of years, such as the factory workers from southern Europe and Turkey in Germany, Holland, and Belgium in the 1960s or the large numbers of Egyptian, Indian, and Pakistani workers working in the oil producing Persian Gulf states today. Another recent example of contract workers are the tens of thousands of foreign workers working for construction firms, private security firms, and the US military in Iraq.

Another growing category of immigrants consists of people often referred to as *professionals*, who are immigrants who move from country to country to perform specialized technical or management jobs. Professionals often work for multinational firms and international organizations. They are also closely associated with the growing international trade in services, such as financial services, retailing, and communications.

A fourth, and very different, group of immigrants consists of *asylum seekers and refugees*. These are people who left their home countries to escape political, religious, or social persecution, or other threats to their safety and well-being. We

have already noted that the United Nations High Commissioner for Refugees estimates that there were over ten million refugees in the world in 2012. Most of these people were fleeing war and ethnic strife, and most of these refugees are in Central Asia, the Middle East, and Africa.

A growing number of the world's immigrants are *unauthorized immigrants*, people who cross the border in violation of the laws of the destination country and without the required approvals or documentation. Unauthorized immigrants effectively also fall into one of the above four categories, but they are given their own category because, regardless of the underlying reasons for relocating, they find themselves in a unique legal status by not having followed mandated legal procedures to enter the destination country. The US government and various research groups have estimated that there were over ten million unauthorized immigrants in the USA in 2005.<sup>8</sup> The International Labour Organisation (ILO) estimated that in 1991 there were 2.6 million immigrants living illegally in Western Europe, and that number had doubled by the year 2000 (*The Economist*, 1998). It is very difficult to estimate the number of unauthorized immigrants in the USA and other countries for the simple reason that they try to avoid detection.

Some immigrants do not fall neatly into any of the categories listed above. For example, there are about two million students in foreign countries, nearly 500,000 in the United States alone. There are also diplomats, representatives of international organizations, employees of nonprofit organizations, research organizations, employees of transportation firms, instructors and lecturers, religious workers, and many others who for one reason or another find themselves temporarily residing in foreign countries.

#### **1.4.2 *Forced Immigration***

Some people are forced to move across borders against their will, a group we will call *involuntary immigrants*. People caught in the world slave trade that flourished until the nineteenth century were clearly involuntary immigrants, forced to immigrate not because of conditions in the source country but because of coercion by conquerors or slave merchants. Some people are still forced to migrate, such as when families in one country sell their children into indentured servitude in another country. There is a fuzzy line between involuntary immigration and desperate voluntary attempts by people to better their circumstances by agreeing to near-slave working conditions in other countries. Until sound economic policies end needless starvation and destitution, we are likely to continue to be shocked by revelations of inhumane trafficking of human beings across borders.

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<sup>8</sup> Hoefer, Ryntina, and Baker (2011), The Pew Hispanic Center (2011); and OECD (2006, 2012), *International migration outlook*. Paris: OECD.

### 1.4.3 *Some Immigrants Are Difficult to Classify*

Some immigrants fall into more than one category. It is not obvious whether the more than one million Cuban immigrants who arrived in the United States over the past 50 years did so to escape political persecution or to seek higher incomes. Temporary workers may become permanent residents, as in the case of the *guest workers* who went to Western Europe in the 1960s as contract workers but eventually gained permanent residency in their host countries. Unauthorized immigrants may move temporarily or permanently, and many are refugees from famine or political violence. Some unauthorized immigrants eventually gain legal status in the destination countries.

## 1.5 The Purpose and Organization of this Book

In writing the first edition of this book, we had two goals. First, in recognition of the economic and social importance of immigration in our global economy, a growing number of universities around the world were offering courses to graduate and advanced undergraduate students on the economic analysis of immigration. We wrote this book to serve as a comprehensive textbook for courses covering a full range of immigration issues. Second, a growing number of scholars and students are taking an interest specifically in the economics of immigration. These researchers need a central source for information about theoretical and empirical developments in the field of immigration studies. Unfortunately, immigration research is widely dispersed among various fields of economics.

One of the challenges in writing this book was to deal with a number of large gaps in the economics literature on immigration. The field of international economics has devoted surprisingly little attention to immigration. There is only one mainstream international economics textbook that devotes more than a small portion of one chapter to immigration, and that is the one written by one of the authors of this book (Van den Berg, 2011). Most of the economic analysis of immigration has been performed by labor economists, not international economists. Labor economists have tended to view immigrants mostly as workers, not the diverse human beings that they are. International economics has treated immigration as a relatively less important form of factor movement and has tried to fit economic analysis of immigration into neoclassical models of production and resource allocation. Hence, most economic analyses of immigration fail to capture the full consequences and benefits of immigration. Fortunately, other fields of social science have filled in many of the gaps left by economists. Sociologists have been especially active in researching immigration, for example. This book is an attempt to, first, take stock of the economics literature on immigration, and, then, to suggest directions in which economists can expand their analysis and build a broader field of immigration economics.

Part I of the book examines the theory of immigration and the supporting evidence economists have developed and accumulated. The economic determinants and consequences of immigration detailed in the models we survey underlie many of the political, social, and cultural disputes involving immigrants. It will quickly become apparent that the articles on immigration that have appeared in the mainstream economics journals barely begin to analyze the complexity of the relationships between immigration and other economic and social phenomena. We thus included two chapters, Chaps. 9 and 10, that examine immigration within more dynamic and holistic perspectives. It has long been suggested by historians and other social scientists that human migration is a dynamic process that has long-term consequences for societies. Chapter 9 examines in what ways immigration influences economic growth. Chapter 10 further examines the suggestion made by a few economists that immigration interacts with technological change, economic growth, and the evolutionary process of economic change.

Since we wrote the first edition to this book, we have become more convinced than ever that there is much to be gained from analyzing economic phenomena as processes of continual change and growth rather than one-time shocks to static systems. As you will notice in the chapters that follow, most of the analysis of immigration to date has used static partial equilibrium models common to micro-economics, which not only ignores the dynamic changes that accompany immigration, but also does not capture even static spillovers and aggregate outcomes. The last two chapters of Part I, Chaps. 9 and 10, greatly extend the more traditional approaches to the economics of immigration. They provide few definitive answers, but they do call into question the simple traditional models. These chapters also provide professional economists and students with many new ideas and potential research topics.

Part II of the book deals with a number of special issues and cases on the economics of immigration. The section includes chapters on the determinants and consequences of unauthorized immigration, the economics of temporary immigration and forced immigration, and the interesting case of the rapid increase in Hispanic immigration to the USA during the latter half of the twentieth century.

Part III of the book focuses on immigration policy. Chapter 14 covers the history of United States immigration policy. The USA makes for an interesting case study of immigration policy because not only has the USA received the greatest number of immigrants over the past two centuries of any country in the world, but its policies have changed quite radically over the years. Chapter 15 covers immigration policy in Canada, and Chap. 16 covers immigration policy in Western Europe. Europe is a most interesting case because the region first served as a major source of immigrants for several hundred years, but it has now become a major immigrant destination. Chapter 17 concludes with several observations on the state of the economics of immigration.

As you will see from the chapters that follow, much work remains to be done before we achieve a full understanding of the economic and social consequences of people's increasing international mobility. Fortunately, we think that you will also find that immigration is a fascinating phenomenon to study, in large part because the

act of immigration catches people in their most ambitious and vulnerable moments. The study of immigration reveals why societies often seem to struggle with the complex economic and social consequences of the movement of people between countries. The clash of cultures and the fear of strangers, which are inherent to the international movement of people, often still drive political debate and shape economic policy. Immigration is the study of both the best and the worst human behavior. We hope our exposition will do justice to both the economics and the humanity of our subject. In reference to Jacques Chirac's quote at the start of this chapter, our fundamental goal in writing this book is to enable our readers to do more than "imagine" the causes and consequences of immigration.

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# Part I

## Immigration Theory and Evidence

The economic theory of immigration primarily has sought to explain why people leave one country in order to live and work in another country. A second purpose of the economic theory of immigration has been to clarify the economic consequences of immigration, such as the welfare of people in the source and destination countries. Since people are workers, consumers, and innovators, the economic consequences of immigration on both the source country and the destination country are complex. The analysis of the many positive and negative effects on both the demand and supply sides of the source and destination economies helps to explain why immigration is a controversial issue in so many countries.

### Modeling Immigration

As discussed in the first chapter of this section of the book, economic incentives to immigrate are related to a great variety of *push*, *pull*, *stay*, and *stay away* factors. Given the complexity of immigration, many different models of immigration have been developed. In preparation for this detailed examination of the many economic models of immigration, we introduce here the *labor market model of immigration* that many economists have used to explain and analyze immigration. This model is the one that appears most often in economic textbooks that deal with immigration. In its simplest representation, this model assumes that immigrants are only workers, and their only effect is to change the supply of labor in the source and destination countries. Clearly, this model introduced here does not do justice to the complexity of immigration. However, you are well advised to devote a few minutes to learning this model because most economic models of immigration effectively build on this popular labor market model.

## The Basic Labor Market Model of Immigration

The typical demand curve for labor is known in the labor economics literature as the *value of the marginal product of labor* ( $VMP_L$ ) curve. The  $VMP_L$  curve is the product of the marginal physical product of labor,  $MP_L$ , and the marginal price of the output,  $P$ , or

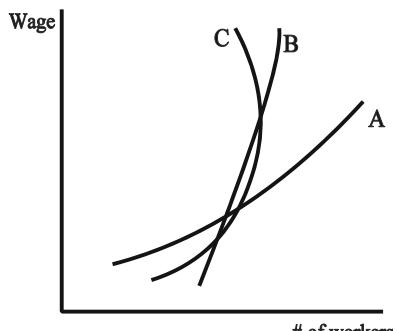
$$VMP_L = MP_L \cdot P \quad (I.1)$$

$VMP_L$  thus represents the value of the additional output produced when one more unit of labor is used in the production process. Because the marginal product of labor declines as more labor is hired, the  $VMP_L$  curve is downward-sloping.

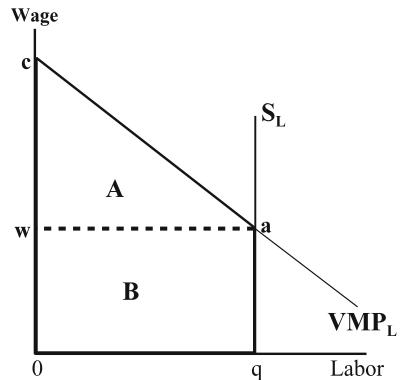
The shape of the supply curve for labor is not as obvious, however. An upward-sloping supply curve implies that the quantity supplied increases when the price rises. Certainly, the opportunity costs of leisure and nonpaying home activities rise as wages rise, and, all other things equal, a higher wage will tend to make workers *substitute* work for leisure. But higher wages also increase the income received by labor, and this positive *income effect* may very well lead people to acquire more leisure even if the opportunity costs go up. Thus, if the income effect of higher wages outweighs the substitution effect of increased opportunity costs of not working, the supply of labor curve will be backward-bending, as the curve labeled C in Fig. I.1, not upward-sloping as the more familiar-looking supply curves labeled A and B.

There is indeed evidence that the income elasticity of supply is negative. Only a century ago, in today's high-income countries industrial workers routinely worked 12 h/day, 6 days/week. Today, the 40-h workweek is the norm, except where even shorter workweeks have been mandated. Recently, France legislated a 35-h workweek.

In the simple labor market model, we depict the labor supply curve as a perfectly vertical line. We do this to simplify the graphs. Be reassured, however, that even if we draw the labor supply curve as upward- or backward-sloping, the conclusions reached are not qualitatively different from what this class of models reaches in the literature while assuming a perfectly vertical supply of labor curve.



**Fig. I.1** The labor supply curve

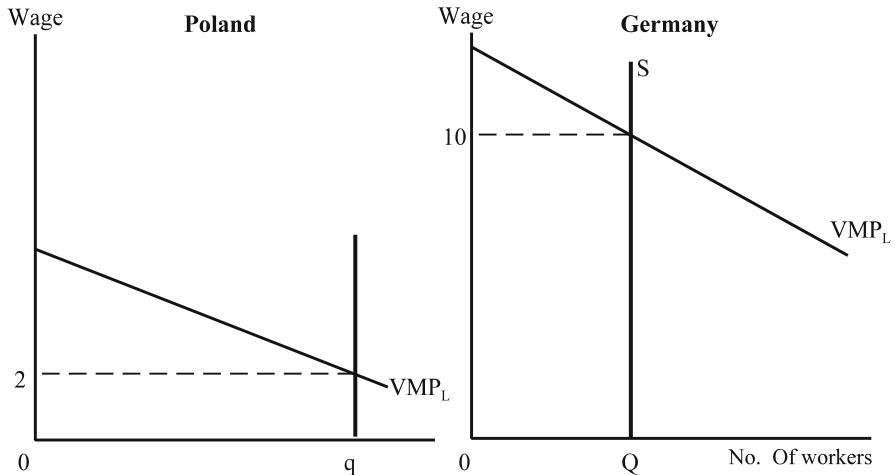
**Fig. I.2** The labor market

In a competitive labor market, the wage is equal to the value of the  $VMP_L$  curve where it intersects the supply of labor curve. The area under the  $VMP_L$  curve, the demand curve for labor, represents the total value of output produced in the economy using all the factors of production, namely, labor, and all the other factors employed along with the labor. The area under the *marginal* curve represents the sum of all the marginal values, or the *total* value. With labor supply equal to  $S_L$ , total output is equal to the areas A plus B in Fig. I.2. The total value of output is split among labor (area B) and the other factors (area A). At the wage  $w$ , total labor income is equal to the rectangle B. The remaining output, area A, accrues to the other factors of production such as capital and land that labor uses to produce the output.

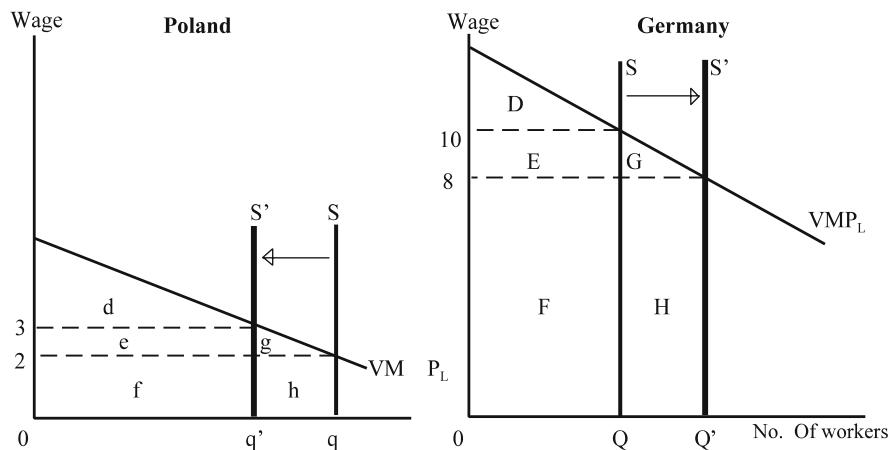
Since we are interested in the broad consequences of immigration across both the source and destination countries, we will often examine a two-diagram graphic labor market model of immigration such as in Fig. I.3, which explicitly shows the labor markets of two countries.

Suppose that the supply and demand curves for labor are different in two countries, let's call them Poland and Germany, and wages are 10 euros/h in Germany and 10 zloty in Poland. If the exchange rate between euros and Polish zloty is, say, equal to 1 euro = 5 zloty, we can translate the zloty wage into euros. Or, suppose Poland joins the euro area at the exchange rate of 5 zloty for 1 euro. Then, in euro terms, wages are five times higher in Germany than they are in Poland, €10.00 as compared to €2.00.

The wage difference will tend to cause Polish workers to move to Germany. This immigration will cause the supply curve for labor to shift to the left in Poland and to the right in Germany. Figure I.4 depicts a possible outcome. Immigration is shown to have shifted the supply curve inward in Poland and outward by an equal amount in Germany, causing the wage to rise to €3.00 in Poland and fall to €8.00 in Germany. In the absence of any psychological or economic costs or explicit restrictions of any kind, we might expect more immigrants to go to Germany until the supply curves shift enough to where the wages become equal in the two countries. Figure I.4, however, depicts the more realistic situation where migration



**Fig. I.3** The labor markets before immigration



**Fig. I.4** The labor market after immigration

tends to reduce, but not eliminate, the difference in wages between two countries. In general, there are many stay and stay away factors, such as language differences, moving costs, and family ties, that prevent perfect wage equalization.

### ***Who Gains and Who Loses with Immigration?***

Figure I.4 provides useful insight into why labor migration is a controversial issue in many countries: Even though the overall worldwide gains appear to outweigh the

**Table I.1** Gains and losses from immigration

<i>1. Poland</i>		
Owners of other (nonlabor) factors		Loss of e + g
Remaining workers		Gain of e
Net change in real income		Loss of g
<i>2. Germany</i>		
Workers originally in Germany		Loss of E
Owners of other (nonlabor) factors		Gain of E + G
Net change in real income		Gain of G
<i>3. Immigrants</i>		
Loss of wages in Poland		Loss of h
Gain of wages in Germany		Gain of H
Net change in real income		Gain of H – h
<i>World (1 + 2 + 3)</i>		
Net change in Polish real income		Loss of g
Net change in German real income		Gain of G
Net change in immigrants' real income		Gain of H – h
Net gain		Gain of (H + G) – (h + g) > 0

various welfare losses, the simple labor market model of immigration shows that some groups suffer welfare losses when people immigrate. Note that as a result of labor migration from Poland to Germany (represented by the shift in supply curves), migrating workers increase their welfare very substantially.

More specifically, after the quantity  $q'q$  workers depart, the supply of labor in Poland falls from S to  $S'$  and total output falls by the area  $g + h$ . The wages of the workers remaining in Poland rise from 2 to 3 euros, and their labor income increases from f to  $e + f$ . The other factors earn only d, which is smaller than their former income by the value of the areas  $e + g$ . It thus appears that labor gains real income while other factors lose income. The other factors in Poland suffer a net loss in income: The area e that other factors lose is gained by labor, but the area g is completely lost to Poland because the decline in total output,  $g + h$ , is greater than the wages that no longer need to be paid to the workers who left (area h).

Immigration causes a similar, albeit reversed, redistribution of welfare in Germany. According to Fig. I.4, native labor in Germany sees its income fall from  $E + F$  to just F, but other factors enjoy a rise in income from D to  $D + E + G$ . The income of Germany's native workers and other factors rises by the net amount of G as other factors gain more than the native workers lose. Output increases in Germany as we move down the labor demand curve in Fig. I.4; this increase is represented by the area  $G + H$ .

Figure I.4 also shows that the gain in output in Germany is greater than the loss of output in Poland. This must be the case since  $q'q = Q'Q$  and the average height of the areas  $G + H$  and  $g + h$ , respectively, are 9 euros and 2.5 euros. This rise in the value of total world output is the result of labor moving from a country with a small marginal contribution to the real value of output to a country where labor's marginal contribution to the real value of output is greater. Table I.1 summarizes the distributional results from immigration in Fig. I.4.

## ***Building on the Basic Labor Market Model***

According to the simple labor market model of immigration developed here, immigration causes total income in the source country to fall, and total income in the destination country to increase. The immigrants clearly increase their welfare, which is why they were motivated to immigrate in the first place. Notice also that in the example given here, the gains of the immigrants are much larger than the net gain in the destination country. As will be detailed later in this book, there is a large amount of empirical evidence suggesting that, indeed, immigrants capture the greatest part of the immediate gains from immigration. The labor market model of immigration also shows that immigration causes world output to rise, wages to rise in the immigrant source country, and wages to fall in the destination country. Finally, the model seems to confirm what many workers and employers in immigrant destination countries suspect or hope for, which is that immigrants cause wages to decline.

This simple model is often used in immigration analysis. But, despite its popularity in the economics literature, the model is an extreme simplification of what actually happens in source and destination countries when people immigrate. All models are simplifications, of course, but there are some obvious extensions that can make the model more realistic. First of all, when labor moves from one country to another, simultaneously there is also an international transfer of a consumer. That implies that consumption expenditures shift from the source to the destination countries, and thus the demand for labor also shifts from the source to the destination countries. And, in the long run, there are likely to be dynamic growth effects associated with the movement of people because (1) immigrants may introduce economies of scale effects and (2) immigrants may turn out to be entrepreneurs, innovators, and inventors. Chapters 2 through 10 of Part I of this book on the economic theory of immigration detail how economists have extended economic theory to take into consideration these additional causes and effects of immigration.

# **Chapter 2**

## **The Determinants of International Migration: Theory**

**Abstract** The economic theory of cross-border migration is concerned with three questions—*why* migrate, *who* migrates, and *what are the consequences* for source and destination countries? While there is a strong tendency in the literature to distinguish between domestic (internal) and international (external) migration, there is actually just one economic theory of migration. In mainstream economics, the theory of why people migrate is simply an application of the human capital model; migration is an *investment* in one's well-being. The human capital perspective leads to the implications that the immigration rate depends upon international differences in the returns to factor supply, controlling for migration costs, skill levels, income inequality, and immigration policies. We also discuss other models that focus on how the immigration decision is influenced by family considerations, the option value of waiting, and feelings of relative deprivation. There is still a big gap between theory and empirical work, and much needs to be done on the theoretical side of this literature to bridge that gap.

*The greatest challenge to migration theorists is the organization of all hypothetically relevant factors into one coherent theoretical framework that will specify their interaction with each other in empirically testable form and thereby serve as a guide to future research.*

### **Chapter Overview**

Forty years ago, there was no single, unified theory of why people migrate. Today, there is *still* no such convergence to a single model of immigration. Sociologists and economists have very different views about why people emigrate, and politicians and policymakers seem to have yet another set of views. Economic models are based on the fundamental assumption that people's decision to relocate abroad

depends on international differences in the returns to their labor, net of migration costs. This approach is useful in understanding what could be called *purely economic migration*, but not so useful in understanding refugees, family members who decide to accompany or follow immigrants, or those who are forced to migrate against their will. In contrast, sociologists have tended to focus on a broader range of determinants of international migration, although important economic determinants are often given secondary emphasis in their analysis. As with any area of research that cuts across the different social sciences, often one discipline's explanation seldom matches the explanations offered by other disciplines. The economic literature has been restricted by its use of labor market models favored by the labor economists who have done most of the economic analysis of immigration.

It is certainly not obvious that the primary motive for immigration is a *factor supply* decision. Does a person relocate in order to obtain a higher price for her labor supply? Or, is migration a *consumption* decision? For example, does a person move because she expects the destination to have a more pleasant climate and attractive scenery, a preferred social culture, or better quality local public goods such as schools, parks, or police protection? Or, is migration a decision to relocate *household production*? For example, does a family move because the destination has a better climate and soil for growing food or a better environment for home-schooling children? Or, do people relocate internationally to be closer to family and friends in the destination country, to seek political freedom and avoid persecution, or to safeguard one's wealth and property? A theory of the determinants of migration requires specifying what the migrant's motives are.

In this chapter, we survey the theoretical literature on the determinants of international migration. A number of things will quickly become apparent about this literature. First, the standard mainstream economic theory of why people migrate is simply an application of the human capital model. Second, the theoretical literature on why people migrate internationally is quite small. Third, the current popular model of immigration, the Borjas (1987) model and subsequent embellishments of it, is a model designed to explain both the determinants of immigration and the composition of immigrant flows. Finally, our survey of the theoretical literature on immigration will show how limited are the perspectives of the theoretical literature. Empirical researchers have often taken a much broader approach to immigration and have tested many variables representing influences not included in the available theoretical models of immigration. Much work must be done on the theoretical side to bridge the gap between theory and empirical work.

The organization of this chapter takes us first to a discussion of the very early contributions, including those made by scholars outside of economics, to understanding why people migrate. Second, we present an overview of the theory since the 1960s, focusing on the human capital investment model of migration developed by Sjaastad (1962). We then survey a number of other economic theories of international migration that have appeared in the mainstream literature.

## 2.1 Early Migration Theory

Prior to the 1960s, the theory of migration was mostly focused on domestic migration, and it was closely linked to the location models from regional economics and economic geography. Economic historians discussed international migration, but not from a theoretical perspective. With the development of the human capital investment model beginning in the late 1950s, migration began to be discussed from a more theoretical perspective. In this section, we survey the main developments in this older theory.

### 2.1.1 Pre-1960 Theory

Interestingly, an economic analysis of migration dates back to Smith's ([1776](#)) *An Inquiry into the Nature and Causes of the Wealth of Nations*, in which Smith ([1776](#) [1976], Part I, pp. 83–84) wrote,

...the wages of labour vary more from place to place than the price of provisions. The prices of bread and butcher's meat are generally the same or very nearly the same through the greater part of the United Kingdom. These and most other things which are sold by retail, the way in which the labouring poor buy all things, are generally fully as cheap or cheaper in great towns than in the remoter parts of the country... But the wages of labour in a great town and its neighborhood are frequently a fourth or a fifth part, twenty or five-and-twenty per cent. Higher than at a few miles distance. Eighteen pence a day may be reckoned the common price of labour in London and its neighbourhood. At a few miles distance it falls to eight pence, the usual price of common labour through the greater part of the low country of Scotland, where it varies a good deal less than in England. Such a difference of prices, which it seems is not always sufficient to transport a man from one parish to another, would necessarily occasion so great a transportation of the most bulky commodities, not only from one parish to another, but from one end of the kingdom, almost from one end of the world to the other, as would soon reduce them more nearly to a level. After all that has been said of the levity and inconstancy of human nature, it appears evidently from experience that a man is of all sorts of luggage the most difficult to be transported.

The above quote contains insightful observations which foreshadow research in the migration field two centuries later. Smith's observation that there is greater spatial dispersion of wages (the rural/urban wage differential is particularly large, for example) than there is of commodity prices is certainly still relevant today; international commodities seem to be more efficiently arbitrated today than labor. Smith effectively suggests that migration is potentially a response to spatial disequilibrium in labor markets. His observation of large wage differences in Britain suggests that wage differences are clearly not the only determinant of migration.

More than 150 years later, another leading economic theorist, Hicks ([1932](#)), wrote that "...differences in net economic advantages, chiefly *differences in wages*, are the main causes of migration" (our italics). Yet, during the 150 years between Smith and Hicks, the world had seen an incredible widening of wage differences across countries and regions. Clearly, other things influenced immigration, and the

rising arbitrage opportunities did not cause enough migration to prevent wage differences from growing. Indeed, Smith correctly foresaw the barriers to migration with his statement “man is of all sorts of luggage the most difficult to be transported.”

Shields and Shields (1989) formalize Smith’s observation in a model that hypothesizes labor moves from location  $i$  to location  $j$  if the wage is higher in  $j$  than  $i$ , and that the volume of migration is related to the wage differential in the following manner:

$$M_{ij} = \beta_{ij}(W_j - W_i), \quad (2.1)$$

where  $W$  is the wage,  $M$  is the number of migrants and  $\beta$  reflects barriers to migration, such as distance, imperfect information, and policy restrictions, that may reduce the speed at which wages adjust to migration. The parameter  $\beta$  takes on a higher value when the barriers to migration are reduced. The theory of migration must be able to explain why wage differences do not generate enough arbitrage.

### 2.1.2 Ravenstein and Zipf

In between Smith (1776) and Hicks (1932), there were three scholars, two outside of economics, who made important contributions to the study of migration: British geographer Ravenstein (1889), American economist Jerome (1926), and American sociologist Zipf (1946). After extensively studying British census data on nativity of the population and place of residence along with vital statistics and immigration records, Ravenstein hypothesized seven “laws” of migration. Greenwood (1997) provides the following useful summarization of Ravenstein’s seven laws: (1) most migrants move only a short distance and usually to large cities; (2) cities that grow rapidly tend to be populated by migrants from proximate rural areas and gaps arising in the rural population generate migration from more distant areas; (3) out-migration is inversely related to in-migration; (4) a major migration wave will generate a compensating counter-wave; (5) those migrating a long distance tend to move to large cities; (6) rural persons are more likely to migrate than urban persons; and (7) women are more likely to migrate than men.

Building upon several of Ravenstein’s “laws,” Zipf hypothesized that the volume of migration between two places is directly proportional to the product of the populations of the origin and destination and inversely proportional to the distance between the two. This “ $P(1)P(2)/D$ ” hypothesis, where  $P(1)$  is origin population,  $P(2)$  is destination population, and  $D$  is distance between origin and destination, came to be known as the *gravity model* of migration. The gravity model of migration is obviously an application of Newton’s law of gravity, which predicts the level of attraction between two bodies. In applying Newton’s law, Zipf treated “mass” as the population of a place, and “distance” as referring to miles between

two places. Zipf's intuition is that distance is a good proxy for the costs of migration. Secondly, the gravity model effectively hypothesizes that the volume of migration is higher the greater are the populations of the origin and destination communities. The intuition behind this assumption is that at any point in time, some fraction of persons in the origin will face wage opportunities in alternative locations that exceed the wages they currently earn, net of migration costs, and those persons will migrate. Assuming that that fraction stays the same as the size of the origin population rises, the number of persons choosing to migrate will then also rise. Also, as the population of the destination community rises, the quantity and quality of employment opportunities will also be greater, inducing more migration.

It is important to note that, in terms of popularity, this gravity model of migration has received very little attention compared to another gravity model, namely the *gravity model of international trade*. The latter, which hypothesizes that the level of international trade between two countries is proportional to the product of their GDPs or populations and inversely related to the distance between the two, has been widely applied in empirical work in the field of international economics.<sup>1</sup>

Jerome, a macroeconomist specializing in business cycle analysis, studied empirically the extent to which: (1) US immigration and emigration are driven by business cycle fluctuations; and (2) How migration flows influence the business cycle itself. His study, involving many different measures of US economic performance and migration flows dating back to the early nineteenth century, confirmed that there is strong correlation between cyclical changes in employment and cyclical changes in immigration and emigration. He concluded that migration does respond to changes in employment conditions, but may contribute as well to unemployment. Interestingly, the latter conclusion foreshadows work decades later on the distributional effects of immigration, discussed in a later chapter.

### 2.1.3 *The Standard Modern Theory of Migration*

The recent literature on the determinants of migration can be divided into three categories, each corresponding to a particular motive for migration. Specifically, a migrant can be (1) a supplier of her factor services or, effectively, a maximizing investor in her human capital, (2) a consumer of amenities and public goods, or (3) a producer of her own household goods and services. Most theoretical work on international migration is grounded in the human capital approach; the consumption approach is heavily favored by urban and regional economists and focuses on domestic migration; the “household production” approach is merely an application of the human capital approach.

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<sup>1</sup> Tinbergen (1962) first applied the gravity model of trade to explain international trade patterns, and trade economists have consistently found it to explain a large proportion of the variation in trade flows, making the model attractive for testing the marginal influence of other hypothesized variables on international trade. Theoretical justifications for the gravity model of trade have been provided by Linneman (1966), Anderson (1979) and Deardorff (1998).

### 2.1.3.1 The Migrant as Investor in Human Capital

Most economists who study migration apply a *labor-flow* model, which posits that migration is a response to spatial differences in the returns to labor supply. At the micro level, this model implies that the migrant's goal is to maximize utility by choosing the location which offers the highest net income. Hence, users of this model implicitly assume that utility maximization is achieved through the maximization of income. These models, therefore, ignore the obvious fact that people migrate for reasons other than income maximization, e.g., family reunification, seeking refuge or political asylum, a more attractive culture, and religious beliefs. Those reasons are compatible with a more complex specification of utility maximization, but not with a simple assumption of income maximization.

To the extent that relocation involves up-front costs followed by an uncertain payoff in the future, migration is effectively an *investment* decision. Since labor income is a return to human capital, migration is effectively an investment in one's human capital. This view of migration draws on Becker<sup>2</sup> (1975) and hypothesizes that people invest in their skills in order to maximize the net present value of future earnings.

The connection between migration and investment in human capital was first made by Sjaastad (1962). Sjaastad argued that a prospective migrant calculates the value of the opportunity available in the market at each alternative destination relative to the value of the opportunity available in the market at the point of origin, subtracts away the costs of moving (assumed to be proportional to migration distance), and chooses the destination which maximizes the present value of lifetime earnings. Nearly all recent *neoclassical* economic analyses of the internal migration decision proceed from this basic framework.<sup>3</sup> Within this framework, migration is usually treated as a once-and-for-all decision involving a change in the location of one's employment. This framework is, effectively, an inter-temporal version of the simple graphic labor market model we presented in the introduction to this section of the book, in which would-be migrants respond to differences in wages across labor markets in different geographic locations.

Sjaastad uses distance as a proxy for migration costs. He justifies this by pointing out that the greater is distance traveled, the greater are the monetary costs of migration such as transportation expenses, food and lodging costs for oneself and one's family during the move, and interruptions in income while between jobs. The migration decision is also very dependent on available information about job vacancies. Such information is both informal (provided by friends and relatives, for example) and formal (advertisements in publications and

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<sup>2</sup> Becker makes it clear that migration is an act of investment in one's human capital when he states "The many forms of such [human capital] investments include schooling, on-the-job training, medical care, *migration*, and searching for information about prices and income" (our italics).

<sup>3</sup> See expository surveys by Greenwood (1975, 1985, 1997), Molho (1986), Massey and Garcia Espana (1993), Shields and Shields (1989), Bauer and Zimmerman (1998), Ghatak, Levine, and Price (1996) and Gorter, Nijkamp, and Poot (1998).

employment agencies). Other pecuniary expenses include losses from selling one's home, car, or appliances prior to the move, or additional expenses incurred to replace certain assets left behind at the destination. Also, a move will sometimes necessitate a loss of job seniority, employer contributions to pension plans and other types of employment benefits, which are also monetary expenses of moving. Sjaastad effectively assumes that all these types of expenses vary with distance.

In Sjaastad's model, nonmonetary benefits of migration such as better climate and recreational opportunities, a desirable social, political, or religious environment, or more desirable quantities of public goods, available at the destination, are not counted in migration returns. Sjaastad reasoned that spatial differences in these factors are already accounted for by spatial differences in living costs (Sjaastad's model includes spatial differences in *real* pecuniary returns to migration). For example, a more pleasant climate in Arizona versus North Dakota should already be reflected in higher prices for Arizona real estate.

Elaborating slightly on an approach taken by Shields and Shields (1989, p. 284), we can depict Sjaastad's ideas mathematically. Specifically, suppose that  $w_t^H$  represents earnings per period at home,  $w_t^M$  earnings per period if a person migrates to another market elsewhere,  $CL_t^H$  an index measuring the cost of living at home,  $CL_t^M$  an index measuring the cost of living at the destination,  $i$  the discount rate, and  $C$  the cost of migration. If a person lives  $T$  years, in discrete time, the present value of the net gain to migration  $\pi$  is then

$$\pi = \sum_{t=1}^T \frac{(W_t^M - W_t^H)}{(1+i)^t} - \sum_{t=1}^T \frac{(CL_t^M - CL_t^H)}{(1+i)^t} - C(D, X), \quad (2.2)$$

where  $D$  is distance between origin and destination and  $X$  is a vector of any other determinants of migration costs. In continuous time, the present value is

$$\pi = \int_{t=0}^T [W_t^M - W_t^H - CL_t^M + CL_t^H] e^{-rt} dt - C(D, X). \quad (2.3)$$

In both the discrete and continuous time versions of the model, if  $\pi > 0$ , the decision-maker moves; if not, no move occurs. If there are multiple destination options, then Eq. 2.1 or 2.2 are computed for all those options and the individual chooses the option which yields the highest value of  $\pi$ . Nearly all theoretical and empirical studies that adopt the human capital investment approach utilize some behavioral model that is equivalent to, or is some permutation of, Eq. 2.2 or 2.3.

Sjaastad's model captures four aspects of the migration investment decision: (a) the imperfect synchronization of migration's benefits and costs in time; (b) earnings differences between origin and destination; (c) cost of living differences between origin and destination; and (d) the migrant's rate of time preference. The Sjaastad model is a single period model and, therefore, cannot explain why some people

migrate on multiple occasions during their lifetimes. Sjaastad's unit of analysis is the individual, which means that it cannot address the researchers who argue that the preferences and goals of persons close to the migrant such as family members must be taken into account when analyzing the migration decision. For example, if a husband and wife both work, then the husband's decision to migrate is likely to depend upon his wife's career prospects at the destination and vice versa. Migrants with more children tend to have a lower likelihood of migrating than those with fewer children. An explanation for this requires a model where the decision-making unit is the family, not just one person in isolation.

Another shortcoming of Sjaastad's model is its implicit assumption that migrants are perfectly informed about labor market opportunities at alternative destinations. This is a shortcoming of many investment models; uncertainty is very difficult to deal with in a model. But, in reality a prospective migrant will always face some degree of uncertainty about the size and path of his lifetime earnings stream at the destination. This uncertainty and the migrant's attitudes towards risk will influence his choice to migrate. Perhaps because Sjaastad ignored uncertainty in his model, he did not consider the role of past migration that has been shown to play such an important role in explaining both internal and international migration.

Sjaastad's model has some further shortcomings. Many international migrants remit some of their destination country earnings back home, which means that the benefits to immigration may include the benefits of remitting. Also, when remittances are part of the decision process the benefits of migrating also depend on the real exchange rate between the destination and home countries. The appreciation of the destination country's currency will boost the benefits of migration.

### 2.1.3.2 The Migrant as Consumer

Greenwood (1997) points out that by the early 1980s, tests of migration theory based on the human capital approach were consistently failing to confirm wages or earnings as determinants of migration. These empirical failures gave rise to an alternative view, favored by some urban and regional economists, called the “equilibrium” perspective on migration (in contrast to the “disequilibrium” perspective implied by the traditional labor flow model that posits people migrate to take advantage of regional income differences<sup>4</sup>). The basic idea behind the equilibrium models is that people migrate adjust their consumption to continual changes in incomes, prices, the supply of goods, services, and amenities, and their utility functions.

These models recognize that a person's utility function includes goods and services that are not all available in each geographic market. Desirable goods that

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<sup>4</sup> For a sampling of important early papers using the equilibrium perspective, see Roback (1982, 1988), Graves (1979, 1983), Greenwood (1997), Green, Deller, and Marcouiller (2006) and Glaeser and Shapiro (2003).

are not universally available are called *amenities* and include such things as attractive scenery, a pleasant climate, and clean air. The basic idea behind this group of migration models originated with Rosen's (1974) work on hedonic prices and implicit markets.

Some of these models of migration focus on changes in the *demand for amenities*. The demand for amenities may change as a person moves from one phase of his/her life cycle to another. Or they may change as culture changes or as economic growth changes incomes and the mix of products available. For example, long-term technological advances will raise peoples' real incomes and, assuming that consumption amenities are normal goods, boost the demand for those amenities. Because amenities tend to be distributed unevenly across the country, migration will occur and efficient markets will quickly re-equilibrate markets. Consequently, amenity-rich areas will experience in-migration, driving down wages and driving up land prices. In amenity-poor areas, wages will rise and rents will fall. Technological advances could have the same sorts of effects on producer demand for amenities. There will be a new set of interregional wage, rent, and price differentials that emerge and they will reflect a new set of compensating differentials.

Because it focuses on demand, the equilibrium model assumes the market clears instantaneously, unlike the so-called disequilibrium approach that assumes labor flows gradually in response to earnings differences. Also, the demand-driven equilibrium model concludes that earnings differences across locations can be permanent because differences in amenities will tend to offset earnings differences in equilibrium.

The notion that people migrate in response to spatial differences in amenities also extends to public goods. Long before regional economists were constructing models relating spatial equilibrium to amenities, Tiebout (1956) argued that an important factor explaining why people move from one locality to another is differences in the quality of public goods such as police and fire protection, education, hospitals, courts, beaches, parks, roads, and parking facilities. The idea that people "vote with their feet," picking communities which best satisfy their preference patterns for public goods, has come to be known as the *Tiebout Hypothesis*.

The consumption/equilibrium model has been used largely to explain internal migration in developed countries. The equilibrium perspective has generally not been applied to the study of migration in developing countries and it has not been applied at all to the study of international migration. Because of the regulated nature of international migration and the relatively higher costs of international movement, the equilibrium perspective is not very applicable to international migration. At the same time, there is no doubt that even from a disequilibrium perspective differences in amenities can drive migration.

The notion of the migrant as consumer does have some relevance for the study of international migration. There are huge differences between countries, especially developing versus developed countries, in the supply of nontradable goods, public goods, and amenities. For example, amenities include such things as a free and

democratic society, a lower perceived risk of persecution, a greater likelihood of cultural acceptance or an environment more permissive of creative expression. Furthermore, international migrants may be attracted by higher levels of public goods such as good quality health care, educational systems, and more functional judicial systems. In fact, the developed countries that have attracted most of the world's immigrants typically have a greater variety, quality, and accessibility to nontradable goods, e.g., lower cost and higher quality food, housing, home furnishings, cars, entertainment, and recreation goods, that contribute overall to a higher quality of life.

As in the case of internal migration in developing countries, it is difficult to justify the assumption of immediate adjustment to a changing equilibrium in the case of international migration because that would, implicitly, assume zero migration costs. Again, this criticism does not deny the importance of amenities and the differences in the availability of nontradable goods for international migration. But the equilibrium models that incorporate the idea would not be realistic. Further relaxation of trade barriers, lower transportation costs, international regional economic and political integration, and liberalization of immigration agreements between countries could reduce international mobility costs sufficiently to enhance the equilibrium migration model's accuracy in explaining international migration.

### 2.1.3.3 The Migrant as Household Producer

Another set of models focused again on domestic migration proceeds from the assumption that a main motive for individual and family migration is the cost of household production. Shields and Shields (1989) suggested that households choose a location where they can produce the best combination of household goods and services. Their model is based on the literature of the *new household economics*, pioneered by Lancaster (1966) and Willis (1973). This “migrant as household producer” view is complementary to the “migrant as consumer” view of why households move because it emphasizes the influence of amenities in the choice of migration destination.

According to the *new household economics*, all households to varying degrees produce goods and services for their own consumption. These could include meal preparation, housecleaning, growing fruits and vegetables, home repair, educational services, recreational goods and services, activities with friends and relatives, and child care. The household derives utility from its consumption of these goods and services, which are produced using its time, its physical capital, and various inputs purchased in the market. The household's goal is hypothesized to maximize utility by choosing the optimal combination of commodities to produce and consume, subject to the household's income to purchase goods and capital and its technology of household production. Since there are significant locational differences in goods prices and amenities, there will be locational differences in

the costs of household production. For example, if the household grows fruits and vegetables for its own consumption, then the cost of home grown produce will be lower in areas where climate and soil quality are more appropriate.

The implications of the household production models of migration actually match those of the human capital model. For example, suppose that real wages rise in an alternative location. According to the household production view, *ceteris paribus*, a household where family members allocate time to the labor market will relocate to the higher wage area because doing so will bolster income opportunities and allow for greater levels of household production. This choice of relocation matches what the human capital view would predict. Thus, the household production approach to migration may be taken as another application of the human capital approach.

### 2.1.4 Further Influences on Migration

Models all make assumptions that simplify the framework and permit the user to focus on a limited number of variables. For example, recall that in the original Sjaastad model, pecuniary migration costs depend only on distance traveled, that psychological and social costs are constant, and that there are zero information costs. It is, therefore, to be expected that for a complex phenomenon like immigration researchers will soon specify additional models that include variables not included in earlier models. In this subsection, we address several other strands of literature on internal migration that address other influences on people's decision to migrate.

#### 2.1.4.1 The Role of Past Migration

Some researchers have argued that psychological and social costs, as well as information costs, are likely to fall when there is greater access to family, friends, and other previous migrants in the destination. In the sociology literature on migration, the community of family and friends at the destination is often referred to as a *kinship network*, and the community of earlier migrants from a similar ethnic or regional background is referred to as a *migrant network*. Access to these networks can greatly improve the efficiency of migration. For example, as Yap (1977) has suggested, "Destination contacts have a positive effect on migration to a specific area, when contacts are measured by the presence of parents in the city,... by potential ethnic contacts,... by language similarity between areas... or by the stock of persons in the destination who had migrated earlier from the home area." A similar point has been made by Hugo (1981), Taylor (1986), Massey and Garcia Espana (1987), and Lundborg (1991). Kinship and migrant networks can lower job search costs, the costs of securing housing and child care, and reduce vulnerability to exploitation, fraud, and crime. Also, having family and members of a familiar

culture at the destination can reduce the personal and cultural stresses associated with migration. To the extent that kinship and migrant networks are effective in reducing information and psychic costs, migration costs are endogenous to the volume of past migration.

One modeling approach is to enter kinship and migrant networks into the migrant's objective function under the assumption that people experience increased utility from having familiar faces and contacts in a new place. Another approach is to relate migration costs to a risk variable that varies inversely with the size of kinship and/or migrant networks. This was the approach of Taylor (1986), who argued that kinship networks serve as "migration insurance" that protects against potential income losses at the destination.

#### 2.1.4.2 Migration as a Life Cycle Decision

Polacheck and Horvath (1977) argue that migration should be modeled as an investment process undertaken at each stage of the life cycle rather than a one-investment decision. Their model generates clear, refutable predictions about when in their life cycle people are most likely to migrate and the likelihood of return migration. They argue that the Sjaastad model does not generate such predictions because it says nothing about choice of locational characteristics. Polacheck and Horvath's model could fit into the category of consumption demand models of migration because they assume that what matters to people are locational characteristics. They model locations as composites of various locational characteristics, including the rate of unemployment, price levels, industrial composition, occupational structure, and per capita public expenditures on education. As a person moves through the life cycle, demand for locational characteristics changes. For example, a young person in the early stage of her career may have a strong preference for locations with many other young people and high income jobs, whereas a person nearing retirement may have a strong preference for locations with good climate and healthcare. Because there are multiple stages to the life cycle, it is very likely that there will be multiple migrations during a person's life.

#### 2.1.4.3 The Expected Income Hypothesis

A weakness of the Sjaastad model is that it assumes the probability of a migrant finding employment in the destination is 100 %. If migration costs are zero and all migrants find work at the destination instantly upon arrival, a pure disequilibrium model then implies complete wage convergence between source and destination. Beginning with Todaro (1969, 1976) and Harris and Todaro (1970), many development economists have pointed out that this assumption is very unrealistic for

cases involving internal rural-to-urban migration in developing countries.<sup>5</sup> They point out that urban unemployment rates in developing countries have historically been high and that rural migrants usually face a long wait before they find a job in the urban “modern” sector. While they search and wait, migrants are either unemployed or underemployed, occasionally performing menial tasks for low pay.

Provided a model in which prospective migrants explicitly take into account the probability of obtaining work in the modern urban sector. In terms of the Sjaastad framework presented as Eq. 2.1 or 2.2 above, this involves substituting expected income at the destination for actual income:

$$\pi = \int_{t=0}^T [p(t)W_t^M - W_t^H - CL_t^M + CL_t^H] e^{-rt} dt - C(D, X), \quad (2.4)$$

where  $p(t)$  is the probability a migrant will be employed in the modern urban sector in period  $t$ . This probability is assumed by Todaro to be equal to the ratio of new modern sector employment openings to the number of “waiting” job seekers in the urban traditional sector. The number of modern sector job openings grows at the rate of industrial output growth less the growth rate of labor productivity in the modern sector. Rural-to-urban migration will continue despite high unemployment as long as the *expected* wage in the urban sector, net of migration costs, equals the average wage in the rural sector. This basic model was subsequently extended by Harris and Todaro (1970), Bhagwati and Srinivasan (1974), Corden and Findlay (1975), and Calvo (1978), among many others, to take into account additional characteristics of developing countries.

It is important to emphasize at this juncture that while most of the literature discussed above focuses on internal migration, it is easily applicable to cross-border migration. From our perspective, there is only one theory migration, whether one takes it from a human capital perspective or a gravity model that is preferred by geographers. Institutional factors may be a consideration—in the USA today there are no restrictions across subnational units, but there are restrictions on entry from the outside. There have, however, been times and places, e.g., China’s “Hukous” system, the old Czarist Russia, or former USSR, in which there have been substantial legal barriers to domestic migration. There have also been barriers to emigration, e.g., medieval serfs tied to the manor, the treatment of Jews in the former USSR, or racial discrimination in the USA that kept blacks out of certain neighborhoods or entire communities. One can even think of state occupational licensing laws as barriers to domestic migration. These institutional factors affect the costs of immigration.

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<sup>5</sup> For a very recent and thorough review specifically of the literature on rural to urban internal migration in LDCs, see Lall, Selod, and Shalizi (2006).

## 2.2 The Modern Model of Immigration

The development of theoretical models of immigration has gained momentum in the past several decades. One of the better-known immigration economists is Borjas (1987, 1991), who drew on the prior work of Sjaastad (1962) to develop what has become arguably the most popular model in immigration economics. It is fair to say that Borjas adds little substance to the theoretical models for migration presented in the previous section. His mathematical model is a close derivative of the simple graphic model presented in the introduction to this section of the book, which is, of course, a close relative of the Sjaastad migration model. Borjas does add some interesting innovations that have permitted him to address the characteristics of immigrants versus nonimmigrants. Therefore, the exposition of Borjas' model in this part of the chapter also serves as the first step towards analyzing immigrant selectivity, the topic of Chap. 3.

### 2.2.1 *The First Borjas Model*

In two papers, Borjas (1987, 1991) developed closely related versions of a human capital investment model of international migration.<sup>6</sup> These models assume that the incentive to migrate is driven purely by the international differences in the average returns to labor and human capital in the source and destination countries. Borjas (1987) presents a model in which the distributions of human capital among workers in the source and destination countries determine immigration flows in addition to the overall differences in labor returns.

#### 2.2.1.1 The General Intuition of the First Model

Borjas's approach reflects the observation that people in the source and destination countries are not all the same in terms of their abilities, education, age, etc. Rather, he assumes that people in both economies are characterized by entire ranges of talents, skills, education levels, and other personal characteristics. The migration decision, therefore, depends on how a would-be migrant with a specific set of skills and talents perceives his or her gains from migrating from a labor market where the labor force has a certain distribution of worker characteristics to a country where the labor force has a different distribution of talents, skills, and education levels. The migration decision thus depends not just on the average difference in wages across countries, but on where the immigrant would fit into the destination country

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<sup>6</sup> Borjas has also presented the same models in three expository surveys of the immigration literature (see Borjas, 1990, 1994, 1999).

labor market and how well the worker's abilities and other human capital can be applied there. Borjas' model is thus able to predict the flows of different types of workers between countries.

The Borjas model we discuss here is in fact the first stage of a two-stage model of international migrant selectivity. The second stage of the model will be discussed in detail in the next chapter.

### 2.2.1.2 The Specification of the Model

In the simplest version of the model, Borjas assumes that migration is an irreversible "yes/no" decision and there is just one destination country. The source and destination countries have different earnings distributions, which reflect differences in earnings opportunities available to a would-be migrant. It is important to emphasize that in this model, Borjas assumes that country differences in earnings distributions are not due to differences in skill distributions (which are assumed to be the same), but to differences in markets and policies. For example, Norway has a more compressed earnings distribution than the USA because Norway has higher income tax rates and, through its social insurance programs, a broader system of income redistribution. As a result, a person of given skill has a greater chance of reaping a very high or a very low return to his factor supply in the USA than in, say, Norway.

Borjas further assumes that a person's earnings in either country are equal to the mean earnings in that country plus a random variable. Specifically, a person's earnings in his/her home country are

$$\ln(w_0) = \mu_0 + \varepsilon_0, \quad (2.5)$$

where  $\mu_0$  is the mean income home country residents would earn if they stayed at home, and  $\varepsilon_0$  is random, uncorrelated with  $\mu_0$ , with a mean of 0 and a variance of  $\sigma_0^2$ . Some home country residents will earn less than the mean, others above the mean, and earnings differences could be due to differences in skills or random factors such as luck, unexpected health shocks, and job loss.

A migrant's earnings in the destination will be

$$\ln(w_1) = \mu_1 + \varepsilon_1, \quad (2.6)$$

where  $\mu_1$  is the mean income home country residents would earn if they *all* migrated to the destination country, and  $\varepsilon_1$  is a random variable with the same assumptions as for  $\varepsilon_0$  above. Borjas makes the assumption that  $\mu_1$  equals the mean income migrants would earn abroad *if all* home country residents migrated because it simplifies the model's solution without, he claims, changing the model's basic predictions.

The variance terms  $\sigma_0^2$  and  $\sigma_1^2$  are the parameters in the Borjas model that describe the income inequality in the source and destination countries, respectively. Holding the distribution of skills constant, the variance of earnings effectively indicates the

dispersion of earnings *opportunities* in a country. If the destination country has a greater dispersion, then an immigrant with a given level of socio-economic characteristics will have a greater chance of reaping an exceptionally large return to his labor and human capital. Of course, there is also a greater risk, all other things equal, of reaping an exceptionally low income. In this version of Borjas' model, the variance of earnings in the source and destination countries is driven entirely by the variance of the error terms  $\sigma_0$  and  $\sigma_1$ , and not by specific identifiable character and skill variables. Therefore,  $\sigma_0$  and  $\sigma_1$  effectively measure the returns to *unobservable* characteristics in the source and destination countries.

To incorporate skills transferability across borders, Borjas assumes that the random variables  $\varepsilon_0$  and  $\varepsilon_1$  have a correlation coefficient of  $\rho$ . A value of  $\rho$  that is positive and close to unity indicates that skills are easily transferrable across borders and a person who earns relatively well (poorly) in the home country is highly likely to earn relatively well (poorly) in the destination country. One would expect that the earnings correlation between home and destination countries will be positive and high if the labor markets, levels of development, industrial structures and quality of schools, for example, are similar. Canadian doctors who obtained their schooling in Canada should easily be able to transfer their skills to the USA and continue to earn relatively high incomes after migration. In contrast, a  $\rho$  that is positive but very small implies that skills do not transfer well across borders. It is also possible that  $\rho < 0$ , which is the case if a person's skills generate relatively low (high) earnings at home, but relatively high (low) earnings in the destination country. Such could be the case of a talented folk musician, who is well paid at home for performing native songs greatly appreciated by her countrymen. Were he to migrate, residents of his destination country may not know the music his countrymen are so fond of. Hence, the singer moves from being near the top of his native country's earnings distribution to singing on the street corner in the destination country for a few tips from sympathetic passers-by. Borjas suggests that  $\rho$  is positive and relatively high for pairs of developed countries, but low or even negative correlations will more often be the case for migrants from developing countries to developed economies.

In Borjas' model, if the costs of migrating are  $C$ , then a person migrates if  $w_1 > w_0 + C$ , or  $[w_1/(w_0 + C)] > 1$ . Taking logs, she migrates if  $I > 0$ , where

$$I \equiv \ln(w_1) - \ln(w_0 + C) > 0. \quad (2.7)$$

Note that  $\ln(w_1 + C)$  is approximately equal to  $\ln(w_0) + (C/w_1)$ .<sup>7</sup> Borjas defines  $C/w_0$  as  $\pi$ , and calls this a "time equivalent" measure of the costs of migration. He assumes it to be constant across all individuals in the home country. It then follows from Eq. 2.6 that the person will migrate if

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<sup>7</sup> For example, suppose that home earnings are \$10,000 and migration costs are \$1,000. Note that  $\text{Log } (11,000) = 4.04$  while  $\text{Log } (10,000) + (1,000/10,000) = 4.1$ , a difference of only about 1.5 %.

$$I = (\mu_1 - \mu_0 - \pi) + (\varepsilon_1 - \varepsilon_0) > 0 \Rightarrow (\varepsilon_1 - \varepsilon_0) > -(\mu_1 - \mu_0 - \pi). \quad (2.8)$$

According to expression (2.8), migration will occur if the destination country rewards the migrant more for her or his particular skills and if net mean earnings in the destination country are higher.

Recall that the model introduced a random element to earnings. Hence, it is the probability that  $I > 0$ , which we will call  $P$ , that serves as a measure of the migration rate. From Eq. 2.8, the emigration rate will be positive if  $\Pr[(\varepsilon_1 - \varepsilon_0) > -(\mu_1 - \mu_0 - \pi)] > 0$ . For analytical convenience, Borjas standardizes the emigration rate to a  $Z$  value by noting that  $P$  is equivalent to

$$\Pr\left(Z > \frac{-(\mu_1 - \mu_0 - \pi)}{\sigma_v}\right) = 1 - \Phi(Z), \quad (2.9)$$

where  $\sigma_v$  is the standard deviation of  $(\varepsilon_1 - \varepsilon_0)$ ,  $\Phi(Z)$  is the cumulative distribution function for  $Z$ , and  $\sigma_v = \sqrt{\sigma_0^2 + \sigma_1^2 - 2\rho\sigma_0\sigma_1}$  under specific assumptions about the distributions. The emigration rate thus depends upon mean earnings in each country, each country's earnings variance, relative migration costs, the degree of skills transferability across borders, and the interaction of the source and destination country earnings variances (the  $\sigma_0\sigma_1$  term in  $\sigma_v$ ).

### 2.2.1.3 The Predictions of the Model

Ideally, we would like to be able to integrate the density function of earnings and obtain a reduced form expression for the emigration rate. That expression would then specify an empirical model of the emigration rate. It is not possible to obtain a reduced form expression for the normal distribution, which is what Borjas necessarily assumes for his model in order to derive the relationships above. Hence, predictions about the behavior of the migration rate can only be inferred by analyzing how changes in the variables that determine the migration rate influence the distribution function.

Suppose we are interested in knowing how the emigration rate varies with some exogenous variable  $\Omega$ . We can obtain the sign of  $\partial P / \partial \Omega$  by deriving the expression

$$\frac{\partial P}{\partial \Omega} = \frac{\partial \Phi}{\partial Z} \frac{\partial Z}{\partial \Omega} \quad (2.10)$$

From a table giving areas under the standard normal curve, it can be verified that  $\partial \Phi / \partial Z$  and  $(\partial^2 \Phi) / (\partial Z^2) > 0$ . The sign of the expression  $\partial Z / \partial \Omega$  depends upon whether the destination is relatively rich ( $\mu_1 > \mu_0 + \pi$ ) or relatively poor ( $\mu_1 < \mu_0 + \pi$ ) and on the sign of  $(\partial \sigma_v) / (\partial \Omega)$ . If we assume that the destination is relatively rich and apply expression (Eq. 2.9) above, we conclude that

$$\frac{\partial P}{\partial \mu_1} = -\frac{\partial \Phi}{\partial Z} \left( \frac{1}{\sigma_v} \right) > 0 \quad (2.11)$$

and

$$\frac{\partial P}{\partial \mu_0} = -\frac{\partial \Phi}{\partial Z} \left( \frac{1}{\sigma_v} \right) < 0 \quad (2.12)$$

Hence, the model effectively hypothesizes that<sup>8</sup>

1. *The migration rate will rise (fall) if the destination country's mean income rises (falls).*
2. *The migration rate will fall (rise) if the source country's mean income rises (falls).*

These predictions match those of the internal migration models discussed earlier, which is that when the net return to migration rises there will be a stronger incentive to migrate. However, the predictions implied by Eqs. 2.11 and 2.12 also address the question of why, when the mean income of an immigrant destination country is much larger, as in the case for the USA versus many developing countries, we do not see a country's entire population migrating. Differences in countries' variance of earnings and the degree of skills transferability between countries means that people with different skills, talents, education, etc., will have different incentives to migrate.

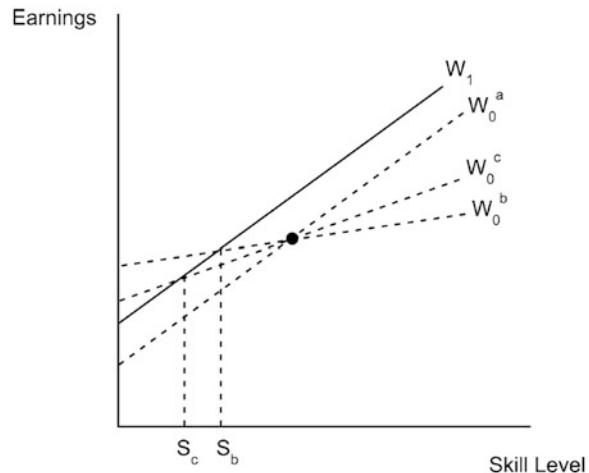
To see how differences in the dispersion of earnings affects migration, consider Figs. 2.1 and 2.2. Each of the figures shows a mixture of wage profiles, where each profile relates the level of earnings to the level of skills in a country. Since a higher (lower) variance of earnings opportunities increases the return to skills, a higher variance in earnings implies a steeper wage profile in the figures. In both figures, it is assumed that the destination country is relatively richer. In each figure,  $w_1$  shows the relationship between wages and skills in the destination country and the three other profiles are for the source country. In both figures,  $w_0^a$  shows the wage profile in the source country when the variance of earnings there equals the destination country variance. When the variances are equal and skills are fully transferable, all persons in the source country have an incentive to migrate and the migration rate is 100 %. The result that in both figures the three source country profiles intersect at a mean income level lower than the mean of  $w_1$  reflects the assumption that the destination country is relatively richer.

In Fig. 2.1, both countries have the same level of income inequality, as evidenced by the parallel wage profiles  $w_0^a$  and  $w_1$  of the source and destination

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<sup>8</sup> These predictions are implied by the first derivatives of the emigration rate with respect to each of its six determinants. There are also predictions implied by second derivatives (which would indicate rates of change) and cross-partial derivatives (which indicate interaction effects). Borjas did not discuss second-order effects, however.

**Fig. 2.1** The effects of relative income inequality when source country inequality is lower



countries, respectively. If skills are fully transferable, all individuals in the source country have an incentive to migrate, and the emigration rate is 100 %. When the source country wage profile is less steep, as for example  $w_0^b$ , then only those persons with skill level  $s_b$  or higher will migrate. If source country inequality rises and the wage profile rotates upward to  $w_0^c$ , those persons with skill level  $s_c$  or higher will migrate, and total migration increases. As long as source country inequality is initially relatively lower, an increase in that country's inequality will result in a higher emigration rate.

According to Fig. 2.2, if the source country's wage profile is  $w_0^b$ , then those persons with skill level  $s_b$  or below will migrate since for those persons, the destination country offers a higher return. If income inequality in the source country rises and the wage profile rotates upwards to  $w_0^c$ , then only those persons with skill level of  $s_c$  or below will move. Hence, the emigration rate will fall. When source country inequality is greater (so that the source country wage profile is steeper), an increase (decrease) in source country inequality will *lower* (*raise*) the emigration rate.

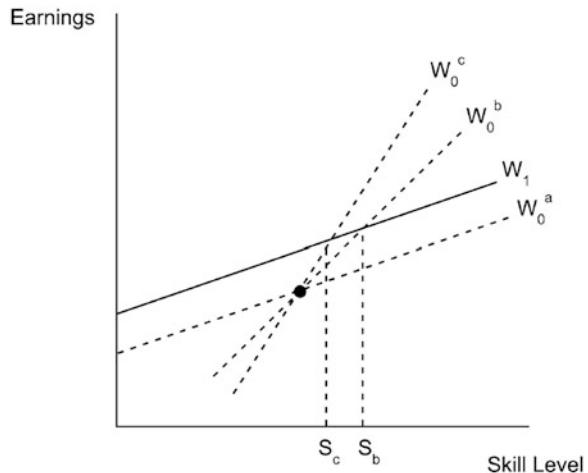
Borjas uses the same analysis as above to show that (a) if destination country inequality is initially relatively low, an increase in that country's inequality will raise the emigration rate, and (b) if destination country inequality is initially relatively high, the emigration rate will be negatively related to that country's inequality.

The first Borjas model also derives the following relationship

$$\frac{\partial P}{\partial \pi} = - \frac{\partial \Phi}{\partial Z} \left( \frac{1}{\sigma_v} \right) < 0, \quad (2.13)$$

which suggests the following hypothesis:

**Fig. 2.2** The effects of relative income inequality when source country inequality is higher



### 3. The migration rate is lower the higher are relative migration costs.

Finally, the model generates the following relationship

$$\frac{\partial P}{\partial \text{cov}(\varepsilon_0, \varepsilon_1)} = \frac{\partial \Phi}{\partial Z} [(\mu_1 - \mu_0 - \pi)[\sigma_0^2 + \sigma_1^2 - 2\text{cov}(\varepsilon_0, \varepsilon_1)]^{\frac{3}{2}}] > 0. \quad (2.14)$$

Because the covariance measures the transferability of skills and talents, Eq. 2.14 suggests that

### 4. The migration rate rises if the degree of skills transferability rises.

This latter conclusion is an important result for Borjas' ultimate purpose, which is to show how differences in income distributions and skill distributions affect the characteristics of immigrants. When skills are not easily transferred, it becomes more likely that only less skilled workers will migrate, all other things equal.

## 2.2.2 Borjas' 1991 Model

In his 1991 study, Borjas presents a variation of the above model. Instead of assuming independently random fluctuations in earnings, Borjas (1991) assumes that the earnings of a person with socioeconomic characteristics or skill endowment  $X$  is equal to that country's average valuation of  $X$  plus a random component. This model again finds that migration is more likely to occur if the destination country values the migrant's characteristics, net of migration costs, more than the source

country does. Also as before, Borjas (1991) concludes that the migration rate for persons with given characteristics  $X$  depends upon international differences in the values attached to those characteristics, each country's earnings variance, relative migration costs, and the degree of transferability of  $X$  across borders.

Borjas uses this model to show that earnings variance in a country can be driven by variations in *observable* characteristics such as schooling and experience. In this case, a person's earnings in the source and destination countries are modeled as depending on mean country earnings for a person with a set of personal characteristics other than schooling, a variable for the level of schooling, the rate of return to schooling ( $\delta_0$ ), and a random error. The migration rate now depends on two distributions—the distributions of unobservable characteristics in each country and the distribution of returns to schooling in each country. One of the predictions that Borjas' second model generates is the following:

5. *The migration rate is higher (lower) the higher (lower) is the mean level of schooling in the source country.*

In the extreme case where mean schooling in the source country is zero, there is no "educational premium" to capture in the destination country, and hence there is no incentive to emigrate on the basis of one's education. In contrast, in a country where mean schooling is very high, the potential gains available to migrants in the destination country will be very high and there will be a strong incentive to migrate. The important point here is that emigration rates will be higher for source countries that have more skilled labor forces.

The model also concludes that

6. *The migration rate is higher (lower) the lower (higher) is the variance of schooling in the source country.*

When the variance of the distribution of skills (measured in this case by level of educational attainment) rises, there will be a larger number of persons who fall far below the mean level of education and who have little incentive to migrate because the potential gains to education in the destination country would then also tend to be very low. There will, of course, also be more persons with exceptionally high levels of education in this case, but they would have been strong candidates for migration anyways. Hence, there is a net reduction in the overall migration rate. The implication is that in countries where there are substantial disparities in schooling across the population (such as in developing countries), smaller fractions of the population will migrate abroad.

### 2.2.3 Recent Extensions of the Borjas Model

Approximately a quarter of a century has passed since Borjas first published his model of international migration in which he supplemented the role of income differences with various assumptions about the distributions of personal

characteristics. Since then, others have built other determinants of international migration into Borjas' models. For example, Hatton and Williamson (2005) and Clark, Hatton, and Williamson (2007), and Hatton and Williamson (2010) have extended the Borjas model to account for the effects of non-pecuniary costs of migration and explicit immigration restrictions. We focus here on some novel predictions derived in Clark, Hatton, and Williamson (CHW).

### 2.2.3.1 The CHW Model

CHW model the decision to migrate as a function of the destination/source country wage differential, the distributions of skill levels, and a several types of migration costs. The authors specify four types of migration cost:

1. *Individual-specific migration cost ( $z$ )*. According to CHW, the value of  $z$  could be a compensating differential. For example, persons who have relatives and friends in the destination country are likely to have lower levels of  $z$ . We have already discussed some reasons why relatives and friends reduce migration costs, but CHW add the important observation that persons with family members in the destination can obtain admission through family reunion or family-sponsored preference categories, as compared with other (potentially more expensive) categories. Furthermore, persons who have stronger preferences for amenities available in the destination will have lower values of  $z$ . Note that in the case of amenities,  $z$  could be negative. For example, a person's preference for the destination's warm climate could be so strong that she would migrate there even if that meant a cut in income. Refugees escaping political persecution or risk to life and limb as a result of civil war will also have a negative  $z$ .
2. *Direct cost*. Direct migration costs are directly related to distance. Also, migration costs rise when the destination country imposes higher visa costs or imposes more difficult visa application procedures.
3. *Migration costs that result from quantitative restrictions on immigration*. This measure uses the total cap on the number of migrants from source country  $y$  allowed to enter destination country  $x$ . The larger is the cap, the lower are the costs of waiting for permission to enter or the cost of moving to a higher-preference category.
4. *Migration costs resulting from “skill-selective” immigration policy*. A skill-selective policy generally implies that the more-skilled migrants face a lower cost of admission.

CHW derive a probit equation for the emigration rate using the same approach as Borjas in which they predict the effects on migration from changes in each of the four types of migration costs. CHW generate a number of novel predictions. One result is that, while the migration rate still depends on the relative variance of the country's income distributions, the migration rate now also depends on the level of skill-selective immigration policy and the variance of schooling in the source country. Another novel result is that different immigration policies will influence

the emigration rate in different ways. For example, expanding family reunification policies lowers average person-specific migration costs  $\mu_z$ , which will stimulate emigration. A reduction in an overall immigration quota will dampen emigration, as will an increase in admission standards under a skill-selective policy. However, CHW find that there is an ambiguous relationship between the parameter measuring the relative importance of skill-selective policy in the destination country. Skill-selective immigration policies may increase or decrease immigration, depending on more specific circumstances.

### 2.2.3.2 Migration as a Response to Relative Deprivation

Some immigration economists have applied the concept of *relative deprivation* due originally to the social psychologist Runciman (1996). The notion of relative deprivation is very fundamental: a person derives happiness not only from the goods his own income can buy, but also on how his income ranks relative to his peers. This hypothesis is solidly founded on evidence from psychology, neuroscience, and experimental economics.

Stark (1984, 1991), Katz and Stark (1986), Stark and Taylor (1989, 1991) and Stark and Yitzhaki (1984) model migration as being undertaken because it can improve a person's income relative to members of his or her "reference group," which in the immigration literature is assumed to be other income-earning persons in the source country or source community. It follows that if migration leads to higher absolute income elsewhere (assuming we have controlled for cost of living differences), the migrant experiences a higher level of welfare or satisfaction because relative deprivation is reduced.

The notion that relative deprivation motivates migration is well rooted in the psychology, happiness studies, and experimental economics literature. For example, Blanchflower and Oswald (2000), Frey and Stutzer (2002a, 2002b), Layard (2005), and Veenhoven (1996, 1999), among others, have examined responses to life satisfaction surveys and concluded that human happiness or life satisfaction is often more influenced by their relative incomes than absolute levels of income. The evidence suggests that for levels of income below \$10,000, people's happiness or life satisfaction is strongly responsive to gains in absolute income, but for higher incomes, relative status overwhelms absolute income levels as the determinant of human happiness. Hence, for immigrants from high income countries, a focus on how immigration is likely to change a person's income relative to his peers in the source country is clearly called for. On the other hand, for migrants who move from poor countries to wealthy countries, improvements in both absolute income and relative income are likely to influence the migration decision.

The relative deprivation models generate potentially important testable implications of the hypothesis. First, the relative deprivation hypothesis implies that characteristics of the migrant's home income distribution will influence his decision to migrate. For example, if his absolute income stays the same, but the variance of the distribution or its degree of positive skewness rise, this will alter his

utility and give him greater incentive to migrate. Since one can usually obtain reasonably accurate data on the distribution of individual or household income in a community, province, or country, the relative deprivation hypothesis can be tested for many cases.

There is a second and potentially very important implication of the relative deprivation hypothesis. Following Todaro (1969) and Harris and Todaro (1970), suppose people face only *expected* income. Assume, also, that the probability distribution of possible employment outcomes in the destination is such that a migrant stands only a small chance of reaping a very high reward after migrating. Assume, however, that utility is very dependent on relative income in his reference group, so were (s)he to get lucky and reap the very high reward at the destination, utility would rise substantially. Under such conditions, the expected utility from migrating could be very high even if there is no differential in expected income between the two locations. Migration could be attractive even if expected income at the origin is greater than at the destination, provided there is a higher chance of hitting the jackpot in the destination compared to the source country. In other words, the relative deprivation hypothesis is capable of contradicting the traditional hypothesis that expected income differentials between urban and rural areas must be positive in order to induce migration.

### 2.2.3.3 Migration as Sequential Search and the Option Value of Waiting

It is likely that someone contemplating migration will be imperfectly informed about labor market opportunities at the destination. Hence, the migration decision is generally made under some degree of uncertainty. Models like those of Todaro (1969) and Harris and Todaro (1970) explicitly recognized uncertainty and how it determined internal rural-to-urban migration. A number of theories of international migration also explain migrant decision-making when would-be migrants face probability distributions rather than full information on foreign opportunities.

Pickles and Rogerson (1984) and McCall and McCall (1987) model the decision to migrate as a sequential search process in which the migrant maximizes expected net income and faces a stationary probability distribution of wages at the destination. Every period, an observation from that distribution is revealed in the form of a wage offer, at which point the potential migrant compares the offer with the reservation wage, which is usually the wage in the source country. When a foreign wage offer exceeds the reservation wage plus migration costs, the migrant moves abroad. The model answers the question: How long does it take before a move is made? The model concludes that, all other things equal, the more favorable labor market conditions are at the origin, the longer before a sufficiently attractive wage offer arrives and migration occurs. Alternatively, the more favorable are labor market conditions in the destination country, the sooner a person decides to migrate.

These models add time as a variable in the immigration decision. They help explain the evidence showing that international migration almost always responds only sluggishly to real income differences. For example, Burda (1995) found that

**Table 2.1** The option value of waiting to migrate

	Period 1 income	Period 2 income	Expected present value
Migrate	10,000–9,500	$(50,000 - 20,000) \times 0.5$	$500 + 15,000 = 15,500$
Wait	0	$(50,000 - 9,500) \times 0.5$	20,250
Option value of waiting			4,750

following a large spike immediately after reunification of West and East Germany, migration from the East to the West was surprisingly sluggish despite very large real wage differences. This type of pattern, where migration is sluggish despite significant real income differentials between countries, has been found for most other cases of internal and external migration.

Burda (1993, 1995) provides a different explanation for the sluggish response of migration to the usual incentives for migration like income differences. Burda argues that uncertainty about labor market conditions in the destination country justifies delaying the decision to migrate until more information is obtained. Burda effectively models procrastination as an *option* similar to an option to purchase a stock or foreign exchange at a later date. It will pay to wait to make a decision as long as the benefits of waiting for information exceed the opportunity costs.

Consider the following example of Burda's point. Suppose a person living in Source is contemplating a move to Destination and faces a two-period decision problem in which the second period return is not certain. Specifically, suppose that by moving to Destination the migrant can increase her income by \$10,000 in the first period with a probability of 1, but in period 1 there is a 0.5 probability she will find a job with a salary \$50,000 more than in Source in period 2. But in period 1, the would-be migrant also knows that there is an equal 0.5 probability that she will not find that job and, instead, be deported and fined in period 2, in which case she will lose \$20,000 compared to her expected Source income. She also faces migration costs of \$9,500, which must be paid at the time of migration. If, for simplicity, we assume the migrant is risk neutral and has a discount rate of zero, the potential payoffs from migrating in period 1 or waiting until period 2 when that period's outcome is known are shown in Table 2.1 above. Note the "option" value of waiting and foregoing the \$10,000 income in period 1. At the start of period 2 the migrant will know whether the \$50,000 job is available; if it is, she can cash in her "option" and migrate, but if it is not, she simply ignores the option and stays home. Had she migrated in period 1, she would have faced the risk of losing \$20,000 in period 2 and, overall, her expected gains from migrating would have been less than if she took the option of waiting.

Burda (1995) develops a formal theoretical model from which he derives an expression for the option value of waiting. He demonstrates that the value of the migration option, or the "gain from procrastination," is inversely related to the current wage gap, positively related to migration costs, has an ambiguous relationship with the discount rate, is inversely related to the wage gap when destination labor market conditions are unfavorable, and does not depend on the wage gap

when destination conditions are favorable. In short, uncertainty and changing conditions at home and abroad do necessarily imply sudden large shifts in migration flows. Migrants may opt to wait and see.

## 2.3 The Family or Household as the Decision-Making Unit

The original economic model of migration does not distinguish between personal and family decisions. In Sjaastad (1962) the focus is on the individual, and there is no analysis of how migration by an individual may affect other persons close to him. The implicit assumption in early research on the migration decision is that if the migrant is part of a family, then the welfare of the rest of the family is unaffected by that person's decision to relocate. In other words, when the migration model is applied to individuals, it ignores the gains or losses accruing to family or household members coming along or staying behind.

For large proportion of internal and international moves, migration is indeed a family decision, and everyone in the family is affected by it. Consequently, the migration model above needs to be extended to take account of the effects that family ties have on the migration decision, and the effects that the migration decision has on all members of the family or household. We need answers to questions such as the following: When family members have conflicting interests, how is the decision to migrate made? Also of interest is the following question: Under what circumstances would only part of the family migrate, leaving the others to remain behind?

### 2.3.1 *Conflicting Interests and the Family Migration Decision*

Extensions of the standard migration model to the case of a family that migrates began with the work of, Polacheck and Horvath (1977) and Mincer (1978). Their models explicitly recognize that individual family members can have conflicting interests. The family's migration may enhance the well-being of some family members but reduce others' well-being. For example, while a software engineer wife may gain income when moving from India to Silicon Valley, her history professor husband might lose income or even become unemployed after the move. While the household head's income and job satisfaction may improve with relocation, other family members may suffer psychological costs that result from leaving family and friends behind, adjusting to a new language and culture, etc. Becker (1974) suggests how an economist tends to view these issues when he wrote the following about a husband's migration decision: "For example, he would not move to another city if his spouse's or children's income would be decreased by more than his own income would be increased." We focus on one of the above-mentioned papers in the next section.

### 2.3.2 *Mincer's Model*

Mincer's (1978) model of the impact of the family is straightforward. Suppose, for simplicity, that the household includes two persons, a husband and a wife. Let us assume that this two-person family has two alternatives to choose from: (a) both migrate together; or (b) both stay at the origin. We thus rule out the possibility that one person migrates, while the other stays behind, as in the cases of "commuting couples" or broken marriages caused by career conflicts. Mincer argues that the requirement for migration to take place is not that both persons have positive gains to migration, but rather that the family's net gains, i.e., the *sum* of the family's gains be positive. If the private gains to migration for each person are positively correlated, then family migration is of course always the efficient action. When the private gains to migration are negatively correlated, however, Mincer's model suggests it may still be efficient for the family unit to migrate. If, for example, the husband experiences a gain from migration, the wife a loss, but the joint gains are still positive, then Mincer's model predicts the case of a *tied mover*; the wife follows her husband even though her employment outlook is better at their current residence. On the other hand, if the wife's loss from migration dominates the husband's gain, then he becomes a *tied stayer*.

### 2.3.3 *Family Migration as a Portfolio Decision*

Another strand of migration literature that focuses on the family unit emphasizes the role of immigrant remittances. This literature began with Stark and Levhari (1982), Stark (1984) and Katz and Stark (1986), who model the decision of the *household* to send a family member overseas to work. These authors model such a decision as a "family portfolio diversification decision" where the migration abroad of a family member serves to hedge against risky labor markets at home. Such hedging is especially important for low families in poor countries who have little savings to fall back on in the case of income losses.

The core feature of this collective decision making model is that the family or household, unlike the individual, can reduce risk through diversification in the same way that a portfolio manager controls the risk of investing in the financial markets. Some members of the family, for example, can be assigned to work in the local economy, while others may be sent to work in foreign labor markets where conditions are not closely correlated with local labor markets. If there is a slump in the local labor market and the household faces a liquidity shortfall, then having a family member working overseas who remits his or her income will relieve that shortfall. According to this literature, the decision to have family members migrate is a response to a lack of risk-hedging mechanisms such as unemployment insurance, welfare programs, as credit institutions, crop insurance markets, futures

markets, and other financial markets. This literature stands out for providing the first theoretical economic rationale for immigrant remittances, something that the immigration literature was largely silent on prior to the 1980s.

## 2.4 Summary and Conclusions

In this chapter, we have surveyed economic theories of why people migrate. We began with the writings of Smith (1776), who described migrants as arbitrageurs who take advantage of regional wage differences. We detailed Borjas' (1987, 1991) recent models which show that international migration is not only influenced by net earnings differences between countries, but also by factors such as international differences in income inequality and the degree of skills transferability. We also discussed Clark et al. (2007), who examine various costs of migration including explicit government policies to control immigration. We concluded with other recent models by economists that capture some of the additional complexities of immigration.

The fundamental premise of nearly all the models discussed is that migration is driven by spatial differences and distributional differences in the net returns to human labor. An important contribution was by Sjaastad (1962), who articulated a theory of internal migration as a type of human capital investment. Sjaastad argued that a person migrates to another state, province or region because, by taking advantage of higher income opportunities elsewhere, migrants in effect increase their lifetime earnings.

The shortcoming of the standard economic model of migration is that observation and research in other social sciences makes it clear that there are many motives for migration beyond the simple pursuit of higher lifetime earnings. Migration may be driven by opportunities to achieve consumption, including amenities, that more closely fits one's preferences. Some migrants may seek a more desirable capability to carry out household production. Or, migration may be motivated by a combination of social, political, or psychological factors. Some theorists have suggested that people move to assuage feelings of relative deprivation, as a solution to a household portfolio diversification problem, or to exploit migrant network effects flowing from the destination. Furthermore, migration is often a family decision as opposed to an individual one, but this obvious fact has not yet been thoroughly dealt with in the theoretical literature on immigration. The internal migration literature is at present not clear on which explanation of migration is the strongest. The international migration literature, because it is younger and less developed, is even less clear.

Much work remains to be done on the international migration model, however. Given the broad range of economic, social, political, cultural, and natural factors that enter into the migration decision, a complete model of immigration would almost certainly have to be somewhat multidisciplinary in nature. Sociological, psychological, political, and ecological factors act alongside economic factors in

pushing, pulling, rejecting, and holding back would-be migrants. An immigration model would also have to be dynamic, even evolutionary in nature. Since the labor economists who have so far dominated the development of immigration theory are still firmly wed to their neoclassical static equilibrium analysis, a dynamic unified interdisciplinary theory of migration remains a distant goal. Opportunities for progress are abundant for anyone willing to think beyond the work presented in this chapter. The upcoming chapters outlining the empirical evidence on migration provide further insight into where we still lack theories that explain the complex reality of human migration.

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# Chapter 3

## Why People Immigrate: The Evidence

**Abstract** In this chapter, we survey the empirical evidence on the determinants of international migration. The empirical literature on determinants is very small, partially due to lack of appropriate data for many countries. Existing studies focus mostly on USA, Canadian, and European immigration, and this literature provides support for the human capital investment view of immigration. However, the evidence also indicates that there are many other important social and political determinants of immigration.

### Chapter Overview

In the previous chapter, we surveyed theories of why people migrate from one country to another. A major theme of the theory is that immigration is an investment in human capital, although many of the models incorporate other causal factors. In this chapter we will see how well the models discussed in the previous chapter hold up to the data.

Clark, Hatton, and Williamson (2007) accurately assess the current state of the empirical literature on immigration when they write,

. . . while the literature is long on examining the outcomes of immigration, it is surprisingly short on estimating the determinants of immigration and on testing the models of immigrant selection that underpin our understanding of those outcomes. (Clark et al., 2007, p. 359)

The small size of the empirical literature is, no doubt, partly due to the lack of accurate data on international migration flows. There is little data for most source countries, and even many of the major destination countries have, at best, incomplete data on immigration. The data sets used in empirical studies of international migration are almost always incomplete because they seldom include unauthorized immigration or return immigration. Consequently, data on immigrant flows used in empirical studies usually cover only inflows of legal immigrants to a small number of OECD countries.

The data paucity does not justify the small number of empirical studies of immigration, however. There are both time-series and cross-section data available on the entry of new immigrants to most OECD countries, and these data detail the sources, ages, and many other characteristics of the immigrants. The lack of data certainly does not justify the primitive econometric methods used in much of the empirical work. Much more could have, and should have, been done. This chapter's survey of the empirical literature will, hopefully, serve as a wake-up call for economists.

Most of the empirical models detailed in this section blend elements of the modified gravity model of migration with elements of the standard (human capital approach) model discussed in the Introduction to this first section of the book, which hypothesizes that income differences and migration costs determine migration flows. The results of the econometric analyses suggest that international migration is driven by a number of economic, social, political, and environmental determinants. In the remaining sections of the chapter, we will highlight further details of the empirical literature. You will notice that, in many ways, the empirical studies have ventured beyond the simple theoretical models presented in the previous chapter. Perhaps empirical researchers have been less enamored by their models and more driven by what they observe in the real world. In a very modest way, the brief empirical literature surveyed here can help to expand the perspective from which economists view, and model, international migration.

## 3.1 Regression Models of Immigration

A detailed look at the regression models used in empirical studies of immigration is a critical step in applying the scientific method. While economists like to describe their models as economic theory, those models are nothing more than hypotheses until they are verified empirically. At the same time, statistical analysis depends critically on the accuracy of the regression models used in statistical research. At this point in time, it appears that the evidence on what drives immigration is not entirely consistent across the various empirical studies that have been undertaken. Furthermore, it should also be clear that the regression models are only casually related to the theoretical models detailed in the previous chapter.

### 3.1.1 *Empirical Models of Regional Migration*

We do not intend to cover the evidence on domestic, or regional, migration in detail here. Nevertheless, it is worth briefly mentioning the general results of the empirical studies of domestic migration because, as discussed in Chap. 2, regional economics led other fields in analyzing migration. The regional models formed the theoretical foundation for the theoretical literature on international migration. For more

complete surveys of the early empirical literature on internal migration in the USA, we recommend Greenwood (1975, 1985), Greenwood and Hunt (2003) and Shields and Shields (1989). Also, Greenwood (1997), Lucas (1997), and Lall, Selod, and Shazali (2006) survey the empirical literature on regional migration for a range of individual developed countries.

Overall, the evidence from the literature on internal migration in the USA points to regional differences in earnings as the most important determinant. Among the major findings, Naskooten and Zimmer (1980) and Kennan and Walker (2003) both estimate that a 10 percentage point increase in the wage difference between destination and source regions within the USA increases the probability of migration by about 7 percentage points. They also report a strong correlation between the probability that someone migrates and relative employment conditions, where the latter are proxied by unemployment rates and layoff statistics for individual states. For example, Kennan and Walker find that a 10 percentage point increase in the rate of employment growth in the sending state cuts the probability of migration to another state by about 2 %. This evidence is compatible with Sjaastad's (1962) model of regional migration.

Many studies of domestic migration report a negative correlation between the likelihood of migrating internally and distance. The consensus finding is that a doubling of distance reduces the migration rate by about half. This finding supports the gravity model of migration.

There are also many case studies that provide explanations for specific episodes of internal US migration. For example, Boustan (2006) documents that the great black migration of 1900–1970 was due to both the superior employment opportunities in the very strong manufacturing sector and the perception of less racial discrimination in Northern labor markets and school systems in the major cities of the Northeastern and Great Lakes regions. Another significant case of US internal migration is postwar California. During much of the postwar period, many workers moved to California due to its booming economy. Following the cold war, California's defense industry underwent a significant downsizing, contributing to a loss of 750,000 jobs in the state between 1990 and 1993. Consequently, California went from being a major destination for migrants to a major source of migrants.<sup>1</sup>

Recent studies done on migration in post-reform China are also confirming the implications of the human capital approach to explaining migration. Thanks largely to the post 1980 Chinese censuses and the intensification of Western style market reforms, which have made Western models of migration more applicable, a small most empirical literature on determinants of domestic Chinese migration has emerged. The focus of this literature has been to examine the extent to which migration flows are driven by regional differences in labor markets and it has identified two broad factors: (1) Growth in regional income differences, due to economic reforms, a boom in China's export markets, and a surge in foreign direct investments; and (2) a dramatic decline in migration costs due to substantial

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<sup>1</sup> See, for example, "California in the Rearview Mirror," *Newsweek*, July 19, 1993, pp. 24–25.

improvements in the country's transportation infrastructure, deregulation of migration, and rapid growth in migrant communities. See Bao, Bodvarsson, Hou, and Zhao (2009) for an example of an empirical study of Chinese migration, as well as literature review.

### 3.1.2 *The Gravity Model of International Migration*

Researchers designing empirical models of the international migration rate have been influenced by two major contributions in the migration literature. First, most empirical models of the emigration rate are closely related to the *Gravity Model* of migration. Second, these models usually incorporate income differences exactly as the standard model of migration in the introduction to this section of the book and Chap. 2 prescribes.

#### 3.1.2.1 *The Basic Gravity Model of Migration*

The basic *gravity model of migration* specifies migration as a positive function of the attractive “mass” of two economies and a negative function of distance between them. The *gravity model* gets its name from physics and the closely related formula for gravity. Implicitly, in the gravity model of migration, distance is a proxy for the costs of moving from one country to another. Defining  $\text{IMM}_{ij}$  as total immigration from country  $i$  to country  $j$ ,  $\text{DIST}_{ij}$  as the distance between the two countries, and the gravitational “mass” as the product of the gross domestic products of countries  $i$  and  $j$ , the gravity model of immigration is

$$\text{IMM}_{ij} = f[(\text{GDP}_i \times \text{GDP}_j)/\text{DIST}_{ij}]. \quad (3.1)$$

As a statistical regression model Eq. 3.1, is commonly specified in natural logarithms. Representing natural logs in lower case letters, the basic gravity regression equation is thus

$$\text{IMM}_{ij} = a_0 + a_1(\text{GDP}_i \times \text{GDP}_j) + a_2(\text{DIST}_{ij}) + u_{ij} \quad (3.2)$$

where  $u_{ij}$  is the usual random error term. The expected signs of the coefficients are  $a_1 > 0$ , and  $a_2 < 0$ .

Many researchers have specified variations of Eq. 3.2. For example, Lewer and Van den Berg (2007) specify a slightly different gravity model of migration by assuming the attractive force between immigrant source and destination countries depends on the difference between per capita incomes rather than the total GDPs of the source and destination economies. However, they recognize that the size of the populations in the source and destination countries also matter because, all other

things equal, the more people there are in a source country, the more people are likely to migrate, and the larger the population in the destination country, the larger is the labor market for immigrants. Hence, Lewer and Van den Berg suggest the gravity equation

$$\text{IMM}_{ij} = a_0 + a_1(\text{Pop}_i \times \text{Pop}_j) + a_2(\text{Rely}_{ij}) + a_3(\text{DIST}_{ij}) + u_{ij}, \quad (3.3)$$

in which  $\text{Pop}_i$  and  $\text{Pop}_j$  are the total populations of the source and destination countries, respectively,  $\text{Rely}_{ij}$  is the ratio of destination and source country per capita incomes. The expected signs of the coefficients are  $a_1 > 0$ ,  $a_2 > 0$ , and  $a_3 < 0$ .

When regression equations contain variables in natural logarithms, the coefficients effectively measure how the proportional growth of an explanatory variable influences the proportional growth of the dependent variable in the model. For example, in Eq. 3.3, the coefficient  $a_3$  estimates by what percentage migration changes for a given percentage increase in the distance between the source and destination countries. Sometimes researchers enter the variables in “double log” form, or the percentage change in the rate of change, in which case the coefficient measures the elasticity of the migration rate with respect to the particular explanatory variable. For example, with the variables in double log form,  $a_3$  measures the elasticity of the migration rate with respect to distance.

### 3.1.2.2 The Augmented Gravity Model

As was pointed out in Chap. 2, researchers have observed many potential determinants of international migration flows. Hence, the statistical results from estimating simple regression equations like (3.2) or (3.3) will almost certainly suffer from omitted variable bias. To mitigate such bias, researchers have introduced other variables into the basic gravity regression equation.

For example, Kahan (1978), Murayama (1991), and Repmann and Vencatasawmy (2000) provide evidence supporting the hypothesis, common in the sociology literature on immigration, that immigrants tend to concentrate where earlier compatriots have settled because the cost of adapting to a new society is mitigated by the presence of compatriots familiar with both the source and destination country cultures. It is also hypothesized that immigration is larger, *ceteris paribus*, when the language and culture in the destination country is familiar. These considerations point to the augmented immigration gravity equation

$$\begin{aligned} \text{IMM}_{ij} = & a_0 + a_1(\text{Pop}_i \times \text{Pop}_j) + a_2(\text{Rely}_{ij}) + a_3(\text{DIST}_{ij}) + a_4(\text{Stock}_{ij}) \\ & + a_5\text{LANG}_{ij} + a_6\text{CONT}_{ij} + a_7\text{LINK}_{ij} + u_{ij} \end{aligned} \quad (3.4)$$

in which  $\text{Stock}_{ij}$  is the number of source country natives already living in the destination country and LANG, CONT, and LINK are dummy variables that take on a value of one when the source and destination countries share a common language, border, or colonial heritage, respectively.

Lewer and van den Berg (2007) estimate precisely this model, and they find that all variables except contiguity are highly significant. The reason contiguity is not a statistically significant determinant of migration is, most likely, due to the many European countries in the sample and the freedom of movement within the European Union. It is just as easy (or difficult) for a Russian immigrant to move to Germany as it is for her to move one country further, the Netherlands, once the distance variable accounts for the transport costs. Lewer and Van den Berg's results also reveal high  $R$ -squares, which means the gravity model explains a very large portion of the variation in the dependent variable, immigration.

### 3.1.2.3 Generalizing the Gravity Model

Many variations on Eq. 3.4 are possible. Greenwood (1997) offers a general representation of the gravity model of immigration:

$$\begin{aligned} \ln(\text{IMM}_{ij}) = & \ln \beta_0 + \beta_1 \ln(D_{ij}) + \beta_2 \ln(\text{Pop}_i) + \beta_3 \ln(\text{Pop}_j) + \beta_4 \ln(Y_i) \\ & + \beta_5 \ln(Y_j) + \sum_{n=1}^m \beta_{in} \ln(X_{in}) + \sum_{n=1}^m \beta_{jn} \ln(X_{jn}) + \varepsilon_{ij}, \end{aligned} \quad (3.5)$$

where

- $\text{IMM}_{ij}$   $\equiv$  Migration rate from source  $i$  to destination  $j$
- $D_{ij}$   $\equiv$  Distance (in miles) from source  $i$  to destination  $j$
- $\text{Pop}_i$   $\equiv$  Population of source  $i$
- $\text{Pop}_j$   $\equiv$  Population of destination  $j$
- $Y_i$   $\equiv$  Per capita real income or GDP in source  $i$
- $Y_j$   $\equiv$  Per capita real income or GDP in destination  $j$
- $X_i$   $\equiv$  A vector of  $m$  characteristics of source  $i$
- $X_j$   $\equiv$  A vector of  $m$  characteristics of destination  $j$
- $\varepsilon_{ij}$   $\equiv$  Random error term

The variable IIM representing “migration” can take many forms. The expected signs of the coefficients, according to the intuition behind the gravity model, are  $\beta_1 < 0$ ,  $\beta_2 > 0$ ,  $\beta_3 > 0$ ,  $\beta_4 > 0$ , and  $\beta_5 > 0$ . Note that the influence of total income or GDP, namely  $Y$ , is positive under the assumption that bigger economies per se increase migration flows. Greenwood's representation effectively designates per capita income or GDP to the vectors of country characteristics.

### 3.1.3 Some Econometric Problems Related to the Gravity Model

The vast experience with estimating gravity models by international trade economists has revealed some serious potential sources of bias in the estimation results. In the simple regression models (3.2) or (3.3), each variable is *bilateral* in that it applies to both countries  $i$  and  $j$ . In model (3.4), however, there is the Stock $_{ij}$  variable that applies only to one of the pair of countries. The general specification (3.5) designates entire sets of variables that apply to just one or the other of the pairs of countries. Redding and Venables (2004) and Rose and van Wincoop (2001) show that such *unilateral* variables result in *standard error clustering*, which can seriously bias the estimates. Feenstra (2004) shows that in the case of a cross-section sample of countries, adding fixed effects dummies to the model eliminates this bias.

A second source of bias is related to the fact that many variables in the gravity equation model (3.5) are natural logs, which means standard regression methods require omitting observations with zero values. In larger cross-section studies of immigration, the dependent variable, migration, between pairs of countries may be zero in a substantial percentage of observations, and omitting those zero observations biases the regression results. After all, a zero outcome is just as important an observation as any other observation. All observations can be included with the *scaled ordinary least squares* (SOLS) method first applied by Wang and Winters (1992) and Eichengreen and Irwin (1995).

Finally, heterogeneity may plague a gravity model. Cheng and Wall (2005) advise including an *error ranking variable* calculated by first running regressions with the data ordered alphabetically by country and then rank ordering the average residual for each country pair.

In sum, there are unique econometric challenges associated with gravity models of migration. Few applications of the gravity model to migration have recognized these problems, even though in the international trade literature referees have for some time demanded that econometric methods deal with these issues. An example of an econometric study of immigration that does address the above-mentioned econometric problems is Lewer and Van den Berg (2007).

## 3.2 The Choice of Variables in Statistical Models of Immigration

Most empirical models of international migration have specified regression models based on the gravity model. Despite the same basic structure, there are nevertheless many differences in the empirical models that researchers have used to estimate the determinants of international migration. Some of these differences potentially influence the differences in the empirical results that the models generated.

Recall that the predictions of the Borjas (1987, 1991) models depend critically on the particular distribution function for the variation in population characteristics.

For example, if the density of earnings is assumed to be *uniform* instead of *normal*, the equation for the cumulative distribution function is very different, and the derived interactions between determinants of migration related to the differences in source and destination country population characteristics are also different. As a result, the predictions of the theoretical model are dependent on specific assumptions about the parameters of the model. It would thus seem important that an empirical specification of a model account for the precise theoretical structure of the model it seeks to test.

Also, researchers have used different data to represent the diverse variables included in the theoretical models. The available data does not always match the theoretical variables very well. If different researchers use different proxies for the variables in the model, the results will vary.

### **3.2.1 Three Examples**

In this subsection we contrast three recent models and discuss their choice of variables to augment the gravity model of immigration. These models all include variables that fall into four broad sets of explanatory variables: (a) country differences in earnings, (b) migration costs, (c) source country levels of development and political conditions, and (d) destination country immigration restrictions. The three models are by Greenwood and McDowell (1991), who study annual immigration to the USA and Canada during the period 1962–1984, Clark et al. (2007), who study US immigration between 1971 and 1998, and Mayda (2010), who uses data on immigration to 14 OECD countries between 1980 and 1998. Each of these models represent immigration in terms of a rate defined as  $\frac{IM_{it}}{P_{it}}$ , where  $IM_{it}$  is the flow of persons, and  $P_{it}$  is source country population. They differ, however, in which specific proxies they use to represent the four types of explanatory variables.

### **3.2.2 Representing Income Differences**

Greenwood and McDowell (1991) capture the effects of cross-country differences in earnings by adding two variables to their regression model. The first is the ratio of average manufacturing earnings in the source country to the same in the destination country. The second is the ratio of the growth rate of real per capita GDP in the source country, averaged over the previous 3 years, to the same in the destination country.

Clark et al. (2007), who we will denote as CHW from here on, enter only the ratio of average real incomes in each source country to average real income in the USA. They also include a variable that they claim proxies the proportion of the source country population living in poverty. However, because complete data on

the incidence of poverty are not available for all source countries, CHW use the inverse of source country income squared. This is, obviously, an approximation of completely unknown quality. Mayda recognizes the possibility of a reverse relationship between income differences and migration; immigrant flows may induce changes in contemporaneous relative income opportunities because migration to country  $j$  in period  $t$  tends to depress earnings in  $j$  that period while it may raise wages in the source country  $i$ . To avoid estimation bias resulting from reverse causality, Mayda lags income per capita one period.

### ***3.2.3 Representing Migration Costs***

Greenwood and McDowell add four variables to capture the costs of migrating. First, they include geographic distance. They try to measure the costs of transferring skills to the destination country, the USA or Canada, by a dummy variable for whether or not the source country's official language is English and a variable that measures the level of educational attainment in the source country. Finally, they include a time trend to control for technological advances that may have resulted in long-term decline in the costs of transportation, communication, and acquiring information.

CHW include measures of various migration costs. First, they include the distance (in miles) between the source country and the USA. They also include a dummy for whether the source country is landlocked. Like Greenwood and McDowell, they include a dummy for whether the source country is predominantly English speaking. CHW try to capture the effect of previous immigration on perceived migration costs by including the ratio of the number of persons born in the source country residing in the USA one period earlier to the total destination country population. The square of this ratio is also included to test whether the marginal effect of the presence of source country compatriots in the destination country diminished with the size of the immigrant population.

Mayda also follows the gravity equation by including the distance between the source and destination countries. Furthermore, she includes dummy variables set equal to one if the source and destination countries share a land border, speak the same language, or were part of the colonial empire in the past.

### ***3.2.4 Representing Source Country Development***

Greenwood and McDowell enter three variables in their model to proxy the level of development in the source country: the fraction of population that is urbanized, the fraction of the workforce employed in manufacturing, and a measure of structural similarity between the source and destination countries. The latter is calculated as the sum of squared differences between the fractions of source country employment

to destination country employment in industry  $k$ . A low level of development is taken to imply limited domestic employment and earnings opportunities compared to the USA or Canada. On the one hand, such conditions in the source country should encourage emigration. On the other hand, a low level of development may mean that the source country's labor force has few of the skills demanded in the USA or Canada, in which case the effective cost of transferring the unwanted skills will be relatively high. This could discourage emigration. In short, the signs of the coefficients for the three indicators of development and political conditions could be positive or negative.

Greenwood and McDowell use the *Freedom House Index*, which is an index of economic freedom, political rights, and civil liberties, to capture political conditions in the source country. CHW include the ratio of mean years of schooling in the source country relative to the USA to capture differences in human capital. They also add an "age" variable, namely, the share of the source country's population comprising young adults, to test whether countries with younger populations have higher emigration rates. CHW also draw on Borjas (1987, 1991) and include relative income inequality, measured by the ratio of source to destination country income inequality. Mayda measures relative income inequality as the ratio of source to destination country gini coefficients. Furthermore, she includes the share of the population in the source country that is aged 15–29 years old, the lagged migration rate to measure the influence of network effects, and the unemployment rates in the origin (destination) countries.

### 3.2.5 Representing Immigration Restrictions

Greenwood and McDowell use dummies to control for different immigration restrictions by source country and region, as well as changes in immigration policies. Specifically, they enter nine dummies in the Canadian regression and four in the US regression.

CHW emphasize the role of immigration policy in their paper, and hence they test the statistical importance of a variety of immigration restrictions. Specifically, they include four variables that represent quotas for different kinds of visas issued by US authorities divided by the populations of the source countries that qualify for them. A higher (lower) value for a specific quota variable means lower (higher) restrictions on US immigration for persons choosing that channel of entry. Hence, a higher (lower) quota results in lower (higher) costs of entry and a higher (lower) emigration rate.

One of CHW's quota variables is the annual quota for non-immediate relatives. An increase in that quota should encourage more migration to the USA, but the quota has no value to prospective migrants if they have no relatives living in the USA. Therefore, the effect of the quota on the immigration rate depends on the number of US-based relatives, which is why CHW multiply the ratio of those visas to the proportion of the source country population by the size of the source

country migrant network already in the USA. Another of CHW's quota variables is the refugee quota. Since 1980, the USA has adjusted this quota annually in response to changes in the source country's political and geopolitical situation. Hence, CHW multiplies the actual quota by a dummy that equals unity if there was a civil war in the source country in the observation year.

CHW's remaining two policy controls reflect "special circumstance policies." These variables are designed to capture the effects of the 1986 Immigration Reform and Control Act (IRCA) and the significant increase in the backlog of unprocessed visa applications during the 1990s due to various administrative changes at the US Immigration and Naturalization Service.

Mayda captures the effects of destination country immigration policy with a dummy variable that increases by one (falls by one) if in period  $t$  immigration policy is less (more) restrictive than it was in period  $t - 1$ . Mayda multiplies the policy change dummy by lagged GDP per capita in order to test for whether a lessening of restrictions accentuates the effects of pull and push factors on immigration rates. Mayda estimated alternative versions of her regression model that included an interaction between the distance variable and the immigration policy change dummy, as well as the interaction between the young population share and the immigration policy change dummy.

Comparing the three models of international migration above with Eq. 3.1, one can see that they are all forms of the augmented gravity model. All three models include measures of cross-country differences in income and geographic distance. They all add indicators of skills transferability, destination country immigration policy, and source country socio-political conditions. Furthermore, all three regression models are log-linear. This makes the results of the three models comparable, at least in the case of coefficients of similar variables.

There are also important differences between the models, most notably in the variables included, the number of variables included, and the samples covered. Hence, the three models will not generate identical coefficient estimates even for those variables that are identical across the three models. Omitted variable bias will differ across the models, and variations in the actual data used, sample periods, countries covered, and the statistical methods used will further cause differences in coefficient estimates.

### 3.2.6 *The Empirical Evidence on the Determinants of Migration*

We mentioned earlier that the empirical literature on international migration is quite small. However, there are a number of recent statistical studies of international migration in addition to the three detailed in the previous section. This section presents the results of those studies and discusses what those results tell us about the theoretical models detailed in Chap. 2.

### 3.2.7 Evidence on Worldwide Migration

Despite large waves of migration around the world during most of human history, empirical work has been limited by data availability. Empirical studies have, therefore, focused mostly on immigration to the USA and Canada, small groups of OECD countries, specific European countries, and Australia. There is one econometric study of worldwide migration by Hatton and Williamson (2005), who analyzed migration to 80 different countries using United Nations data on annual average immigration flows over 5-year periods from 1970–1975 to 1995–2000. Hatton and Williamson's regression model contains a small but very diverse set of explanatory variables. For example, they find a destination country's net immigration rate falls by 0.9 per thousand of the population, all other things equal, for every reduction of 5 percentage points in the share of young adults in the country's population. The "friends and family effect" is strong: for every 1,000 person rise in a destination country's immigrant community, net immigration rises by about 23 persons per year. Not surprisingly, civil war reduces annual immigration by about 2 per thousand of the population. Finally, Hatton and Williamson find support for the traditional model of international migration: a ten percent increase in the destination country's relative income raises immigration by 0.12 per thousand, all other things equal. All together, these results suggest that worldwide migration is driven by a combination of economic, social, and political determinants, and no single determinant seems to dominate the process.

### 3.2.8 Evidence on Migration to Groups of OECD Countries

Mayda (2010) uses immigration data for a subgroup of OECD countries from the OECD's *International Migration Statistics* and its *Continuous Reporting System on Migration* (SOPEMI). She finds that the elasticity of the emigration rate with respect to *destination* GDP per capita is approximately 1.9, which implies that a 10 % increase in destination GDP per capita results in a 19 % increase in the emigration rate, or 2.5 immigrants per 100,000 persons in the source country population. Surprisingly, earnings opportunities in the *source* country are not significantly related to immigration rates. A doubling of the distance between source and destination countries reduces the number of migrants by 41 per 100,000 persons in the source country, but common border and language do not appear to matter. The origin country's age distribution does impact emigration rates: a 10 % increase in the young population share raises the emigration rate by nearly 25 migrants per 100,000 source country individuals. The coefficient on relative inequality is positive and significant and the coefficient on relative inequality squared is negative and significant, confirming Borjas' (1987, 1991) prediction that changes in relative skills and wage inequalities across countries can have both positive and negative effects on emigration rates.

In her study, Mayda finds that the destination country's unemployment rate is negatively and significantly related to the migration rate, but the source country unemployment rate is statistically insignificant. Hence, she concludes that there is no evidence of a *poverty trap* that slows migration from very poor countries. Finally, past migration between two countries has a positive and significant effect on current migration between those same two countries. Mayda finds that distance and age distribution account for the greatest shares of the variation in migration.

While their study focuses primarily on selection and sorting, rather than scale, of international migrants, Grogger and Hanson (2011) estimate equations where the dependent variable is the log ratio of emigrants in the destination to the population in the source for the tertiary or primary skill group. The regression analyses are based on data taken from a study by Docquier, Lindsey, and Marfouk (2009), who, estimate the population in each OECD member of international migrants 25 years and older by source country and schooling level, as of 2,000. They find that immigration rates tend to be invariant to international differences in wages.

### 3.2.9 Evidence on US Immigration

Greenwood and MacDowell (1991) find that US immigration varies inversely with source country wages. Their estimated elasticity suggests that, on average, a 10 % increase in the source country wage is accompanied by a 7.5 % decline in the emigration rate. They also find that distance has a strong negative effect on US immigration. Furthermore, US immigration is enhanced when the source country's primary language is English, its population is better educated, its population is more urban, its employment share of manufacturing is greater, and its government is more politically repressive. Greenwood and MacDowell also find that US immigration restrictions were binding during the sample period.

In their 2007 paper, Clark, Hatton, and Williamson (CHW) use a data set with 2,268 panel observations (81 source countries  $\times$  28 years) covering over 80 % of legal immigration to the USA during the period 1971–1998. CHW confirm the predictions of the Borjas (1987) model. For example, a 10 % increase in a source country's income per capita reduces the emigration rate by approximately 4.5 %, which confirms the "relative earnings effect." The coefficient on relative income inequality and its square are found to be positive and negative, respectively, confirming Borjas' predicted "U-shape" relationship between the migration rate and relative income inequality. Although the effect varies considerably across regions and source countries, when evaluated at the mean of all countries, a 10 % increase in source country income inequality is associated with a 7.5 % decline in the migration rate. The effect is on average larger for developing countries.

The coefficients on past migration and its square are positive and negative, respectively. At the mean of source country population, a 1,000-person increase in the source country's US-based immigrant community will induce 5 more people per year to migrate there. CHW also find that a 10 % increase in

family-reunion immigration visas increases immigration by about 0.3 %. This implies that the full effect of the family reunification provisions in US immigration policy is about 6 new immigrants for every 1,000-person increase in the immigrant community.

Finally, Hatton and Williamson (2010) estimate US immigration rates from 62 developing countries using a model similar to CHW (2007). The sample is a balanced panel including 24 source countries in Latin America and the Caribbean, 25 in Asia and Middle East/North Africa, and 13 in sub-Saharan Africa. As with CHW (2007), Hatton and Williamson add fixed country effects to absorb time-invariant influences such as distance and whether the source is English speaking. They estimate that, all other things equal, a 10 % increase in the log ratio of the USA to source country GDP per capita induces a 3.11 % increase in the immigration rate. Most other economic and demographic variables are of the expected sign and all are significant. Only the coefficient on the relative education variable is insignificant.

### **3.2.10 Immigration to Other Countries**

Greenwood and McDowell's (1991) results for Canadian immigration are quite similar to their results for the USA. The impact elasticity with respect to the source country wage is remarkably close to the average elasticity for the USA. Contrary to the US case, however, political repression in the source country is not statistically significant. Canadian immigration restrictions were also found to be binding during the sample period.

Hatton (2005) uses data for the UK to test why, since the 1970s, Britain has shifted from a net source country to a net destination country for immigrants. Hatton incorporated income inequalities into his model. Consistent with the Borjas (1987) model, the coefficient of income inequality in the UK has a negative effect on emigration. However, the coefficient values estimated by Hatton showed that the effects on migration of the unemployment rate and income differences between countries were much stronger than the effects of income inequalities within countries.

Cobb-Clark and Connolly (1997) examine skilled immigration to Australia. Their regression model tests for the usual explanatory variables as well as for correlations with other countries' immigration. Interestingly, they find that migration flows to Australia are not independent of flows to other countries. Specifically, the number of skilled persons who apply for entry to Australia is negatively related to US skilled admissions, but positively related to Canadian skilled admissions. They thus conclude that Australia's ability to induce immigration of highly skilled and educated persons depends upon the immigration policies of other nations competing for the same immigrants.

Karras and Chiswick (1999) analyze the determinants of migration to West Germany from 22 other European countries during the period 1964–1988. They found that West German immigration was strongly influenced by past West German

immigration and economic growth over the entire sample period, but wage differences did not matter at all during the latter half of the period. On the other hand, Brücker, Siliverstovs, and Trübswetter (2003) study immigration to Germany from eight European countries between 1967 and 2000, and they find that the long run stock of immigrants in Germany is positively and strongly related to destination/source country differences in per capita income GDP levels, but only weakly related to differences in employment rates.

Rotte, Vogler, and Zimmermann (1997) analyze requests for asylum in Germany by migrants from 17 developing countries for the period 1985–1994. Interestingly, they found that the arrivals of asylum seekers are positively related to German/foreign earnings differentials, which is somewhat surprising given that one would expect asylum seekers to be influenced by more urgent factors such as wars, violence, and political oppression. It may be that requests for asylum are used as a pretext to gain entry into high income countries by people seeking to migrate for the usual economic reasons, or Rotte et al.’s statistical results are biased by the fact that the political and social conditions that tend to produce refugees are correlated with income and employment conditions, and the statistical procedures erroneously attribute the influence of true asylum-inducing conditions to the latter variables. Most likely, both causes contributed to Rotte et al.’s results.

### 3.2.11 Summarizing the Results

Table 3.1 summarizes the evidence from 11 studies discussed above that use more or less similar augmented gravity models of immigration. Because the exact variables differ so much across the various studies, it makes little sense to compare actual coefficient values. We, therefore, report only the signs and significance levels of some of the key variables. A “+” (“−”) means the coefficient on the variable was found to be positive (negative) and significant at 5 % or better, a “0” means the coefficient was insignificant, and “n/i” means the study did not include this variable in the regression.

According to Table 3.1, the most consistent results across the models are that emigration is (a) positively related to earnings differences and (b) negatively related to migration costs. Only 2 of the 11 studies confirmed an inverse U-shaped relationship between immigration and relative destination country income inequality or a positive relationship between migration and source/destination country earnings correlation, as hypothesized by Borjas’ (1987), but that is due to the fact that most of the 11 models do not include variables to capture those influences.

It should be clear from the regression results and procedures described in this section that the differences across samples and regression models must be partially responsible for the inconsistencies in the results. Clearly, much work remains to be done before solid conclusions can be drawn about how well the data support the

**Table 3.1** Summary of results of nine empirical immigration studies

Study	Receiving area(s)	Destination/source country earnings differences	Migration costs	Destination country relative earnings inequality	Earnings correlation
H&W (2005)	Worldwide	+	—	n/i	n/i
Mayda (2010)	14 OECD countries	+	—	Inverse U-shape function	0
G&M (1991)	USA and Canada	+	—	n/i	+
Clark et al. (2007)	USA	+	—	Inverse U-shape function	+
Hatton (2005)	UK	+	—	—	n/i
Cobb-Clark and Connolly (1997)	Australia	+	—	n/i	n/i
Karras and Chiswick (1999)	Germany	0	—	n/i	n/i
Brücker et al. (2003)	Germany	+	n/i	n/i	n/i
Rotte et al. (1997)	Germany (asylee inflows only)	+	—	n/i	n/i

prevailing economic models of why people migrate. Researchers need to run many more regressions using more complete data sets, better statistical methods, and more models that include additional variables.

### 3.3 Summary and Concluding Remarks

Our survey of the empirical literature on why people migrate across borders and what types of people are more, or less, likely to migrate is hampered by the small size of the literature. Still, there are enough studies to venture some tentative conclusions on what the empirical evidence suggests. We draw two major conclusions from the small number of recent statistical studies: (1) People emigrate for a great variety of economic, political, social, and psychological reasons, and (2) there is so much still to do in this part of the immigration literature.

The evidence so far suggests that emigration is driven consistently by international differences in earnings and migration costs (measured by distance, past migration, or destination country immigration restrictions). The regressions uncover other reasons, such as demographic factors, political shocks, poverty

constraints, and international differences in income inequality, although this evidence is quite tentative given that only 2 of the 11 studies in Table 3.1 have estimated these influences.

The empirical literature on the determinants of immigration consists of a relatively small number of studies, most of which use models closely related to the same gravity model of international migration, augmented with a variety of additional potential influences. The small size of the literature is further exemplified by the high proportion of unpublished working papers included in our survey. The data on immigration is inaccurate because they seldom include return migration or unauthorized immigration. Furthermore, most of the published studies focus on a single country, the USA. Hence, even though the studies are in some ways consistent, the small volume and the narrow focus of the literature makes it impossible to claim that these results are what statisticians would call *robust*. We need many more studies using many more regression models, data sets, time periods, countries, and replications of existing studies before economists can have very much confidence in the results of their statistical studies of immigration.

### 3.3.1 *The Power of Statistical Models*

To put the results of the small number of empirical studies into perspective, keep in mind that no one statistical study can ever provide definitive proof of any hypothesis. That is especially true for hypotheses about a phenomenon as complex as international migration. Any one study can be, and should be, critiqued for shortcomings related to the data, the specified model, and the particular statistical methods used. Also, the practical application of statistical methods inevitably requires the use of statistical models that are simplifications of the true underlying models and assumptions about the unknown distributions of the populations from which the sample data are derived. Fully justified accusations of omitted variables, simultaneity, spurious regressions, incomplete samples, biased samples, biased estimators, errors in variables, and any number of other econometric problems can be directed at any of the empirical studies we have sampled.

The very narrow range of theoretical models on which the empirical studies have been based is disturbing. Florax, de Groot, and Heijungs (2002) have shown that an unlimited number of potential models can always be found to explain any observed economic phenomenon. Hence, when researchers do not venture far from a narrow standard modeling approach, they cannot claim they have robustly *proven* a specific model's validity. We need robustness in terms of the theoretical models as well as robustness across data and econometric methods.

In reality, there is only one way to deal with the inevitable shortcomings of empirical studies, and that is to repeat the empirical process over and over until it becomes possible to claim some degree of *robustness*. Robustness is achieved when statistical results remain consistent regardless of which sample of countries is used, which time period is covered, which model is specified, or which consistent

statistical methods are used. It is safe to say that robustness is *not* a characteristic of the empirical literature in international migration. In fact, the necessary process of serious criticism and subsequent attempts to address the criticisms has barely begun. On the positive side, think of how many opportunities economists have to engage in important research!

### 3.3.2 *The Way Forward*

Clearly, we need many more empirical studies. To get more studies and more varied studies, more economists must become interested in immigration. Given the lack of data, there is a need for more microeconomic studies and case studies that include new data on specific immigration episodes. Sociologists have taken this approach long ago; economists need to follow.

It would also be especially useful to have more micro studies on return migration and unauthorized migration, as well as studies that gather data from samples not currently included in the empirical studies of immigration. We also need better data on migration between developing countries and on migration from developed to developing countries. It would be interesting to know whether the rapidly growing so-called emerging economies attract immigrants and their human capital from the developed economies.

Finally, there should be a more detailed analysis of how immigration policy affects migration flows. There is certainly enough information available to do studies of the recent programs to promote specific types of immigrants. For example, Canada targets specific types of immigrants and discourage others. Do these programs work to promote immigration as designed? The next chapter looks at models and evidence that seek to explain what types of people tend to become immigrants and how the characteristics of the native populations in the source and destination countries help to determine the characteristics of the people who migrate between the two.

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# **Chapter 4**

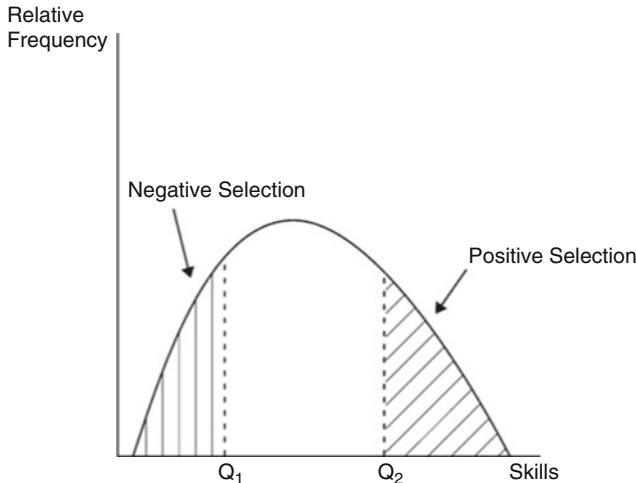
## **Who Immigrates? Theory and Evidence**

**Abstract** Do immigrants differ from their source country and destination country native-born peers with respect to their personal characteristics and labor market performance? This chapter surveys recent theoretical work and empirical evidence that, since the late 1970s, examines how immigrants self-select with respect to partially unobservable characteristics such as innate ability or fully observable characteristics such as years of schooling. Specifically, this chapter examines how immigrants self-select in response to international differences in returns to skill and education, migrants' cost constraints, and immigration policy, among other factors. This chapter also examines the literature on how immigrants assimilate in their destination societies, which indirectly has influenced discussions about the characteristics of those who immigrate. Unlike the last two chapters, which discussed the theoretical and empirical models separately, this chapter covers both the theoretical and empirical literatures.

### **Chapter Overview**

In 1919, the US Senator (and economist) Paul H. Douglas wrote a paper on US immigration entitled, “Is the New Immigration More Unskilled than the Old?” Douglas’s answer at that time was *no*. Today, the same question has dominated discussions on immigration policy in the major destination countries in North America and Europe. To answer Douglas’ question, we need to know what kind of workers, consumers, and innovators are among the immigrants arriving in, or leaving, countries. We need to know how immigrants self-select and how they fare in the destination countries.

Chiswick (1979) points out that “U.S. immigration policy has historically been based primarily on the premise that immigrants have a favorable impact on the destination country’s economic development” (Chiswick, 1979, p. 359). Some have argued that for immigrants to have “a favorable impact,” they should have different



**Fig. 4.1** The distribution of worker skills in the source country

skill sets from natives so that they are *complementary* to, and not *competitive* with, native workers. Yet, others argue that immigrants cause less social conflict if they speak the same language, have similar levels of education, and have compatible cultural backgrounds to natives in the destination country. This conflict between wanting noncompetitive workers and yet similar people to immigrate clearly reflects factors that go beyond the field of economics to sociology, psychology, and cultural anthropology. We will deal with these other factors in later chapters. In this chapter we focus on the economics of immigrant selection by surveying how some recent theorists have modeled *immigrant selectivity*, or, put more simply, sought to determine *who* immigrates.

If immigrants are different from those they left behind in the source country or the native-born that await them in the destination country, we say there is *selection bias* in immigrant flows. According to Heckman (1987, pp. 287–288):

The problem of selection bias in economic and social statistics arises when a rule other than simple random sampling is used to sample the underlying population that is the object of interest. The distorted representation of a true population as a consequence of a sampling rule is the essence of the selection problem. Distorting selection rules may be the outcome of decisions of sample survey statisticians, self-selection decisions by the agents being studied or both.

Figure 4.1 shows two possible forms of selectivity bias. If immigrants have skill levels below Q1, even though the overall distribution of skills follows the full curve shown, we say there is a selection bias towards low-skilled immigrants. If all immigrants have skill levels above Q2, there is a selection bias towards high-skilled workers.

Selection bias has been studied by labor economists in many different environments. For example, workers who decide to join a labor union tend to be,

on average, distinctive from those who choose not to join a union. Nonjoiners are likely to be younger, they may see their jobs as less permanent, they may be less interested in confronting their employer, and they are most likely less interested in actively participating in union activities. Therefore, one cannot assume that the observed wages union members earn are the same wages nonunion members would earn *if they became union members*. Similarly, the observed earnings of college-educated persons will differ from the wages that current non college-educated persons *had the latter somehow been induced to enroll in college*. They would still be people with characteristics that made them choose to *not* attend college in the first place. In general, wages estimated using evidence from samples of immigrants do not provide an accurate estimate of what the wages of other members of the source country population would be if they also migrated.<sup>1</sup>

The concept of *self-selection* is a behavioral term closely related to the statistical concept of selection bias. Self-selection implies some deterministic process to select who does, and who doesn't, do something. The previous two chapters show that there are many factors that determine whether people decide to migrate or stay home, so self-selection is likely to result in a group of migrants whose personal characteristics are distributed differently from the way the personal characteristics of the whole source and destination country populations are distributed. Because immigrants self-select, they are unlikely to be an unbiased sample of either the origin country's population or the destination country's population.

In the first part of this chapter, we survey the models that immigration economists have developed to explain the causes, and some of the consequences, of selection bias in *immigrant flows*. We follow this discussion with a survey of the empirical evidence from testing those models. Then we survey the closely related theoretical literature on *immigrant assimilation*, which links immigrants' labor performance to, among other things, immigrants' personal characteristics.

## 4.1 Immigrant Selection: The Chiswick vs. Borjas Debate

One popular point of view of immigrant selection dates back to Chiswick (1978), who presented evidence that, in the USA, immigrants tended to be relatively more productive and earn more than native-born Americans. Another point of view, prominently argued by Borjas (1987, 1991), is that immigrants from developing countries tend to be less productive and earn less than natives in more developed destination countries. These discussions on immigrant labor market performance have become intertwined with discussions on whether immigration is beneficial or harmful. The argument between Chiswick and Borjas has been carried out at an intellectual level, but some of the tentative conclusions have been brought

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<sup>1</sup> For a detailed discussion of the econometric implications of self-selection behavior, see Heckman (1979).

into the much less-nuanced news media and political dialog. The purpose of this chapter is to describe what mainstream economists have concluded about immigrant selectivity.

### 4.1.1 Some Unfortunate Terminology

It is customary for labor economists studying immigration to use terms such as “positive selection bias” or “unfavorable selection bias.” By positive (negative) selection bias economists mean that immigrant skills and earnings are on average above (below) the mean skill levels or earnings of the source country’s population. Words such as “positive” and “negative,” or “favorable” and “unfavorable,” are inherently offensive, however, and they certainly will not be interpreted correctly in discussions in the public sphere. It is not even generally the case that “unfavorably selected” or “negatively selected” migrants, that is, relatively less educated, experienced, or skilled migrants, have “unfavorable” or “negative” consequences for either the source or destination economies.

If labor economists cannot be more sensitive and accurate, we can. In this book we will describe groups of people by using more specific terms that clearly refer to their human capital, age, education, and other explicit characteristics. For example, we will use terms such as “high-skill selection” or “youth bias” if a group includes a relatively large share of skilled or young people, and we will avoid subjective terms such as “negative” or “favorable.”

### 4.1.2 The Chiswick View

Chiswick (1999) developed a model to show how immigrants self-select in ways that tend to make them, as a group, relatively more ambitious, harder working, and more likely to succeed in their destination country. Chiswick’s model makes a number of assumptions to simplify the analysis, as all models do. For example, in order to abstract from explicit observable differences in immigrant characteristics, Chiswick assumes that wages in the origin and destination countries are invariant to the amount of labor market experience. He also assumes that age is irrelevant because workers live forever. Chiswick specifies the *rate of return to migration* as

$$r = \frac{W_D - W_S}{C_I + C_E} \quad (4.1)$$

where  $W_D$  represents destination earnings,  $W_S$  represents earnings in the source,  $C_I$  equals the implicit costs of migration (equivalent to foregone wage earnings in the source), and  $C_E$  represents out-of-pocket (explicit) costs, e.g., transportation and visa costs. In this simple framework, migration occurs if the rate of return  $r$  from

investing  $C_I + C_E$  in relocation is greater than the market interest rate, which reflects the foregone rate of return on riskless securities available in the source country's financial market. Therefore, migration occurs if  $r > i$ , where  $i$  is the rate of interest faced by the would-be migrant.

Suppose there are two types of workers, low-skilled and high-skilled, and skills are fully observable and known. We define  $r_L$  and  $r_H$  as the rates of return to immigration for low-skilled and high-skilled persons, respectively. If both persons face the same market interest rate, the person who would earn a higher rate of return of migrating will have a greater likelihood of migrating. Suppose, now, that source and destination country wages are  $k$  percent higher for the high-skilled. It then follows that

$$W_{D,h} = (1 + k)W_{D,l}, \quad (4.2)$$

$$W_{S,h} = (1 + k)W_{S,l}, \quad (4.3)$$

where  $h$  ( $l$ ) stands for high (low) skills. Finally, Chiswick initially assumes that direct migration costs  $C$  do not vary with skill levels.

Because they earn more in their native countries, high-skilled workers have higher opportunity costs, namely  $C_{i,h} = (1 + k)C_{i,l}$ . Therefore, the return to migration for high-skilled migrants is

$$r_h = \frac{(1 + k)[W_{D,l} - W_{S,l}]}{(1 + k)C_{I,l} + C_E} = \frac{W_{D,l} - W_{S,l}}{C_{I,l} + \frac{C_E}{(1+k)}}. \quad (4.4)$$

For example, if  $k = 0.5$ ,  $W_{S,l} = 50,000$  (same as  $C_{I,l}$ ),  $W_{D,l} = 75,000$ , and  $C_E = 10,000$ , then,  $r_l = 0.4167$ , and the wage gain enjoyed by the low-skilled worker is 41.67 % of the "investment" in migration. On the other hand,  $r_h = 0.4412$ . Equation 4.4 implies that high-skilled migrants experience higher rates of return than low-skilled migrants if (a) mean earnings in the destination are higher ( $W_{D,l} > W_{S,l}$ ), (b) the labor market rewards higher skilled workers more ( $k > 0$ ), and (c) there are positive out-of-pocket costs of migration ( $C_E > 0$ ). In sum, given the three assumptions, the probability of migration is higher for high-skilled migrants. In other words, high-skilled migrants have a greater likelihood of selecting themselves into the act of migration.

Chiswick then examines how changes in various assumptions and variables can alter the model's implications. For example, he demonstrates that if high-skilled immigrants are more efficient in using their time than low-skilled immigrants, they will enjoy a selection advantage even if there are no out-of-pocket costs. On the other hand, even if the rate of return to migrating is higher for a low-skilled person than it is for a high-skilled person, there can still be a selection bias towards high-skilled migrants if there are very high direct costs of migrating, such as high visa expenses or high transport costs due to long distance. Chiswick's model shows that under many plausible circumstances, higher migration costs are associated with a

selectivity bias towards those who expect to earn the highest wages in the destination country, who have a strong tendency to be relatively high-skilled, highly educated, and well-connected immigrants.

### 4.1.3 The Borjas Model

Borjas (1987, 1990, 1991, 1999a) developed several closely related models to counter Chiswick's conclusion that, all other things equal, self-selected immigrants tend to be relatively more skilled, talented, and educated, and, therefore, likely to be highly successful in the destination countries. He developed a model to explain immigrant selection that drew on the work of Roy (1951), Heckman (1979), and other economists who studied self-selection in labor markets. His model predicts that, all other things equal, immigrant selectivity results from international differences in the return to skills and the degree to which skills are transferable across borders. Effectively, he allows the "k" in Chiswick's model, the skill premium, to vary across countries. He finds that immigrants who self-select in response to the skill premium, the observed distributions of skills across the source and destination countries' populations, and their perceptions of their own skills, do not unambiguously end up earning high incomes in the destination economy.

In Chap. 2, Eq. 2.8, we showed how Borjas' (1987) model yields an expression for the emigration rate. Here we detail how that same model yields expressions for immigrant selection bias. Recall that Borjas' model assumed that a person's wage in the source country is equal to

$$\ln(w_S) = \mu_0 + \varepsilon_0, \quad (4.5)$$

where  $\mu_0$  is the mean income home country residents would earn if they stayed at home, and  $\varepsilon_0$  is random, uncorrelated with  $\mu_0$ , with mean zero and variance  $\sigma_0^2$ . In the destination country the wage is similarly equal to

$$\ln(w_1) = \mu_1 + \varepsilon_1. \quad (4.6)$$

The Borjas model predicts that immigrants exhibit a self-selection bias towards people who are relatively highly skilled or highly educated in the source country's skill/education distribution when  $E[\ln(w_0)] < \mu_0$ , or when the average expected wage in the source country is below the mean. Also, migration exhibits a similar selection bias towards high-skill or highly educated people relative to the destination country's skill/education distribution when  $E[\log(w_1)] > \mu_1$ .

Borjas then defines a measure of selection bias,  $B$ , so that

$$E(\log(w_0)) = \mu_0 + B_0 \quad (4.7)$$

and

$$E(\log(w_1)) = \mu_1 + B_1. \quad (4.8)$$

These two equations can also be expressed as follows:

$$E(\log(w_0)) = \mu_0 + \left( \frac{\Omega}{\sigma(\varepsilon_0 - \varepsilon_1)} \right) \sigma_1 \sigma_0 \left( \rho - \frac{\sigma_0}{\sigma_1} \right) = \mu_0 + B_0 \quad (4.9)$$

and

$$E(\log(w_1)) = \mu_1 + \left( \frac{\sigma_0 \sigma_1}{\sigma(\varepsilon_0 - \varepsilon_1)} \right) \left( \frac{\sigma_1}{\sigma_0} - \rho \right) \Omega = \mu_1 + B_1 \quad (4.10)$$

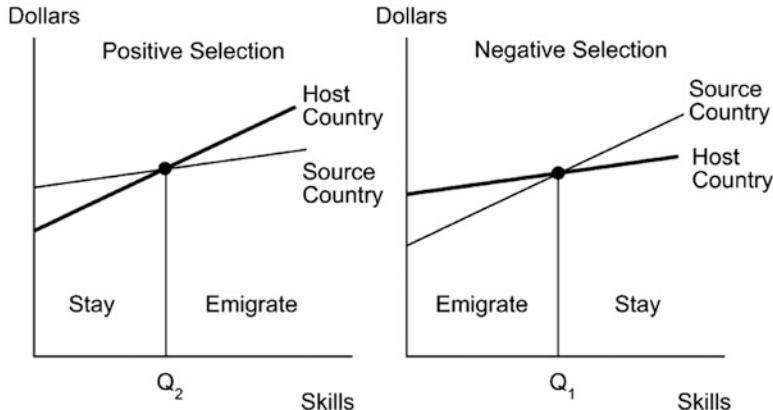
Since the term  $\Omega$  is defined as  $\frac{\phi(Z)}{P}$ , where  $\phi(Z)$  is the density of the standard normal distribution and  $P$  is the emigration rate, it is clear that the self-selection of immigrants who respond to source and destination country wage differences depends also on the earnings dispersion in each country and the degree to which skills are transferable from the source country to the destination country.

Borjas points out that the high-skill selection bias Chiswick (1978) hypothesized requires that (1) earnings in the source and destination countries are sufficiently positively correlated and (2) the dispersion of earnings opportunities in the destination country is greater than in the source country. Positive correlation in earnings is necessary because if a high-skill worker is to migrate, skills must be transferable. Greater wage dispersion in the destination country makes the return to highly skilled workers higher, and the return to low-skilled workers lower, in the destination country, all other things equal. These conditions are not generally true, however, which implies that the high-skill selection bias for immigrants is not generally true either.

The left-hand diagram on Fig. 4.2 illustrates the case of positive selection bias. To highlight the influence of skills on migration, the two diagrams in the figure show the functional relationships between earnings and skills in two countries under the assumption that the average wage is the same in both countries. The figure shows, for example, that if the destination country's "earnings-skills line" is steeper because the return to skills is greater there and, hence, the dispersion of wages is greater there, only those with skill level  $Q_2$  or *greater* will migrate. On the other hand, if the wage dispersion across skills is greater in the source country, all other things equal, then only the relatively less-skilled workers will migrate. In sum, Borjas' model shows that selection bias depends on the specific circumstances.

#### 4.1.4 A More Detailed Look at the Borjas Model

By incorporating the distributions of skills, education, and other personal characteristics of people in the source and destination countries into the model, Borjas (1987) permits us to detail the role in determining who immigrates.



**Fig. 4.2** Selection bias in immigrant flows

This feature of the Borjas model is very important because, in general, migration occurs between countries with varied populations. The model shows that differences in the distributions of personal characteristics, such as age, skill, and education, across populations affect both the composition and scale of international migration.

Borjas' model distinguishes between the *composition* and *scale* effects of immigration. According to Eq. 4.10, the magnitude of migrant selectivity bias is

$$\left( \frac{\sigma_0 \sigma_1}{\sigma(\varepsilon_0 - \varepsilon_1)} \right) \left( \frac{\sigma_1}{\sigma_0} - \rho \right) \Omega = \psi \Omega, \quad (4.11)$$

where  $\psi \equiv \left( \frac{\sigma_0 \sigma_1}{\sigma(\varepsilon_1 - \varepsilon_0)} \right) \left( \frac{\sigma_1}{\sigma_0} - \rho \right)$ . The term  $\psi$  reflects the *income mix* or *skill mix* of a given-sized pool of migrants in the source country. The income mix can change only if there is a structural change in either of the skill or immigrant earnings distributions, that is, if the higher moments of the distribution change. The sign of  $\psi$  determines the type of bias, while its absolute value influences the magnitude of bias. Recall again from Chap. 2 that  $\Omega$  is defined as  $\frac{\phi(Z)}{P}$ , where  $\phi(Z)$  is the density of the standard normal distribution and  $P$  is the emigration rate.  $Z$  is a constant that varies strictly with the size of the migrant pool; the bigger the migrant flow, the smaller is  $\Omega$ . Hence, the size of  $\Omega$  does not influence the type of selection bias, only its magnitude.

Since  $B_1 = \psi \Omega$ , the marginal effect of an exogenous variable  $\kappa$  on selection bias is

$$\frac{\partial B}{\partial \kappa} = \Omega \frac{\partial \psi}{\partial \kappa} + \psi \frac{\partial \Omega}{\partial \kappa} \quad (4.12)$$

Borjas calls the first term on the right-hand side of Eq. 4.12 the *composition effect*. It measures the marginal effect of a change in the exogenous variable on the income or skill mix, holding the size of the migrant pool constant. The second term

is called the *scale effect*, and it measures the marginal effect of a change in the exogenous variable on the size of the migrant flow, holding the income or skill mix constant. Differentiating between the composition and scale effects permits Borjas to conjecture how specific variables influence immigrant flows and the selectivity of those flows.

Borjas obtains a number of important predictions for selection bias in the destination country.

1. *A shift in the source country's earnings distribution induces only a scale effect.*

For example, suppose there is discovery of a large reservoir of oil off the source country's coastline, which makes everyone there wealthier. The greater prosperity in the source country will reduce the emigration rate because it improves the position of the "marginal" immigrant so that he no longer has an incentive to migrate. Greater prosperity in the source country will thus cut both the size of the emigrant flow and average emigrant earnings. Exactly the opposite occurs if there is a drop in mean earnings in the source country.

2. *An increase (decrease) in migration costs will enhance (reduce) selectivity.*

This conclusion assumes that migration costs do not vary with skills. Higher costs have the same effect on selectivity as lower destination country mean earnings and vice versa for lower costs. Changes in migration costs induce only scale effects.

These first two conclusions involved only a shift in the means of the source and destination country earnings distributions, which can only induce scale effects. When there is a change in the variance or higher moments, however, then there can be both scale and composition effects. As a result,

3. *An increase (decrease) in earnings dispersion in the source country will unambiguously reduce (increase) average earnings of the emigrant pool, assuming that mean earnings in the destination country, net of migration costs, are higher.*

An increase in source country earnings dispersion reduces the income of the poorest residents, while the position of the richest residents is improved. The composition effect is unambiguously biased towards promoting migration by the poorest workers in the source country. When the earnings dispersion widens, the mix of emigrants will include more persons from the expanded lower tail area of the earnings distribution. The scale effect will also be biased towards low-income workers because as income inequality in the source country rises, the worst-off persons will still want to migrate, while the relatively higher-earnings persons find their income opportunities at home have improved. Exactly the opposite happens if income inequality in the source country declines. Thus, the composition and scale effects of a change in relative earnings inequality reinforce one another.

Note that these predictions will not generally be true if mean earnings in the source country are higher than in the destination country. In that case, the composition and scale effects will be in opposite directions. For example, if mean earnings in the source country are higher and income inequality at home rises, then the average earnings of the emigrant pool can rise if the scale effect dominates.

### 4.1.5 Selection by Observed Characteristics

In the preceding analysis, it was assumed that immigrants self-select with respect to some unobservable characteristic, such as ability, known only to the migrant. However, selection obviously also occurs according to observable characteristics. Borjas (1991) extended his model to allow for selection with respect to both observable and unobservable characteristics. Borjas uses this model to explain the conditions under which the average schooling of immigrants differs from the average schooling of the source country's population. For example, he concludes that if the destination country labor market rewards schooling more, self-selection will result in a migrant pool with relatively high levels of education.

Interestingly, Borjas points out that negative selection in an unobservable characteristic like ability could occur jointly with positive selection in an observable characteristic like education. Borjas (1991) writes, "Simply because the USA attracts highly educated persons from some countries does not imply that these highly educated persons are the most productive highly educated persons in that particular country of origin" (Borjas, 1991, p. 38). Borjas further notes that "Since the two kinds of selections are independent, *nothing* (his italics) can be said about how the average migrant performs in the destination country unless the kinds of selections that occurred in each of the two dimensions...are known." Realistically, people migrate for a variety of reasons, the exact combination of which they themselves may not understand precisely. This makes empirical work on the determinants of immigration difficult because it is inherently problematic finding proxies for nonobservable or partially observable characteristics.

## 4.2 Extensions of the Borjas Model

Borjas' (1987) model has been extended by relaxing the assumption that a migrant's cost constraint is unrelated to his or her earnings, skills, or other characteristics. First, the model has been extended to allow for variation in migration costs ( $\pi$  from above and in Chap. 2) across members of the immigrant pool. Second, the model has been extended to include credit constraints and the ability of would-be migrants to cover the up-front costs of their investment in migration.

### 4.2.1 Variable Migration Costs and Migrant Selection

In his 1991 study, Borjas allowed for random variation in migration costs:

$$\pi = \mu_\pi + \varepsilon_\pi, \quad (4.13)$$

where  $\mu_\pi$  is mean migration costs in the population and  $\varepsilon_\pi$  is the usual random disturbance with mean zero and variance  $\sigma_\pi^2$ . However, he also assumed that the random disturbance is correlated with the random variation in unobserved migrant characteristics  $\varepsilon_0$  and  $\varepsilon_1$  from Eqs. 4.4 and 4.5, and that this correlation is measured by  $\rho_{\pi 0}$  and  $\rho_{\pi 1}$ , respectively. In effect, such correlated migration costs change the source and destination earnings distributions, which we have already shown to be potential determinants of migrant selectivity.

Suppose migration costs and earnings opportunities are positively correlated. This could occur, for example, if high-ability migrants take longer to find employment. High-ability migrants are likely to be better educated and possess high-levels of special skills. While these skills may provide them with greater earnings opportunities, the kinds of jobs they seek may be more difficult to find and/or the search process may be more costly and time-consuming. A positive correlation between ability and migration costs therefore reduces the likelihood that highly skilled and highly educated persons will migrate. On the other hand, Chiswick's (1999) assumption that more-able persons are more efficient at securing employment would lead to the opposite effect. Since many highly educated immigrants have job offers in hand when they arrive in the destination country, the latter case may the more realistic one in most destination countries.

Inspired by Borjas' treatment of random migration costs, Chiquiar and Hanson (2005) suggest that migration costs are likely to be inversely related to earnings for four reasons: (1) more educated persons are more likely to possess the skills necessary to satisfy the many bureaucratic and paperwork requirements to obtain legal admission to the USA; (2) given that the costs of using the legal services industry for the purpose of obtaining US admission tend to be fixed, those costs will be relatively lower for migrants who earn more; (3) for the case of unauthorized immigration, the costs of securing transportation across the border and for obtaining counterfeit residency documents tend to be fixed, thus higher-wage persons face lower relative costs of unauthorized immigration; and (4) lower-income individuals typically face higher borrowing costs because of a higher likelihood of default, hence they will face proportionally higher migration costs. Chiquiar and Hanson add some more features to the Borjas model, which enables their model to explain the often-discussed fact that Mexican immigrants in the USA are at the same time more educated than the average Mexican living in Mexico but less educated than the average native-born American.

First, Chiquiar and Hanson assume that migration costs are lower for higher skilled migrants. Furthermore, they assume that selection occurs with respect to just one observable characteristic, schooling, and they assume away any random components to wage determination. Residents of Mexico, therefore, face an earnings equation given by

$$\ln(w_0) = \mu_0 + \delta_0 s, \quad (4.14)$$

where  $w_0$  is the wage available in Mexico,  $\mu_0$  is the base wage,  $s$  is the level of schooling, and  $\delta_0$  is the return to schooling in Mexico. Earnings available to Mexican immigrants in the USA are specified as

$$\ln(w_1) = \mu_1 + \delta_1 s, \quad (4.15)$$

where  $w_1$  is the US wage available to Mexican migrants,  $\mu_1$  is the migrant base wage, and  $\delta_1$  is the return to schooling in the USA. Suppose the return to schooling is higher in Mexico ( $\delta_0 > \delta_1$ ) due to scarcity of higher-level skills there.

Chiquiar and Hanson specifically assume that migration costs,  $\pi$ , are inversely related to the level of schooling:

$$\ln(\pi) = \mu_\pi - \delta_\pi s, \quad (4.16)$$

where  $\mu_\pi$  are migration costs in the absence of schooling and  $\delta_\pi$  reflects the savings in costs (measured in units of labor supply) from acquiring an additional year of schooling.

According to this model, therefore, very low-skilled Mexican migrants face relatively high migration costs, and thus the least skilled will tend to remain in Mexico. While migration costs of high-skill migrants are lower, they face very high opportunity costs of leaving Mexico because the return to education there is higher. Consequently, they will tend to remain in Mexico. Hence, Mexican migrants to the USA will tend to be modestly educated and modestly skilled.

#### **4.2.2 Credit Constraints and Immigrant Selection**

Orrenius and Zavodny (2005) develop a model to explain the predominance of migrants with intermediate skill levels among unauthorized immigrants to the USA. Like Chiquiar and Hanson, they assume that the return to education is higher in Mexico than in the USA, but they also include an additional feature in the migrant's cost function not found in earlier models: credit constraints. They argue that undocumented migrants typically must pay border crossing expenses in advance and, because they usually lack access to credit markets, border-crossing costs must be financed from savings. Savings, however, depend on earnings, and earnings depend on skill. Thus, savings are positively related to skills and education, which implies the lowest-income and least-skilled workers will be less likely to migrate.

It should be intuitive that credit constraints, as a percentage of income, are higher for the poor. At the same time, relatively high-income Mexicans face relatively high opportunity costs in a country where skills are scarce. Therefore, it will be mostly people with intermediate levels of education and income who seek to migrate. Hence, Orrenius and Zavodny's model explains the empirical observations

showing that, like legal immigrants, unauthorized Mexican immigrants to the USA tend to be more educated than the average Mexican native.<sup>2</sup>

### 4.2.3 Family Migration and Selection Bias

As we discussed in Chap. 2, migration is often a family decision. When the decision making unit is a family, selection bias may be different than when the decision to migrate is purely an individual decision.

Borjas and Bronars (1991) addressed this issue with a model based on earlier work on family economics by Becker (1964) and Mincer (1974). Specifically, their model represents the case of a two-person family consisting of members  $i$  and  $j$ . Earnings for person  $k$  ( $k = i, j$ ) in the source country are given by

$$y_{0k} = \mu_0 + \nu_{0k}, \quad (4.17)$$

and earnings in the destination country are

$$y_{1k} = \mu_1 + \nu_{1k}. \quad (4.18)$$

The parameter  $\mu_0$  is mean income in the source country,  $\mu_1$  is the mean income that immigrants would earn in the destination country if all persons in the source country migrated, and  $\nu_{0k}$  and  $\nu_{1k}$  are random variables that measure person-specific deviations from mean incomes due to differences in skills or education.

Borjas and Bronars (1991) assume that skills are perfectly transferable, so that  $\nu_{0k}$  and  $\nu_{1k}$  are perfectly correlated. This allowed Borjas and Bronars to write country earnings as

$$y_{0k} = \mu_0 + \eta \nu_k, \quad (4.19)$$

$$y_{1k} = \mu_1 + \nu_k, \quad (4.20)$$

where  $\eta$  is the relative price of skills in the source country (the price of skills in the destination country is unity). They show that  $\eta$  is equivalent to the relative dispersion of earnings opportunities in the source country

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<sup>2</sup> It is worthwhile mentioning the more recent migrant selectivity model of Grogger and Hanson (2011). Recall that the class of models beginning with Borjas (1987) are based on the assumption that migration costs are proportional to income and that migrant flows are influenced by relative returns to skills. Grogger and Hanson's model, in addition to not being reliant on the standard normal distribution, proceeds from the assumptions that there are fixed costs of migration and that migrant flows are influenced by *absolute* source/destination wage differences. They use their model to show that the likelihood of migration will depend positively on the level difference in source/destination skill-specific wages and negatively on migration costs.

$$\eta = \frac{\sigma_0}{\sigma_1}, \quad (4.21)$$

where  $\sigma_0$  and  $\sigma_1$  are the standard deviations of earnings in the source and destination countries, respectively. Finally, earnings across family members are assumed to be correlated, with the correlation coefficient  $-1 < \rho < 1$ .

Borjas and Bronars derive index functions corresponding to the migration decisions of persons  $i$  and  $j$ . Specifically, if person  $k$  ( $k = i, j$ ) were not part of a family, then (s)he would migrate when

$$I_k = (1 - \eta)\nu_k - (\mu_0 - \mu_1) - M = (1 - \eta)\nu_k - \Delta\mu > 0 \quad (4.22)$$

where  $M$  is migration costs (assumed constant across individuals) and  $\Delta\mu = (\mu_0 - \mu_1) - M$ . But when  $i$  and  $j$  form a family, the family migrates when the sum of members' gains is positive, or when

$$I_i + I_j + (1 - \eta)(\nu_i + \nu_j) - 2\Delta\mu > 0. \quad (4.23)$$

Borjas and Bronars use expression Eq. 4.23 to derive the average skill of person  $k$  ( $k = i, j$ ) who migrates with their family, which is the conditional expectation of  $\nu_k$ :

$$E(\nu_k) = \left[ \alpha \left( \sqrt{\frac{(1+\rho)}{2}} \right) \sigma \right] \lambda \left\{ \alpha \sqrt{\frac{2}{(1+\rho)}} z \right\}, \quad (4.24)$$

where  $\alpha = 1$  if  $\eta < 1$  and  $\alpha = -1$  if  $\eta > 1$ . Equation 4.24 also defines  $\lambda(x) \equiv \frac{\phi(x)}{[1 - \Phi(x)]}$  and  $z \equiv \frac{\Delta\mu}{(1 - \eta)\sigma}$ , where  $\phi$  is the standard normal density function, and  $\Phi$  is the standard normal distribution function.

The average earnings of a migrant who migrates as part of a family depends upon international differences in the rewards to skills, as determined by  $\alpha$  in Eq. 4.24, the correlation in earnings across family members ( $\rho$ ) and the dispersion of skills in the source country's population ( $\sigma$ ).

According to Eq. 4.24, when earnings of family members are always the same ( $\rho = 1$ ), selectivity is no different from the case of nonfamily migration:

$$E(\nu_i) = \alpha\sigma\lambda(\alpha z), \quad (4.25)$$

which is the same condition derived in Borjas' (1987, 1991) earlier models of individual selection.

However, the average skill level of migrants under family migration differs from the case of individual migration when  $-1 < \rho < 1$ . Borjas and Bronars show that when returns to skill are greater in the destination country, there will be selection bias towards higher-skill migrants under both family and individual migration, but the degree of positive selection will be lower under family migration. This result is

intuitive since families include tied movers, who are less skilled and find it less profitable to move. Tied movers effectively dilute the degree of selection bias. Similarly, if returns to skill are lower in the destination country, selection will be biased towards lower-skilled migrants under both family and nonfamily migration, but the degree of the bias will be less under the latter.

## 4.3 The Empirical Evidence on Immigrant Selectivity

The models detailed above predict that the characteristics of immigrants, such as education levels, skill levels, age, gender, and family size, depend on the distributions of those characteristics among the overall populations in both the source and destination countries. In this section we discuss the results from the empirical literature on immigrant selectivity, beginning with the original Borjas (1987) study and continuing through studies by economists who contested Borjas' findings.

### 4.3.1 *Borjas' Empirical Results*

Borjas is well-known for his hypothesis that the average skill levels of US immigrants have declined since the 1965 immigration law that changed immigrant visa criteria from national quotas to family reunion. To test his hypothesis, Borjas (1987) used data from the 1970 and 1980 US censuses to estimate the wage differentials for natives and various immigrant cohorts classified according to the number of years they had been living in the USA. Borjas restricted his analysis to men aged 25–64. His results thus depend critically on whether relative immigrant skills can be represented by *wage* differentials between immigrants and natives.

In order to gauge the reliability of Borjas' statistical results, it is important to understand the tenuous links between the variables in Borjas' theoretical model and the actual data used to proxy those variables. For example, mean level of income in the source country was measured by the logarithm of per capita GNP in 1980 (in US dollars). The variance of income in the source country was measured by the ratio of household income accruing to the top 10 % of households to the income accruing to the bottom 20 % of households in 1970. The change in income inequality was measured by the change in the share of GNP attributable to central government spending over that period, under the assumption that a government with greater participation in the source country's economy engages in more income redistribution. Migration costs were measured by the number of air miles between the source country's capital city and the nearest US gateway city. Borjas included additional variables such as the share of immigrants with good proficiency in English, the mean age of migrants, and dummy variables to capture the level of political participation, the level of democracy, political violence, and the continents from which

immigrants came. If you have doubts about some of these variables, then you are in good company. When accurate data are scarce, even the most objective application of statistical models may seem more like an art form than a scientific exercise.

To test his model, Borjas regressed the estimated entry wage differential between the 1979 immigrant cohort from each source country and comparable US natives on various country-specific measures. Among other things, Borjas found no significant evidence to support the hypothesis that higher income inequality in the source country lowers the education and skill levels of US immigrants. Nor did he find distance to be related to the migrant quality measures. He did find source country GNP to be positively and significantly related to immigrant education and skills. Most important for Borjas' hypothesis, he finds evidence, albeit weak, that US immigrants from advanced industrial countries are more likely to be highly skilled, while immigrants from poor countries are likely to be relatively less skilled compared to the native US population. Borjas claims that, these results plus the observation that US immigrants increasingly came from developing countries, provide some support for his hypothesis that US immigrants have become less skilled in recent decades.

Borjas (1987) admits that, overall, the above results are not entirely consistent with his model's theoretical predictions. He attributes the poor statistical results to the measurement errors in the various country-specific proxies. Furthermore, there is the likelihood of omitted variables bias because there were no controls for destination country income inequality, destination country mean income, or earnings correlation.

### 4.3.2 *Further Tests of Borjas' Model*

In a critique of Borjas (1987), Jasso and Rosenzweig (1990) argue that “interpretation of the effects of origin-country characteristics on the changes in the earnings of age-entry cohorts of the U.S. foreign-born thus is likely to require a richer model of self-selection, incorporating decisions to migrate to the United States and to remain there after migration” (Jasso & Rosenzweig, 1990, p. 303). In his 1991 study, Borjas (1991) tests the determinants of migrant characteristics by pooling three destination countries, Australia, Canada, and the USA, and estimating a regression of the immigrant/native wage differential at the time of arrival on sets of source and destination continent characteristics. In this “international” test of migrant selectivity, Borjas found strong and positive relationships between his measure of migrant education/skills and both the relative per capita GNP of the origin continent and the level of income inequality in the destination country. All other things equal, migrants from richer regions earn more *no matter the destination*, and migrants from regions with large amounts of income inequality do worse than other immigrants, all other things equal. Finally, the US immigrant policy dummy was negative and significant, which Borjas interpreted as confirming that US

immigration policies in recent years have had the effect of reducing average skill and education levels of US immigrants.

Other studies have provided mixed support for Borjas' hypothesis that the average skill levels of US immigrants have fallen relative to the native population. For example, Cobb-Clark (1993) reports evidence of selection bias towards lower-skill migrants among female immigrants to the USA from countries with higher returns to skills. Barrett (1993) shows that US immigrants arriving with a family reunification visa earn less when they originate in countries where the income distribution has a relatively high variance. Bratsberg (1995) shows that foreign students who stay in the USA after completing their degrees earn relatively high wages if their country of origin provides a low rate of return to skills, but earn relatively low wages if the homeland offers a high return to skills.

### 4.3.3 *Tests Based on Counterfactual Density Functions*

DiNardo, Fortin, and Lemieux (1996) argued that changes in immigrant wages over time are the combined result of a changing distribution of immigrant characteristics as well as changes in the overall wage structure in the US economy. Borjas' methodology cannot separate these two potential explanations for variations in immigrant earnings, and the wages of the least educated workers in the USA have suffered substantial declines in wages over the past 40 years, while university graduates have enjoyed substantial wage increases, Borjas' results are likely to have been biased towards finding a decline in immigrant earnings over this period. DiNardo, Fortin, and Lemieux developed a decomposition method based on Oaxaca (1973) to estimate the separate contributions of each of the two potential determinant of immigration. Their method involves comparing the actual distribution of skills of the population with a constructed distribution that controls for the overall changes in the wage structure in the US economy.

Using the DiNardo et al. (1996) methodology, Butcher and DiNardo (2002) found that the counterfactual income/skill distribution for 1990 closely resembled the actual 1990 distribution. They thus concluded that the widening of the immigrant/native-born mean wage gap during 1970–1990 was linked to the well-documented increase in the wage premium for college-educated workers in the USA and does not reflect a reduction in the skill levels of immigrants. Indeed, Butcher and DiNardo also directly dispute Borjas: “The emphasis on post-1965 changes in United States immigration policy in explaining the relative wages of immigrants and natives may be misplaced” (Butcher & DiNardo, 2002, p. 116).

Chiquiar and Hanson (2005) applied the same DiNardo, Fortin, and Lemieux methodology to compare the earnings of immigrants from Mexico with residents of Mexico. Their analysis focused on Mexican immigrants that came to the USA within the previous 10 years. Their results do not support the Borjas (1987, 1991) prediction of a decline in immigrant skills. They found that for 1990, immigrant

men were taken disproportionately from the middle and upper middle parts of the Mexican wage distribution, and that low- and high-wage men were the least likely to migrate to the USA. For women in 1990 and 2000, the results also strongly indicated a bias toward the middle and upper middle parts of the Mexican wage distribution. For men in 2000, their results again indicated intermediate selection, but not as clearly. All these results are supportive of the hypothesis that there is intermediate selection of Mexican migrants in the USA.

Finally, Orrenius and Zavodny (2005) examine data on unauthorized Mexican immigrants to the USA and find strong evidence of intermediate selection similar to the legal Hispanic immigration to the USA. Among household heads, those with the lowest probability of migrating had at least a high school education, followed by those who have completed secondary school only, then those with little or zero formal education. For the portion of the sample comprising sons, high school graduates, and those with zero schooling are found to have the lowest likelihoods of migration. Higher real agricultural income or manufacturing wages in Mexico were found to reduce the probability of migration by heads of family in all educational categories, but the greatest reductions were found in the two highest categories. These results undermine Borjas' (1987, 1991) prediction that migration from developing countries to developed countries is characterized by a decline in immigrant skills relative to destination country natives.

The Chiquiar and Hanson (2005) and Orrenius and Zavodny (2005) studies also provide valuable information about Hispanic immigration to the USA, one of the most substantial cases of massive immigration from a low-income to a high-income country in the latter half of the twentieth century. Chapter 13 analyses Hispanic immigration to the USA in detail.

## 4.4 The Asymmetric Information Model

The process of selection, whether by the migrants themselves, by policymakers, or those who employ or sponsor immigrants in the destination country, depends on how the actors view the relative differences in income, skills, and the distributions of those incomes and skills. In short, there is an important informational component to the migration decision. This begs the obvious question: How is immigration affected when information is missing?

Kwok and Leland (1982) develop an interesting model of migrant selection bias that is the result of asymmetric information in the international labor market. They apply the well-known concepts from the labor economics literature, specifically the work of Akerlof (1970) and Leland (1979, 1980) on the market for lemons (as in used automobiles) when sellers know more about product quality than buyers, Spence (1973) and Riley (1975) on job market signaling, and Stiglitz (1975) on employer screening of workers' job qualifications.

### 4.4.1 Kwok and Leland's Model

Kwok and Leland (1982) set up a simple case in which employers in one country are better informed about an individual migrant's productivity than are employers in the other country. However, there are no informational differences between employers and workers in the same country and workers are fully informed about their own productivities. Note that Kwok and Leland specifically model the case of skilled persons that have been studying abroad who must choose to stay or return. This case contrasts with the more traditional case of positive selectivity in *out-migration*, e.g., the case when the high-skilled professionals leave a developing economy in search of more lucrative opportunities in the USA.

To illustrate, suppose that Indian graduate students studying in the USA have to decide whether to remain in the USA to work or to seek work back in India. Kwok and Leland begin by assuming that there is some fraction  $k < 1$  such that an Indian student is indifferent between working in the USA for a wage  $W$ , and returning to India for a wage  $kW$ . If there was perfect information and a fully integrated global labor market, each new graduate would be offered the same wage in India as he would in the USA, and all Indian graduate students would return home. However, suppose there are two types of Indian students/workers trained in the USA: Type A workers have productivity 10 and type B workers productivity 5. Suppose, moreover, that equal numbers of each type of student graduate from US universities. Finally, suppose Indian graduates require a wage in India of at least 80 % of the US wage in order to return home, i.e.,  $k = 0.8$ .

In the face of uncertainty about returnee productivity, Kwok and Leland assume that Indian employers set their pay offers equal to expected productivity for all students abroad. Since there are equal fractions of type A and type B graduates, Indian pay offers will be  $(0.5)(5) + (0.5)(10) = 7.5$ . Suppose that Indian employers are not completely uninformed, and that they know how productive type A and type B graduates are and the fraction of each type out of the Indian graduate student pool in the USA. But, they can't match each individual graduate with his or her personal productivity.

The problem Indian employers face is that the average productivity of returning graduates is 7.5, the average productivity of the entire graduate pool, but type A graduates are offered a wage in the USA of 10 by US employers who are able to discern between type A and type B students. Those type A students need a wage offer from India equaling  $(0.8)(10) = 8$  to return. Thus, all type A graduates remain in the USA. The type B graduates, who require a wage in India of  $(0.8)(5) = 4$ , do return. There is thus a *separating equilibrium* where the low-productivity workers return and the high-productivity workers stay.

Indian employers, unable to distinguish between type A and type B returnees, at first pay all returnees a wage equaling the average productivity of all Indian graduates of US universities. Type Bs are thus overpaid in India relative to their true value by 2.5, as well as relative to their reservation wage for returning by 3.5. The type As understand this too, and they are deterred from returning because they

expect to be underpaid relative to their true productivity by 2.5 and 0.5 relative to their reservation wage. Eventually, Indian employers realize that type B employees only produce a value of 5, and eventually the market settles close to that wage. In this case, type B students still return to India, however, because their reservation wage for returning is 4. The Indian migrants have effectively been selected into a group consisting entirely of type B students.

An important implication of the Kwok and Leland model is that the Indian/USA wage differential is not the *cause*, but the *result*, of negative selectivity in return migration. This conclusion is important because a casual observer might attribute the negative selectivity of returnee migrants to lower wages in India. It is also worth emphasizing that Kwok and Leland's results are sensitive to the values assumed for the parameters in their model. For example, suppose that  $k = 0.7$ . In this case, all Indian graduates would return home if Indian employers offer the average productivity wage of 7.5. Also, suppose that type A workers have a productivity of 7. In that case, the wage offered in India to all returnees would be 6. Type B students would return because they would make two more than their reservation wage, and type A students would also return because their reservation wage in India is 5.6. Finally, all graduate students would return as well if a very large fraction of workers were type B, say, 80 % of the pool.

Kwok and Leland (1982) consider a variety of other cases, such as when the informational advantage is with Indian employers rather than US employers. In each case, immigrant selection is different. In general, the nature of migrant selectivity depends upon the location of the ignorant employers, the distribution of workers according to skill type, worker preferences for remaining at home, and the difference in wage structures between the destination and source countries.

#### **4.4.2 Restoring Symmetric Information**

There are measures that can be taken to mitigate the selection bias in immigration caused by employer ignorance and information asymmetries. Katz and Stark (1987) show that immigrants can invest in a signaling device such as an examination or professional qualifications such as a university degree or professional certification. Suppose the signaling device allows a worker's skill level to be completely identified, but it requires a fixed cost investment by the worker and it does not vary with skill level. The worker thus faces a dual decision: Do I invest in the signal *and* do I migrate? Katz and Stark demonstrate that the high-skilled individuals will be the ones most likely to invest in the signal since the most skilled workers have the most to lose when they are paid a wage equaling the expected productivity of the entire group. In contrast, the relatively low-skilled workers will usually not wish to invest in a device that reveals their below-average productivity. Hence, the investment in signals is biased by a self-selection process, but note that it is biased in a way that offsets the bias caused by asymmetric information in the labor market.

## 4.5 The Theory of Immigrant Assimilation

The word “assimilation” has its roots in physiology and biology, where it is defined as the transformation of food into living tissue. In the social sciences, assimilation is generally defined as the process by which a group of persons, new to an area, adapt to the destination area’s culture, values, and traditions. To economists studying immigration, assimilation is often applied in a much more mechanical way, specifically used to describe the process whereby immigrants’ incomes catch up to native incomes in the destination country. Income assimilation is hypothesized to be strongly influenced by immigrant selectivity, hence the reason for discussion of assimilation in this chapter. For example, Chiswick (1978, pp. 919–920) writes,

That the foreign born eventually have higher earnings than the native born suggests that they may have more innate ability, are more highly motivated toward labor market success, or self-finance larger investments in post-school training. The higher earnings may therefore be a consequence of a self-selection in migration in favor of high ability, highly motivated workers, and workers with low discount rates for human capital investments.

If Chiswick is correct, earnings assimilation will be stronger and faster the more biased is the selectivity of immigrants towards immigrants with “innate ability” and “motivation.”

There is actually very little theoretical work that we can draw on. Even those researchers who have articulated a theory of immigrant earnings assimilation have usually done so as a small piece in a much larger empirical study. We examine Chiswick’s (1978) often-referenced empirical study here.

### 4.5.1 *The Chiswick Study of Assimilation*

In a pioneering study, Chiswick (1978) elaborated on an important point made by Ben-Porath (1967), namely that younger workers will have stronger incentives to invest in human capital than older workers. If immigrants tend to be relatively young, they will have especially strong incentives to invest in human capital, particularly right after arrival. Both Chiswick (1978) and DeFreitas (1980) argued that time spent in the destination country, particularly during the first years, yields information to the immigrant about job opportunities and the value of his/her own skills. This “informational capital” that immigrants produce for themselves permits them to sort themselves into jobs in which earnings are greatest.

Chiswick, therefore, hypothesized that immigrant earnings will be lower than native earnings at the time of arrival due to the absence of country-specific human capital. However, after arrival the immigrant begins to acquire country-specific human capital, and if immigrants acquire this capital more rapidly than similar native workers, immigrant wages will *converge* to native wages.

To test his hypothesis, Chiswick (1978) examined earnings differences between native US workers and foreign-born male immigrants in the US Chiswick used data

from the 1970 US census, which provided detailed earnings of immigrants, broken down by the number of years the immigrants had been in the US Chiswick estimated a regression model with the general structure

$$\ln W_i = \lambda X_i + \beta t_i + \varepsilon_i, \quad (4.26)$$

where  $W_i$  is the labor income, or “wage,” of immigrant  $i$ ,  $X_i$  is a vector of socioeconomic characteristics of the worker,  $t_i$  measures years since migration, and  $\varepsilon_i$  is the usual random error term. The coefficient  $\beta$  effectively measures whether there is wage convergence, or income assimilation. Chiswick’s regression equation included a large number of other influences on earnings, such as education, years of work experience, and location in the USA so that the coefficient  $\beta$  would not suffer from omitted variable bias.

The estimated value of Chiswick’s  $\beta$  implied that immigrants earned about 17 % less than comparable natives at the time of arrival, but the gap narrowed by over 1 % per year. The earnings of the foreign-born in the USA in 1970 were just 9.5 % lower than natives if they had been in the country for 5 years, they were equal, on average, if they had been in the USA for 13 years, and they were 6.4 % greater for immigrants in the country for 20 years. Chiswick thus concluded that immigrants’ earnings overtake the earnings of natives after about 10–15 years, depending upon the country of origin.

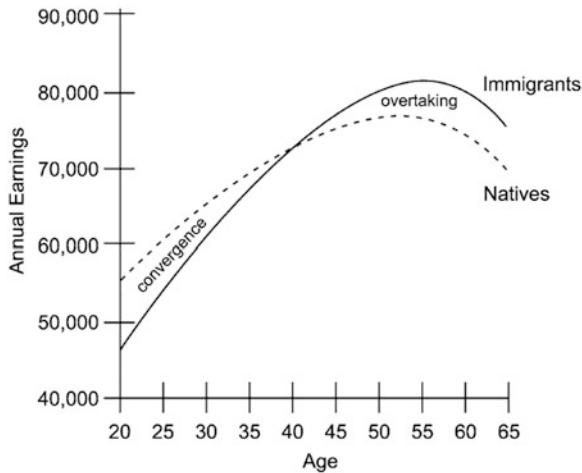
Subsequent cross-section analyses by Carliner (1980), DeFreitas (1980), Long (1980), Borjas (1985), and Borjas and Tienda (1985) analyzed both male and female immigrants, used alternative data sets such as the 1976 *Survey of Income and Education*, and focused on specific immigrant populations, e.g., Hispanics or Asians. These studies produced similar results. Immigrants enjoyed more rapid earnings growth than native-born Americans.

#### 4.5.2 Potential Bias in Chiswick’s Results

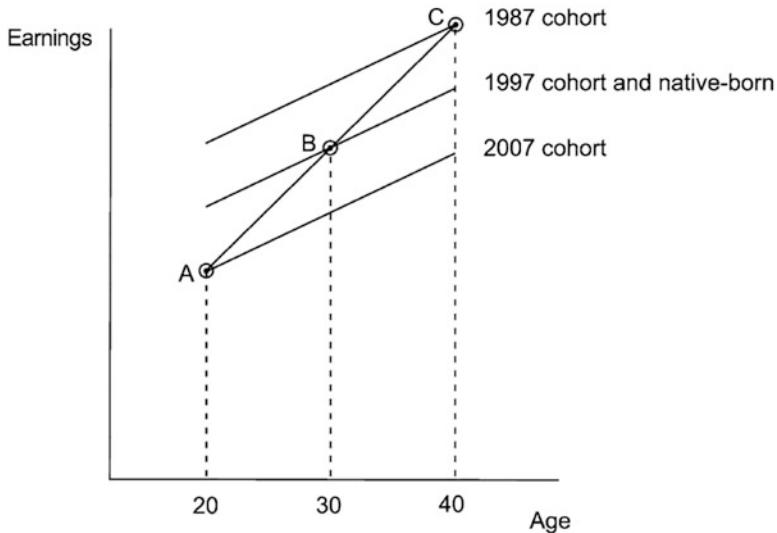
In an immigrant country like the USA, these results were well-received. They reinforced the common myth that immigrants were harder working, more ambitious, and more able than either those that chose to remain in their native countries or the natives in the destination country. But, were Chiswick’s regression model and its results accurate?

Borjas (1985) argued that Chiswick’s finding of earnings convergence is only a statistical illusion. He pointed out that there is a fundamental weakness in Chiswick’s approach of using census data from 1 year to calculate a rate of assimilation. Chiswick used cross-section data to estimate a dynamic process. Figures 4.3 and 4.4 illustrate this weakness.

Figure 4.3 shows the age earnings profiles for immigrants and natives, and the specific shapes of the two curves reflect the results reported by Chiswick (1978). When newly arrived young immigrant workers enter the US labor force, all other



**Fig. 4.3** Immigrant and native age-earnings profiles



**Fig. 4.4** Cohort differences can lead to estimation bias

things equal, their earnings are 17 % less than similar native workers. However, after 15 years, they “catch up” to the natives, after which they earn higher incomes than natives. The immigrant’s age-earnings profile is steeper, supposedly the result of a self-selection process that results in immigrants having the ability and motivation to accumulate human capital more rapidly than natives.

Now, suppose that the study’s data covered a period of time over which the self-selection process changed so that immigrants who arrived in different years have

different personal characteristics. For example, suppose Borjas is correct and immigrants who arrived in more recent years have fewer of those special traits that Chiswick hinted at. In this case, each group has a different age-earnings profile.

Figure 4.4 shows three age-earnings profiles, one each for immigrants who arrived in 1987, 1997, and 2007. Someone doing a study like Chiswick's using a 2007 cross-section would notice that immigrants who had been in the country for 20 years were earning more than natives, those who had come in 1997 and had been in the labor force for 10 years had income about equal to natives, and those who just arrived in 2007 were earning less than natives.

But there is no way to tell from the 2007 cross-section data whether the income differences among immigrants were due to their ability to raise their wages quickly or because the three groups of immigrants were on different age-earnings profiles, each of which is no steeper than the native age-earnings profile. The latter case is the one Borjas suggests. He concludes that the 1990 immigrant cohort will never catch up to native workers and later immigrants to the USA will forever remain poorer than native Americans. Figure 4.4 illustrates this latter case; for example, notice that the 2007 cohort's age-earnings profile lies below the gray shaded profile of natives no matter how many years each has been in the workforce. If that age-earnings profile represents Hispanic immigrants, then Borjas' hypothesis is correct.

### 4.5.3 *Borjas' Empirical Results*

To test his hypothesis, Borjas (1985) used 1970 and 1980 census data to estimate the degree of bias due to *cohort effects*, or differences in the cohorts. His analysis was restricted to males aged 18–54 in 1970 and 28–64 in 1980, but he conducted the analysis separately for six major immigrant groups—Mexican, Cuban, other Hispanic, Asian, white, and black. He explicitly separated cohort effects from human capital accumulation effects, and found that within-cohort earnings growth was found to be much slower than what would be predicted by a simple cross-section study. Specifically, the cross section approach overestimated the growth rate of country-specific human capital by as much as 20 %. To further support his conclusion that the cross section approach overestimates earnings convergence substantially, Borjas provided detailed data showing that the relative earnings of many immigrant cohorts experienced little change and sometimes even a slight decline between 1970 and 1980.

Borjas (1985) suggested another source of bias in estimating the slope of the path of country-specific human capital accumulation even if the omitted variable problem is addressed: *return migration*. Because the least successful immigrants are more likely to return to their native countries, the sample of remaining immigrants overstates the success of immigrants in general.

## 4.6 Addressing Borjas' Critique

Following Borjas' (1985) critique, the empirical literature on immigrant assimilation recognized the need to separate the cohort effects from the accumulation of country-specific human capital. It is, of course, impossible to eliminate all omitted variable bias because there are never enough data and degrees of freedom to capture all potential influences in a regression model.

Chiswick (1986) used detailed data from the US Immigration and Naturalization Service, the 1970 and 1980 censuses, and the 1976 *Survey of Income and Education* to examine how immigrant skills have changed over time. He reasoned that difficult-to-quantify immigrant characteristics such as skill, work experience, and talent could be detected by comparing earnings profiles of immigrants with natives of the same racial and ethnic origin, or by comparing the profiles of immigrants relative to other immigrants. Chiswick found that unexplained earnings differences varied by country of origin, with UK and Canadian immigrants to the USA earning the most and those from parts of Asia, Latin America, the Caribbean region and Africa earning the least. Chiswick concluded that, overall, the data suggested little change in the unmeasured components of skill for white non-Hispanic immigrants, but he did detect a slight decline for US immigrants from Mexico.

Borjas (1999b) and others estimated the regression

$$\ln W_{\ell\tau} = \beta_\tau X_{\ell\tau} + \delta_\tau I_{\ell\tau} + \varepsilon_{\ell\tau}, \quad (4.27)$$

in which  $W_{\ell\tau}$  is the wage of individual  $\ell$  in the census observed in year  $\tau$  ( $\tau = 1960, 1970, 1980, 1990, 2000$ , for example),  $X$  is a set of socioeconomic characteristics, and  $\varepsilon_{\ell\tau}$  is a random error term. The variable  $I_{\ell\tau}$  is a dummy set equal to one if individual  $\ell$  is an immigrant and zero otherwise. What has typically been found from estimating Eq. 4.27 using US data is that  $\delta_\tau$  has declined, typically going from positive in the earlier censuses (1950 and 1960, for example) to increasingly negative with more recent ones. This is taken as a confirmation that unobservable immigrant skills and human capital are lower for more recent immigrant cohorts.

The second strategy is to identify within-cohort (aging) effects. What researchers have done is to estimate Eq. 4.27 on a pooled sample that tracks cohorts over different years. The problem is, however, that the likelihood of the same person being interviewed across time periods is quite low. As Borjas (1985) pointed out, there is selective return migration and census sampling procedures have changed over time. Furthermore, there could be differences in labor supply, likelihoods of being self-employed, and rates of mortality, which will create additional cohort differences over time.

Borjas (1995) extended his 1985 study by adding the 1990 census to his analysis. He observed that the relative decline in wages across successive immigrant cohorts in the USA from the 1960s to the 1970s continued into the 1980s. After adjusting for changes in the wage structure between 1970 and 1990, Borjas estimated that the entry wage of immigrant cohorts arriving in the 1970s was 9 percentage points

lower than in the 1960s and the entry wage of cohorts arriving in the 1980s was 6 percentage points lower than in the 1970s. He found no tendency for the earnings of immigrant cohorts from the 1980s to overtake the earnings of native-born workers. In fact, Borjas predicted that the relative wages of post-1970 immigrants would remain roughly 15–20 % below those of natives over their entire working lives. Third, he predicted that Mexican and Asian immigrants who arrived in the 1980s would fail to even attain wage parity with ethnically similar natives.

Borjas and Friedberg (2007) show that over the 30-year (1960–1990) period there was a continuous decline in the relative earnings of new immigrants. More important, they found that the rate of wage convergence declined for more recent immigrant cohorts, as did the rate at which cohorts overtook even the earnings of their native counterparts from earlier migrations. Butcher and DiNardo (2002) earlier found that the decline in the mean relative wage of successive immigrant cohorts over the two decades between 1970 and 1990 was due to the increasing likelihood that new arrivals land in the very bottom of the native wage distribution. Other studies of US immigration who also find that the strength of income convergence has weakened for more recent immigrants include Duleep and Regets (1997), Funkhouser and Trejo (1995), LaLonde and Topel (1997), and Smith, Edmonston, and National Research Council (1997, Chapter 5).

Finally, Lalonde and Topel (1997) provide a more general model of immigrant assimilation and income convergence. They construct a model that addresses many of the alleged weaknesses of the Chiswick (1978) and Borjas (1987) models. Lalonde and Topel's model explicitly recognizes that the current wage earned by an immigrant from a particular arrival cohort depends upon his observable human capital characteristics, the rate of return available in the destination country for supplying those characteristics, the average level of unobservable characteristics for his cohort, current conditions in his occupation or industry, the amount of time members of his cohort have spent in the destination country, and the reward the destination country's labor market offers for supplying country-specific human capital. Lalonde and Topel emphasize, however, that assimilation can be difficult to confirm empirically because there are likely to be a multitude of other influences on relative immigrant earnings growth and existing data sets often preclude the researcher from being able to adequately control for those influences.

## 4.7 Conclusions

In this chapter we have surveyed the theoretical work over the last 30 years on how immigrants will differ from native-born workers. The literature can be conveniently divided into two parts—studies on *immigrant selection bias* and studies on *assimilation*. The fundamental point made in the literature on selection bias is that immigration is by nature an act of self selection. The fundamental points made in the literature on assimilation is that (1) assimilation is in part a form of human capital investment, and (2) how well immigrants fare in the labor market *relative to*

*natives* depends on how well they are able to invest in human capital. Empirically, the evidence suggests that immigrant selection does influence both *why* people migrate and *who* decides to migrate. However, the evidence is very tentative and of questionable accuracy.

We have already discussed the difficulties of finding data to perform statistical tests of hypotheses related to immigration. When we consider the issues brought up in this chapter, which require detailed data on the distributions of human characteristics among immigrant groups and the populations of source and destination countries, the potential for data shortcomings to bias statistical analysis becomes even more serious a problem. Perhaps we can best conclude, as we did at the end of the previous chapter, by calling for much more theoretical and empirical work. The few statistical studies we have do not use enough sources of data, enough different samples, enough different statistical models, or the most modern statistical methods for anyone to claim any degree of “robustness” in the available statistical results. Worse yet, there is not much consistency across the results from the small number of empirical studies that we do have. At best we have “suggestions.” It is up to future researchers to do the empirical work to upgrade these “suggestions” to serious hypotheses.

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# **Chapter 5**

## **The Effects of Immigration on the Destination Economy: The Theory**

**Abstract** When immigrants enter a country, they affect the destination country's economy in a variety of ways. This chapter surveys theoretical research since the 1960s on the macroeconomic and microeconomic effects of immigration on the destination country. Macro effects are measured by an "immigration surplus" that is usually positive but very small. The "micro" studies have focused on the distributional effects, and these have been substantial in magnitude. Estimates of how immigration affects natives depends on the assumptions of the model used to frame the analysis, such as the production function, number of goods produced, local immigrant consumption, native migration, and the time frame. We appraise the traditional labor market model's predictions, and then we move to more detailed models that present a more nuanced story. Finally, this chapter examines how economists have begun to model immigration from a longer-run perspective, which requires the explicit recognition of "feedback mechanisms" that supplement the initial labor market effects covered in the traditional models.

### **Chapter Overview**

There have been few issues in economics that stir up as much controversy among politicians, business owners, consumers, and voters as the debate on the impact of immigration on the destination country. Economists have tried to answer some of the questions that seem to concern so many people, such as the following:

1. Does immigration raise or lower average destination country income?
2. Which native-born people in the destination country enjoy income gains, which suffer losses, and how much are the gains and losses?
3. How does immigration affect product markets in the destination economy?
4. How do answers to the above differ for the short run versus the long run?

The first question concerns the aggregate, or macro, effects of immigration. The second is *distributional*, or *micro*, in nature. The second question has received the most attention and is at the heart of most political debates. The third question has both macro and micro implications in that immigration affects aggregate demand as well as the demand in specific market segments in the destination economy. The *demand* effect of immigration has been discussed in the business press, but it has been left largely unaddressed by the mainstream economics literature. This is a major failure of this field of economics, especially because the shifts in demand, and thus production, change people's lives and their culture. There is little doubt that much of the emotion surrounding immigration is directly related to these changes in economic and social structures that immigration is perceived to cause. Finally, the fourth question concerns the *dynamic* effects of immigration that determine the full consequences of immigration in the long run.

This chapter surveys the theoretical literature on the first three questions. The very important dynamic effects will be discussed in Chap. 7. As we compare and contrast models developed since the 1980s, it will be clear that there are still many unanswered questions. To some degree, the controversy that has engulfed political discussion also characterizes discussion among economists. This chapter will hopefully contribute to moving the debate within our profession towards accurate and useful conclusions that will, ultimately, also serve to enlighten the public debate.

## 5.1 The Macro Effects of Immigration

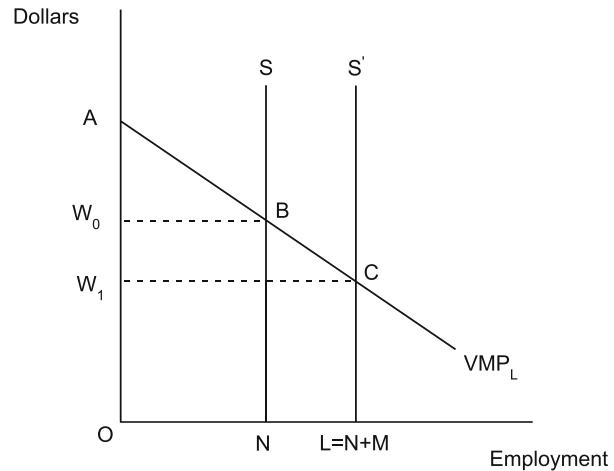
Traditional economic analysis of immigration shows that when immigrants enter the country, some native-born groups gain while others lose. Traditional economic analysis has focused on trying to determine whether the sum of the gains and losses is a positive or a negative number. To arrive at such a number, economists must set the time frame of their discussion, model the supply of native labor and other factors, and model the economy's production function.

There will be several important themes to the discussion below. Most models conclude that some natives of the destination country *must* lose welfare for others to gain welfare. Second, macro effects depend critically on the shape of the economy's production function. We develop five specific cases to illustrate this literature.

### 5.1.1 Homogeneous Labor with Fixed Capital

We first use the standard model presented in the Introduction to this section of the book, in which capital is fixed and native-owned, a given quantity of immigrants moves from a source country to the destination country, and immigrant and native-born workers are perfect substitutes. Specifically, we define a production function

**Fig. 5.1** Labor market equilibrium with immigration



$Q = f(L, K)$ , in which  $Q$  is the quantity of output,  $L$  is the quantity of labor input, and  $K$  is the quantity of capital input.  $L$  is the sum of native-owned labor,  $N$ , and immigrant-owned labor,  $M$ . Furthermore, we assume that labor and capital are complementary, labor supply is perfectly inelastic, markets are perfectly competitive, and there are constant returns to scale in production.

If the economy's production function  $Q = f(L, K)$  exhibits constant returns to scale and there is perfect competition in all markets, then (a) output changes in exact proportion to a simultaneous change in all inputs, and (b) the economy's total product is fully distributed to the owners of the factors used in production, in this case the labor force and owners of capital. That is,

$$Q = MP_L(L) + MP_K(K), \quad (5.1)$$

where  $MP_L$  and  $MP_K$  are the marginal products of labor and capital, respectively. This latter relationship, which depends critically on the assumptions of perfect competition and constant returns to scale, is known in the economics literature as *Euler's Theorem*. In terms of the price of output, the total value of the economy's output is

$$P \times Q = (P \times MP_L)L + (P \times MP_K)K. \quad (5.2)$$

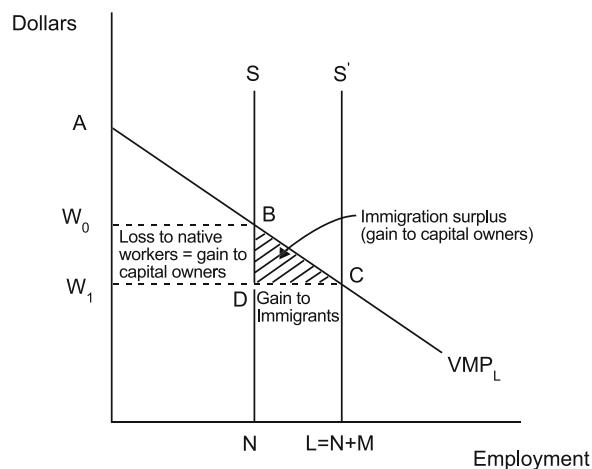
Furthermore, the assumption of profit maximization by producers implies that  $w = P \times MP_L$  and  $r = P \times MP_K$ , and thus

$$PQ = wL + rK. \quad (5.3)$$

This relationship implies that firms earn zero economic profit.

We can analyze how immigration affects national income by a simple graph of the labor market. At point B on Fig. 5.1, employment consists of  $N$  natives, each

**Fig. 5.2** Measuring the immigration surplus



earning a wage of  $W_0$ . National income equals the area under the value of marginal product of labor ( $VMP_L$ ) curve for  $N$  workers. While not shown, the rate of return to capital is  $r_0$  and  $K_0$  units of capital are used. Thus, national income =  $w_0N + r_0K_0$ , or area OABN.

Suppose there is an *exogenous* increase in labor supply of  $M$  immigrants (“supply-push” immigration). This assumption is in contrast to *endogenous* (“demand-pull”) immigration, where an increase in destination country labor demand raises the wage, thus inducing an increase in the quantity supplied of immigrants. The exogenous supply curve shift to the right to  $S'$  leads to a total of  $N + M$  workers being employed. Greater competition causes the wage to fall to  $w_1$  and because the labor force is larger, more output is made and there is more consumption. National income rises to OACL. Assuming there is no output lost from absorbing immigrants, such as training immigrants or legal costs, the country’s economic pie expands.

Figure 5.2 illustrates how natives are affected by immigration. Specifically, the increase in national income attributable to immigration is the sum of triangle BCD and rectangle NDCL (equivalent to  $w_1 \times M$ ). The area NDCL, which is claimed by immigrants, usually accounts for most of the destination country’s income gains. Natives claim area BCD, which is called the *immigration surplus*. As long as the demand curve slopes downward, there is an immigration surplus and native factor owners *as a whole* gain from immigration.

According to the traditional labor demand model of immigration, not all natives share in the immigration surplus. From Fig. 5.2, native workers do not gain welfare because they now are paid a lower wage of  $w_1$  and their employment is assumed to remain unchanged. Native workers lose national income equaling the area of rectangle  $w_0w_1BD$ . Native *capital* owners, on the other hand, capture the area  $w_0w_1BD$  formerly earned by native workers. And native capital owners gain the

surplus BCD. Therefore immigration causes native workers to lose welfare and native capital owners to gain welfare, and the gains to capitalists are greater than the losses suffered by workers. Immigration redistributes income from the destination country's native labor force to its capital owners.

There are three important implications of the immigration surplus. First, a surplus requires redistribution of income; some native groups lose income in order for the nation as a whole to gain. Second, natives lose if they substitute for immigrants, but not if they are owners of the complementary factor, capital. Gains from immigration and the adverse effects on substitute natives are directly related. Third, the immigration surplus results from a downward sloping demand curve. The flatter is the curve the greater is the fraction of national income gains enjoyed by immigrants. If the demand curve is perfectly elastic, there is no surplus, and all gains go to immigrants.

The surplus depends upon a number of factors. As a fraction of national income ( $Q$ ), the immigration surplus can be shown to be equal to

$$\frac{\text{Surplus}}{Q} = -1/2(s \times e \times m^2), \quad (5.4)$$

where  $s$  is labor's share of national income,  $e$  is the *factor price elasticity*, and  $m$  is the share of the labor force comprising immigrants. The factor price elasticity is the percentage change in the wage relative to the percentage change in labor supply. If immigration induces a very large (small) wage decline, the elasticity is very high (low). With two inputs, the elasticity equals  $(1 - s)^2\eta$ , where  $\eta$  is the price elasticity of labor demand. If the labor demand curve is steep (flat), the factor price elasticity will be high (low) and immigration will induce a relatively large (small) loss in national income to native workers.

Hamermesh (1993) reports that  $e$  is about  $-0.3$  in the USA, which means that a 10 % increase in the size of the labor force reduces the wage about 3 %. A low factor price elasticity results from a high degree of substitutability between labor and capital, whereas a large elasticity results from labor-capital complementarity. If we then suppose that  $s$  is equal to 0.7 and  $m$  is equal to 0.1 (which is approximately what the immigrant labor share has been in recent years), the surplus is national income multiplied by 0.00105, or about 1/10 of 1 % of national income. According to the *Economic Report of the President*, in 2011, nominal US GDP was \$15.088 trillion, which makes the US immigration surplus \$15.84 billion, or just under \$51 per capita (based on 2011 population of 311.59 million persons). A result such as this may lead you to ask why the net welfare gains are so small. One reason is that the factor price elasticity is very small in absolute value. If the wage is insensitive to changes in labor supply, then immigration won't have much effect on the wage, and capital owners stand to gain little. Another reason is that immigrants make up only a small fraction of the labor force. The biggest influence on the relative size of the immigration surplus is the factor price elasticity. If  $e = -0.3$ , then the surplus as a fraction of national income will tend to be very small.

The small immigration surplus masks huge changes in how the destination country's economic pie is distributed by immigration, however. In general, the labor income that is transferred from workers to capitalists, the area  $W_1W_0BD$ , is much larger than the surplus area  $BDC$ . For example, Borjas (1999a) shows that, expressed as fractions of national income, the loss to native workers and gains to capital owners are roughly equal to

$$\frac{W_1W_0BD}{Q} = s \times e \times m(1 - m) \quad (5.5)$$

and

$$\frac{W_1W_0BD + BDC}{Q} = -s \times e \times m\left(1 - \frac{m}{2}\right). \quad (5.6)$$

Applying these formulas to 2011 US data, the loss to native workers is about 1.9 % of GDP, or \$286.67 billion, whereas the gain to capitalists is roughly 2.0 % of GDP, or \$310.76 billion. The immigration surplus is the difference between these two numbers, \$24.09 billion. While the net surplus is very small, the distributional effects are substantial. This may help to explain why many labor groups object to immigration while business owners often welcome it.

### 5.1.2 Homogeneous Labor with Variable Capital

In the previous case, an immigration surplus arises because immigration lowers wages. That result assumed a constant supply of capital and other factors. What happens if capital supply is variable? We begin by examining the polar opposite situation of perfectly elastic supply of capital.

Suppose that that capital is available both domestically and internationally and that we are looking at a very small country so that capital prices are entirely determined by the world market and the supply of capital to the small country is perfectly elastic. Assume that the production function is of the convenient Cobb-Douglas form<sup>1</sup>:

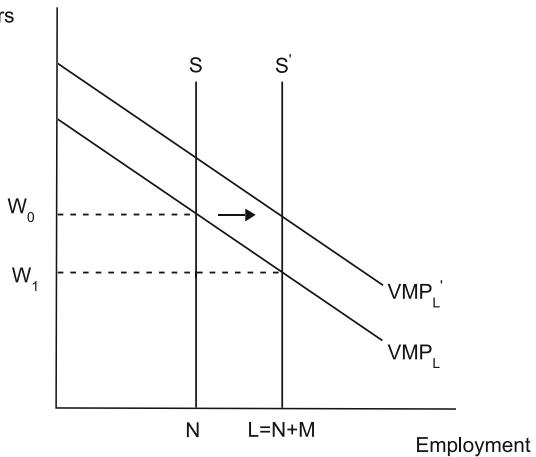
$$Q = AK^\alpha L^{1-\alpha}. \quad (5.7)$$

When markets are competitive, the value of the marginal product (VMP) in equilibrium is the factor price and

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<sup>1</sup>The Cobb-Douglas function is “convenient” because it exhibits constant returns to scale, diminishing returns to each individual factor of production, and the exponents represent the factors’ shares in national output.

**Fig. 5.3** Capital adjustments      Dollars  
to immigration



$$w = (1 - \alpha)AK^\alpha L^{-\alpha} = (1 - \alpha)A \left(\frac{K}{L}\right)^\alpha \quad (5.8)$$

and

$$r = \alpha AK^{\alpha-1} L^{1-\alpha} = \alpha A \left(\frac{K}{L}\right)^{\alpha-1}. \quad (5.9)$$

Note that the partial derivatives of wages and capital returns with respect to labor supply  $L$  are, respectively,  $\partial w/\partial L < 0$  and  $\partial r/\partial L > 0$ . Therefore, by increasing  $L$ , immigration pushes down the wage  $w$  and raises the return to capital  $r$ . Under the small country assumption and the free flow of capital, the fact that immigration tends to raise  $r$  above the world level in the small country means that capital flows to the destination country. Because labor and capital are complementary, more capital boosts overall labor demand. The wage thus rises, which attenuates the initial adverse effect of immigration on native workers.

The capital stock rises until there is zero profit, i.e. the return to capital has fallen back to the world level. According to Eq. 5.9,  $K$  rises by enough to reduce  $r$  and to restore the capital-labor ratio to its pre-immigration level. According to Eq. 5.8, however, if  $(K/L)$  returns to its pre-immigration level, so must the wage. This leads to a very different implication for the effects of immigration on native workers and capitalists: when the supply of capital is perfectly elastic, immigration will not alter factor prices in the long run and the immigration surplus is zero.

Figure 5.3 illustrates the above story. Initially, supply-push immigration of  $M$  workers lowers the wage to  $w_1$ , but this stimulates the inflow of capital and leads to greater labor demand. The labor demand curve shifts from  $VMP_L$  to  $VMP_L'$  and the wage returns to its pre-immigration level ( $w_0$ ). This example suggests that in a small country in the global economy, (a) the immigration surplus is at best only temporary, and (b) the more easily capital flows between countries, the greater are the

gains to immigrants. These results depend, critically, on the “small country” assumption, however. If the immigration flows are very large and the destination country is a major player in the global capital market, the world return to capital is unlikely to remain unchanged in the face of growing capital demand from the destination country.

This example also implies that immigration has complex macroeconomic effects. For example, the inflow of 2.55 million immigrants (permanent plus temporary) to the USA in 2009, as reported by the OECD, is likely to have stimulated the inflow of foreign capital to the US. Economists have provided many explanations for the huge inflow of foreign capital to the USA over the past two decades, and the equally huge trade deficits that balance those capital inflows. Immigration has not been brought into the discussion very often. Perhaps it should be.

### 5.1.3 Heterogeneous Labor

The cases discussed above both assumed that natives and immigrants are identical in production. Suppose, instead, that there are just two inputs to the production function, namely two different labor inputs: skilled labor ( $L_S$ ) and unskilled labor ( $L_U$ ). Assume, for the time being, that skilled (unskilled) natives are perfect substitutes for skilled (unskilled) immigrants. Suppose, furthermore, that labor supply is perfectly inelastic, and that there are constant returns to scale. The production function is

$$Q = f(L_S, L_U) = f\{[bN + \beta M], [(1 - b)N + (1 - \beta)M]\}, \quad (5.10)$$

where  $b$  and  $\beta$  are the shares of skilled workers among natives and immigrants, respectively.

If immigrants and natives are equally skilled, so that  $\beta = b$ , immigration has *no* effect on wages. However, if skill levels differ, immigration moves wages in *opposite* directions. For example, if immigrants are more skilled, immigration makes skilled labor relatively more abundant and unskilled labor less so. These changes in relative labor supply, along with complementarities in production between skilled and unskilled labor, cause the skilled wage to fall and the unskilled wage to rise. Skilled workers suffer a loss in income, but unskilled workers gain.

Borjas (1995b) shows that the immigration surplus depends on the disparity in skill distributions. If this case is correct and the goal of immigration policy is to maximize the immigration surplus, then immigration should be restricted to those workers who *differ most* from natives. Since, for example, Canada’s workforce is relatively skilled, Borjas’ model prescribes that, all other things equal, Canadian immigration policy should restrict the admission of skilled workers. The fact that Canadian immigration policy seeks to accomplish exactly the opposite with its near open invitation to highly educated immigrants makes this model suspect. What is it missing?

### 5.1.4 *Heterogeneous Labor with Constant Capital*

Suppose next that the supply of capital is perfectly inelastic. In this case, there is a surplus even when natives and immigrants have identical skills. Borjas (1995b) shows that, in this case, the surplus depends on the fraction of the destination economy's workforce that is unskilled and the share of national income accruing to unskilled labor, provided the capital stock is brought into the analysis. The arrival of immigrants increases the labor supply, and if labor and capital are complementary, capital owners gain regardless of the skill level of immigrants. But the outcome for labor depends on the relative skill levels of immigrants and natives. For example, suppose the native workforce is primarily skilled and the immigrant labor pool is primarily unskilled. Then, immigration causes the unskilled wage to fall and the skilled wage to rise. Thus, native owners of capital and native skilled workers benefit from immigration, while native unskilled workers lose.

### 5.1.5 *Heterogeneous Labor and Perfectly Elastic Capital Supply*

We now extend the previous case to allow for capital adjustments. Assume, again, that we are analyzing a “small country,” and capital’s price is set exogenously on the world market. Immigration will trigger capital inflows, and the elastic supply of capital keeps wages invariant to changes in the relative supply of immigrant labor. In the case where the native workforce is primarily skilled, the surplus is largest if all admitted immigrants are unskilled. In general, immigrant skills *must* be different from native skills, on average, in order for the destination country to benefit from the admission of immigrants.

### 5.1.6 *How Big Is the US Immigrant Surplus?*

Most measures of the immigrant surplus have assumed theoretical models, which were then used largely for “back of the envelope” calculations. A more detailed study of immigration by the National Research Council (NRC) of the National Academy of Sciences estimated that the net benefits to the United States from immigration in the 1980s were between \$1 and \$10 billion per year, a minuscule fraction of total US GDP (National Research Council Panel on the Demographic and Economic Impacts of Immigration, 1997). A study by the RAND Corporation reaches similar conclusions: “While the effects on the least educated workers may be substantial, the economy-wide effects are small” (Schoeni, 1997).

Freeman (2006) estimates that a 10 % increase in immigration will generate an increase in GDP of only about 0.2 %. According to Freeman, native owners of capital and workers in professions that complement immigrants gain 4.2 % in

national income, while workers who compete directly with immigrants lose 4 %. These small effects of immigration on the US economy mirror the results of the many studies that have estimated the costs of immigration.<sup>2</sup>

Some researchers have estimated the size of the surplus through more complex computer simulations, among others Borjas (1995a), Borjas, Freeman, and Katz (1997), and Johnson (1997). While the simulations are quite sensitive to assumed parameter values, they indicate that regardless of skill distributions, the measured impact of immigration is always very small.

To summarize, native-born residents in the destination country will in aggregate benefit from immigration depending upon how responsive factor prices are to immigration, native/immigrant skill disparities, and the adjustability of capital. In practice, estimated immigration surpluses tend to be very small relative to GDP. The small immigration surplus may explain why the national debate on immigration tends to focus much more on how certain native-born groups' shares of the destination country's economic pie change as a result of immigration. These "distributional" effects have been much larger than the net effect of immigration.

## 5.2 Detailing the Distributional Effects of Immigration

The macro effects of immigration have really been a "sideshow" in the theory of how immigration affects the destination economy. The spotlight has been on how the gains and losses from immigration are distributed across different factor groups, with particular interest paid to how native-born workers are affected by immigration.

The traditional models have made many strong assumptions that may have biased the conclusions. A number of studies have extended the traditional model of immigration to account for other potential determinants of how immigrants cause the economic pie in the destination to be split among the various categories of native factors and immigrants.

### 5.2.1 *The Johnson Model (1980)*

Johnson (1980a, 1980b) extended the basic models above to the case where the immigrant and native skill distributions differ. Johnson was interested in policy implications, particularly those relating to the control of unauthorized immigration. His model focuses on the distributional effects of unauthorized immigration of low-skilled workers to a market comprising both high- and low-skill native workers. Johnson's model explains the impact each additional immigrant has on the wage

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<sup>2</sup> See the survey of this evidence by Friedberg and Hunt (1995).

and employment of native low-skill and high-skill workers, the returns accruing to native capital owners, and the level and distribution of national income.

Johnson's (1980a, 1980b) model suggests that different native-born groups in the destination country will be affected differently by immigration. High-skill workers and owners of capital are likely to be complementary to low-skill immigration, and they are, therefore, likely to gain from immigration. However, low-skilled immigration may have certain fiscal effects that could harm high-skill workers and owners of capital. Specifically, if immigration results in unemployment of low-skill native workers, greater unemployment compensation must be paid. When the tax system is progressive, high-skill workers and capitalists (who typically have higher incomes) may bear the tax burden imposed by higher unemployment compensation.

Interestingly, Johnson speculates that a higher wage gap between low- and high-skill workers and the relative increase in the returns to high-skill occupations may encourage a larger share of the population to invest in higher levels of education and training. Johnson suggests that the skill distribution may be *endogenous* to immigration, not unlike the capital inflows to immigrant-intensive industries discussed earlier.

### 5.2.2 *The Altonji and Card Model (1991)*

Altonji and Card (1991) extended Johnson's analysis to include two additional features of the labor market: (1) skill diversity within the immigrant pool; and (2) the endogeneity of local demand to immigration. In contrast to Johnson's model, which is of a national economy, Altonji and Card's model is of a city economy. Immigrants can be skilled or unskilled in their model, but natives and immigrants are perfect substitutes within each skill category.

By making product demand endogenous to immigration, Altonji and Card allow for immigrants to buy at least part of their own output, which obviously attenuates any adverse wage and employment effects of immigration. They point out that this feedback effect of immigration on wages through local demand is important because many goods produced locally are nontradable, that is, because transport costs and trade barriers prevent perfect product arbitrage between countries, the location of workers affects the location of product demand. Altonji and Card write "The observation that the demand for labor with a local economy arises in part from the demand for location-specific goods and services implies that a partial equilibrium model of the labor market is potentially misleading" (Altonji & Card, 1991, p. 203). This recognition of the product market effects of immigration foreshadows more recent work, discussed below.

The Altonji and Card model hypothesizes that the effects of immigration on the outcomes of unskilled natives depend upon the skill distributions of the local population and pool of new immigrants, the production function, the output demand and labor supply functions, and the fraction of the locally produced good that is

consumed locally. In addition, the model includes skill diversity within the immigrant pool and characteristics of product demand as other influences. Immigration shifts the labor supply and consumer demand curves, creating wage and employment changes for both skill groups. As in Johnson (1980a, 1980b), the wage and employment effects of immigration depend upon labor demand and supply elasticities and skill shares.

The Altonji and Card model yields three important insights. First, immigration need not always have adverse effects on natives. For example, if skill distributions are identical and all local output is consumed locally, then immigration leaves wages of unskilled natives unchanged. For immigration to affect wages, skill distributions must differ and at least some of the locally consumed products must be imported and locally produced goods must be exported. In general, the adverse wage and employment effects experienced by natives are reduced the larger is the fraction of locally produced goods that are consumed locally.

There are three limitations to the Altonji and Card model. First, it does not allow for internal migration as a response by natives. While the model allows for a reduction in per capita labor supply when the wage falls, it assumes the total native population remains unchanged. It is likely, however, that when the unskilled wage falls, unskilled natives will leave. Such out-migration tends to reduce the adverse wage effect of immigration. Finally, the local labor market is assumed to always clear. However, in the market for unskilled labor there could be obstacles to market clearing, e.g. minimum wages, fixed welfare benefits, or unionization. These constraints are likely to dampen wage effects and accentuate employment effects.

### 5.2.3 *The Ottaviano and Peri Model*

Ottaviano and Peri (2005, 2006, 2008) demonstrate that the specific form of the production function can greatly influence the predicted distributional effects. First, they argue that immigrants and natives will not be perfect substitutes. Even within the same occupation or at the same levels of education or experience, the human capital endowment of a native differs from an immigrant's because of source/destination country differences in education, language, culture, and family environment. They write, "...Chinese and American cooks do not produce similar meals, nor do Italian and American tailors provide identical types of clothes" (Ottaviano & Peri, 2005, p. 13). Ottaviano and Peri's model treats natives and immigrants as distinct inputs both across and within skill levels. Second, Ottaviano and Peri point out that when a country experiences immigration, labor supplies in many different occupations will increase. It is thus important to recognize interrelationships in production across different skill levels.

Ottaviano and Peri follow an approach used earlier by Borjas (2003), which defines a labor market as a national market for workers comprising a *skill cell*. A skill cell is defined to include workers with  $k$  years of education and  $j$  years of experience. Within a cell, natives (immigrants) are perfect substitutes for other

natives (immigrants), but natives are imperfectly substitutable for immigrants. Across cells, workers will be complements if they have different levels of education, but substitutes if they have the same level of education. In Ottaviano and Peri's study, there are precisely 32 different skill cells—4 educational categories  $\times$  8 experience categories. The four educational categories include (1) incomplete secondary education, (2) secondary school graduates, (3) some post-secondary education, and (4) university graduates. Workers within each education category are grouped into eight different experience intervals of 5 years between 0 and 40. Within each cell, there are two inputs—natives and immigrants—making for a total of 64 different labor inputs.

Previous literature mostly assumes a fixed capital stock and treats immigration as an unexpected and instantaneous shock. In reality, immigration is an ongoing and anticipated process and capital adjusts continually to actual and anticipated flows of new immigrants. Ramsey (1928) and Solow (1956) show that when there is international capital mobility and/or domestic capital accumulation, a flexible market economy will operate on its *balanced growth path* in the long run. When an economy is on its balanced growth path, the capital–labor ratio rises at a constant rate equaling the growth rate in technology. We saw earlier that when the supply of capital is perfectly elastic, factor prices in the long run are invariant to immigration. This is because the economy is operating on its balanced growth path. Ottaviano and Peri's model permits immigration shocks to cause the capital–labor ratio to fall below its long run trend and for the average wage to fall. This stimulates growth in the capital stock, boosts labor productivity, and, in the long run, restores the pre-immigration wage.

Ottaviano and Peri point out that most of the immigration literature tends to focus only on the short run effects within one labor market or, in their terms, skill cell. The literature has assumed that workers in other cells are not impacted, i.e. there are no interrelationships in production across cells. Furthermore, previous studies have customarily assumed that natives and immigrants within a skill category are perfect substitutes. If workers across cells are interrelated in production and if there are capital adjustments, then there are additional effects on wages. These effects include as follows.

### 5.2.3.1 Temporary Effects on the Capital–Labor Ratio

Initially, the capital–labor ratio falls, which reduces labor productivity and the wage. As the ratio returns to its balanced growth path, however, productivity and the wage return to their pre-immigration levels.

### 5.2.3.2 Positive Feedback Effects on Workers in Different Education Cells

It is presumed that workers with different levels of education are complementary to the workers comprising the cell experiencing immigration. Immigration to one cell

boosts the productivities of workers in the other cells, which in turn boosts the productivity of workers in the first cell. This effect is bigger the less substitutable workers are across different educational categories.

### 5.2.3.3 Negative Feedback Effects on Workers That Have the Same Education, But Different Experience

While workers within a cell are substitutes for one another, workers in other cells are substitutes as well, but the substitutability is lower. Immigration thus lowers the productivities of workers in the other cells, which then feeds back negatively on the productivities of native-born workers in the first cell.

Ottaviani and Peri also point out that when a country experiences immigration, over time the new immigrants begin flowing into many different skill cells. The strength of this effect depends upon how substitutable workers are across educational categories, as well as the pre-immigration size of the labor force. Also important are the effects generated by short- and long-term changes in the capital-labor ratio that occur in response to an increase in the labor force.

## 5.3 Long-Run Adjustment Processes

Exogenous immigration shocks lead to both short- and long-term distributional effects on the destination economy. The long-term effects differ from the short-term effects because economies adjust to immigration shocks in many ways. Wage and employment changes trigger many other changes throughout the economy, some right away, others in later periods. Above, Johnson (1980a, 1980b) and Ottaviano and Peri (2005, 2006, 2008) discussed the adjustment of capital stocks, and Altonji and Card (1991) discussed local consumer demand. There are other adjustment processes that may occur. One of the most-often noted adjustments is that native workers react to the wage and employment changes induced by the arrival of immigrants and migrate out of the region where the immigrants settle.

### 5.3.1 Internal Migration Responses

Borjas (2006) presents a model of the regional wage structure that explicitly includes native migration responses to immigration. Borjas' model shows how internal migration spreads the wage impact of immigration from the local labor markets to the national labor markets.

Borjas assumes that even in the absence of immigration there could be excess supply or demand of native workers in each region during any period, and there will generally be migration responses of native workers to imbalances across regional

labor markets. He then introduces a permanent exogenous influx of immigrants each period, where each region receives the same number of immigrants. Immigrants are assumed not to migrate internally. As a result, natives continue to make relocation decisions, but now they have two reasons for relocation: (1) relocation occurs in response to regional wage differences that would occur in the absence of immigration; and (2) relocation results from immigration-induced wage disparities. Borjas' model assumes that relocation induced by immigration occurs with a one-period lag. Wages respond immediately, but there is a lagged labor supply response because internal migration is a longer-run response to immigration. Not surprisingly, given Borjas' assumption of rational forward-looking native workers, the national wage prevails after all internal migration responses have occurred. The model concludes that over time, internal migration neutralizes the effects of the immigration shock on the regional wage structure.

### 5.3.2 Multiple Goods

Card (2005), Dustmann, Fabbri, and Preston (2005), Dustmann and Glitz (2005), and Gaston and Nelson (2000) argue that if an immigration shock alters the skill distribution, a one-good economy can only react to the shock through a change in its wage structure. When there are multiple goods, however, the economy will also adjust the mix of products it produces.

For example, consider a *small* (price-taking) open economy with two labor markets—skilled and unskilled—and two goods whose prices are set at world levels. Holding the goods ratio fixed, immigration of unskilled workers will in the short run drive down (up) the relative unskilled (skilled) wage. Since unskilled-intensive sector profits are higher, that sector will expand, pushing up the demand for unskilled labor and its wage. If immigration is not too large, wages will return to their old levels, and immigration affects only the *output mix*. The economy reacts to the increase in the supply of labor from immigration by expanding the sector that uses immigrants more intensively. This effect is known as the *Rybaczynski Theorem* in international trade theory, and this theorem is derived from the standard Heckscher-Ohlin model of international trade.

The Rybczynski theorem states that, in a neoclassical world of perfect competition, free international trade, two products, and two factors, the increase in one factor of production in a small country, all other things equal, causes that country to increase production of the good that uses that factor relatively intensively and decrease production of the other product. The result that for a small country the factor prices remain unchanged after the open economy adjusts its product mix is stated by Leamer and Levinsohn (1995) as the *hypothesis of factor price insensitivity*.

A formal derivation of this result is provided by Dustmann et al. (2005). Their model is a blend of a traditional labor market model and the Heckscher-Ohlin trade model. Accordingly, they assume two factors in the form of two types of

labor—skilled and unskilled. Also, like the simple Heckscher-Ohlin model of trade, they assume two traded goods. Furthermore, natives and foreigners are perfect substitutes in each skill class, there is no joint production, production in each sector operates under a different production function that exhibits constant returns to scale, and markets are fully competitive. Under their small country assumption, the return to capital  $r$  is determined in the world market. Dustmann et al. show that the effects of immigration on native-born outcomes differ dramatically depending on whether we use a traditional labor market model of distributional effects with a single-sector with two inputs, or we follow international trade economists and specify a model with multiple sectors and inputs. In effect, for a small country, immigration induces shifts in production that have the same effect as the inflow of capital; only this time the wage effects of immigration are muted by a shift to producing immigrant labor-intensive products.

### 5.3.3 *Choice of Technology*

There is another possible long-term response by firms. Acemoglu (1998) argues that even in the absence of relative wage changes, firms may adopt technologies that emphasize more the factor whose relative supply has increased. Suppose there is unskilled immigration. Then, firms may substitute technologies that require more intensive use of unskilled labor, which are likely to be less advanced. Lewis (2004) argued for example, that the 1980 “Mariel Boatlift” of some 125,000 relatively low-skilled Cubans to Miami induced local employers to adopt more unskilled-intensive technologies. Lewis (2005) also argued that during 1988–1993, manufacturers in cities where low-skill labor supply grew faster adopted automation technologies at slower rates. He observed cases where employers actually abandoned more capital-intensive technologies. If technology is endogenous to factor endowments, immigration is likely to trigger changes in choice of technology.

### 5.3.4 *The Demand Effect of Immigration*

The labor market model is not a good model of the overall effects of immigration because it makes the convenient “all other things equal” assumption in order to focus attention on the direct effects on wages or employment of the sudden arrival of immigrants. All other things *do not* remain the same when immigrants arrive in the destination economy, as suggested in the previous section where immigration-induced shifts in native workers, capital investment, and production were analyzed. The next section details another effect of immigration not captured by the traditional labor market model of immigration: When immigrants arrive, they become consumers as well as workers. That is, immigration shifts product demand in the destination country.

## 5.4 The Demand Effect of Immigration

Most models suppress the goods market by assuming either a “small” open economy where prices are set at world levels, or a closed economy with fixed prices. Prices are fixed either because immigration is very small or because product prices are simply not the focus of analysis. In general, however, immigration will trigger shifts in both the demand and supply curves for output. Immigrants are not only workers, they are consumers too. If immigrants spend at least part of their earnings locally, their consumption activities will stimulate the derived demand for labor. This link between goods supply and immigration is virtually untouched in the literature.

Also, if immigration boosts product supply, native consumers may benefit. Furthermore, if immigration cuts labor costs, product supply will rise and prices will fall. Thus, accurate measurement of distributional effects requires an analysis of product market reactions. The next sub-section details recent studies on the potentially substantial demand effects of immigration.

### 5.4.1 Say’s Law of Immigration

New immigrants spend their income on housing, food, and many other goods and services produced in the economy. New immigrants buy food, transportation, lodging, and other goods and services before they find a job. Thus, the demand for labor may rise even *before* the supply of labor does.<sup>3</sup>

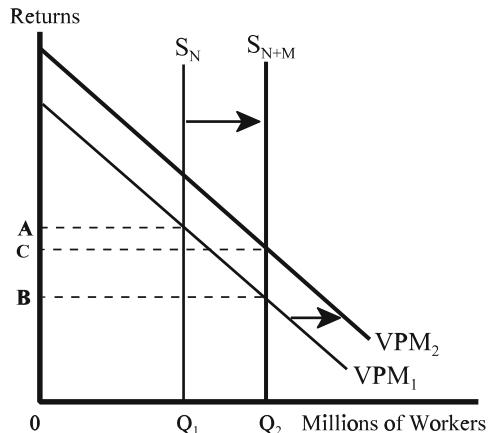
Immigrants thus cause the value of the marginal product (VMP) of labor curve to shift up when they take up residence in a country.<sup>4</sup> This rise in income will cause the demand curve for labor, the VMP curve in Fig. 5.4, to rise. In Fig. 5.4, the wage does not fall from A to B, as the static model of labor suggests. Rather, it is likely to fall to a lesser degree, say to C because immigrants cause the demand for labor to increase along with the supply of labor.

Technically, the demand effect of immigration requires that international trade is not complete in the sense that goods and services can be traded across borders without any cost or impediments of any sort. If trade is complete, then immigrants would already have been spending a portion of their income in the destination country prior to their arrival, and they would continue to spend the same portion of their total income in the destination country. Immigrants’ higher income after migrating to the higher wage country would lead to an increase in demand worldwide, only a small fraction of which would show up in the destination country. The world is not anywhere close to complete trade, of course. The fact that immigrants respond to large wage differences across countries suggests that products do not

<sup>3</sup>This point is made by Simon (1989).

<sup>4</sup>This diagram was first presented in Van den Berg (2004).

**Fig. 5.4** Immigration and demand for labor



move freely enough to equate prices of factors, as true free trade under competitive conditions would do, and, therefore, the assumption that not all goods are tradeable is appropriate. In reality, there are transport costs, marketing expenses, trade barriers, distributional rigidities, and many other factors that cause a home bias in consumption. When not everything can be transported across borders, then it matters where consumers are located. Thus, the movement of people shifts demand from one economy to another. Therefore, immigrants will spend a substantial portion of their income in the destination country, and this raises the derived demand for the labor services they supply. This suggests an extension of *Say's Law*: immigrant labor supply creates its own demand.

#### 5.4.2 Regional Migration and Local Demand

The effect of immigration on demand has attracted the attention of several regional economists. In three expository surveys of the regional economics literature, Greenwood and Hunt (1984), Greenwood and McDowell (1986), and Greenwood (1994) all discuss demand responses to migration. Greenwood and McDowell (1995) argue that demand is one of five channels through which migration can affect the employment and wages of native residents in the destination region or country. They note that greater immigrant labor supply can increase or decrease local aggregate labor income depending upon whether immigrants and natives are substitutes or complements and the specific factor price elasticities of demand. Furthermore, Greenwood and Hunt suggest that the extent to which immigration stimulates local demand depends upon the per capita wealth, nonlabor income, and capital holdings of immigrants. They sketch a general equilibrium model in which immigration influences demand, but the model is not used to generate predictions about how the demand-augmenting effects of immigration influence native labor market outcomes.

### 5.4.3 A Few Models of Immigrant Demand Effects

Mishan and Needleman (1966, 1968) first suggested a link between demand and immigration. They argued that immigration can create excess aggregate demand and will influence the balance of payments. However, they did not consider how immigrant consumption can influence the labor market. It was Harrison (1983) who explicitly sketched a labor market model where immigrant consumption influences native wages and unemployment.<sup>5</sup> He argued that (1) immigrant employment will lag consumption and initially contribute to consumption independently of employment, and (2) the effects of immigration on native labor market outcomes will depend on immigrants' relative propensities to consume and find work. According to Harrison's model, for immigration to cut native unemployment, immigrant propensity to consume and the native job-getting success rate must both be large.

Harrison concludes that there will be conflicting effects on native unemployment. On the one hand, native unemployment tends to increase because immigrants displace natives and native consumption falls. On the other hand, native unemployment will tend to fall because immigrants spend locally. Immigrants cause native unemployment to increase if, overall, natives have a higher propensity to consume and are less efficient at finding work. On the other hand, native unemployment falls if immigrants spend more of their income than natives do.

Hercowitz and Yashiv (2002) build on Harrison's (1983) point that immigrant labor market participation lags consumption, calling it "differential entry" into the labor and goods markets. Their model also includes product supply effects of immigration. Hercowitz and Yashiv's model was inspired by the mass migration of Jewish Russian immigrants to Israel after the collapse of the Soviet Union, mostly during the early 1990s. The model features an open one-good economy produced with three inputs—labor  $L$ , imported capital  $M$ , and an unadjustable input  $M_0$ —using constant returns to scale technology.

The key feature of Hercowitz and Yashiv's model is their incorporation of the goods market, and they are the first to derive a closed form, general equilibrium, solution for output price that links exogenous immigration to product prices. Product supply is a function of native population, immigrant labor and the relative price of domestic goods to imports. The higher immigrant labor supply increases the price of domestic goods because immigrants stimulate demand. At the same time, immigrants are substitutes for native workers, which lower production costs and domestic prices. Hence, the full effect of an immigrant shock on price is the result of two opposing price effects. Which effect dominates depends upon wage and price elasticities, labor and capital output shares, and the extent to which immigrants participate in the goods market relative to the labor market. For example, if immigrants delay getting jobs but participate strongly in the goods

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<sup>5</sup> Harrison's model was analyzed later in Simon (1989, pp. 226–28).

market right after arrival, the first effect will dominate and the relative price of domestic goods will rise, which reduces the negative effect of immigration on native wages.

#### **5.4.4 Bodvarsson and Van den Berg's Lexington Model**

Bodvarsson and Van den Berg (2006) and Bodvarsson, Van den Berg, and Lewer (2008) explicitly model the local demand effects of immigration. They point out that immigration's demand effect is determined by several factors, such as the relationship between natives and immigrants in production, immigrant remittance rates, wage elasticities, and whether there is demand-pull or supply-push immigration. Bodvarsson and Van den Berg (2006) consider the case where immigrants work exclusively in an export industry, but spend some portion of their earnings on locally-produced goods and services. This is a special case based on the experience of a small rural city, Lexington, Nebraska, in the USA. It is, however, a realistic case, one that has been repeated in many high-income countries where immigrants have come to dominate the labor forces of manufacturing plants recently moved from major urban areas to small rural cities. These plants often appear to "revive" the economies of these cities, which often struggle to maintain their populations with the mechanization of agriculture and the increasing concentration of populations in larger urban regions.

In their model, Bodvarsson and Van den Berg assume there are two labor markets—export and retail. The export labor market employs both natives and immigrants, who are perfect substitutes. The export good's price is set on the world market, out-migration is allowed to occur, and immigrants remit some earnings back to their native countries. In the retail market, only natives are employed, out-migration can occur, and price is endogenous. Retail workers spend all their earnings on the retail good. The analysis focuses on how immigration affects the retail labor market.

An important feature of Bodvarsson and Van den Berg's model is that retail consumer demand depends largely on labor earnings in the export sector. The model is used to derive two general equilibrium expressions, one for the retail product price and the other for the general equilibrium retail wage. Bodvarsson and Van den Berg use both expressions above to analyze the demand effects of immigration.

The model predicts that, if immigration is the result of an increase in demand for the export industry's products in the world market, there will be demand-pull immigration and retail wages and employment will definitely rise. The reason is that since immigration would be driven by higher export industry wages, immigration will always increase local retail demand and all workers in both sectors experience wage increases. On the other hand, if immigration is of the supply-push type, driven by conditions overseas and, therefore, exogenous to the local community, immigration depresses the export wage and results in

some out-migration. Hence, the number of consumers could rise, fall or stay the same. Also, because export wages fall with the increase in labor supply, each consumer has less to spend. The effect on the local retail sector, therefore, is ambiguous. Bodvarsson and Van den Berg find that, according to their model, retail wages and employment rise only if export labor demand is sufficiently wage elastic, the export wage elasticity of supply is relatively low, and the immigrant inflow is relatively large.

#### 5.4.5 *The More General Case*

While Bodvarsson and Van den Berg (2006) examine a realistic case to prove there are demand effects of immigration, the case is not general. Therefore, Bodvarsson et al. (2008), henceforth referred to as BVL, develop a model for the more general case where immigrants and natives are imperfectly substitutable and work in the same market where they consume.

BVL find that exogenous immigration will induce four effects on local prices, which they take as the indicator of changes in local demand. The first three—out-migration, a drop in native earnings, and a drop in immigrant's earnings—always cause the product price to fall. The fourth effect—more consumers—always boosts price. The net effect of immigration on product prices will be positive if the stimulus to consumer demand from more consumers dominates the depressing effects on demand due to out-migration and the drop in earnings.

Through the influence on product prices, BVL's model predicts that, in general, immigration also has an ambiguous effect on wages. Specifically, BVL's model can be solved to derive two separate effects on the wage: (1) an *input substitution effect* and (2) a *consumer demand effect*. The former effect results in a lower native wage because immigrants are substituted for natives. The latter effect could raise or lower the native wage depending upon whether immigration raises or lowers total local consumer demand. The marginal effect of immigration on the native wage is the *sum* of the input substitution and consumer demand effects. If a positive consumer demand effect dominates, the wage can rise. However, for the demand effect to dominate, there must be a relatively large immigration shock, little out-migration, and certain assumptions about the various elasticities must be satisfied. For example, if a city experiences an extraordinary inflow of immigrants who send few earnings home, labor supply elasticities are low, and demand elasticities are high, then the inflow of immigrants is likely to result in higher product prices and wages. BVL's model suggests that, in any case, immigrants have a substantial demand effect, and this demand effect helps to explain the mild effect immigration is so often found to have on wages in the destination country.

### 5.4.6 Further Models of Immigrant Demand Effects

Lach (2007) argues that exogenous immigration affects the composition of demand. He studies mass migration of Russian Jews to Israel during the 1990s after the fall of the Soviet Union. Lach models immigration as inducing a *size effect* and a *composition effect* on consumer demand and prices. According to the size effect, as immigrants flow into an area, assuming there is little or no out-migration, prices rise because there are more consumers. With the composition effect, if immigrants' socioeconomic characteristics (tastes, incomes, job search effort, etc.) differ from those of natives, then the price elasticity of demand can change. If immigration flattens the demand curve, prices will fall, whereas a steepening of the curve raises prices. Thus, the composition effect could either reinforce or offset the size effect.

Several researchers have considered the effects of immigration on the housing market. This research is important for several reasons. First, all immigrants need housing, and housing typically comprises a very substantial share of a household's consumption expenditures. Consequently, immigration is expected to exert significant effects on the area's housing market. Second, immigration-induced changes in area housing prices are expected to influence area labor market outcomes. Since real wages depend a lot on housing costs, immigration could lower real wages. Higher housing prices lower employment if labor supply falls due to out-migration responses. Third, if low housing costs and high housing quality are an amenity that is highly valued, immigration could induce out-migration (or deter future immigration) if it reduces the value of that amenity. Finally, the housing industry often employs immigrants, who would be expected to also consume the good they help produce. Thus, immigration to the industry will influence demand and supply in both the retail housing and housing labor markets.

Saiz (2003) analyzed the effects of unskilled immigration to a city on local rental prices and wages. The setting is the rental market in Miami following the Mariel Boatlift. Saiz assumes that a continuum of housing quality is available to all workers. Skilled workers earn more and they are willing to pay more than unskilled workers for a dwelling of the same quality. The unskilled wage varies inversely with the number of unskilled workers, but the skilled wage is fixed. Saiz shows that with skilled/unskilled differences in rental demand, the rental market will be segmented in the pre-immigration spatial equilibrium, with skilled workers residing in the relatively higher quality housing. Segmentation creates a "cutoff quality level" that separates skilled renters from unskilled ones. At this level, the unskilled bid the same as the skilled, but below the cutoff quality level skilled workers' bids are below unskilled workers' bids and above the cutoff quality level, skilled workers bids are higher than the unskilled workers' bids.

Suppose there is unskilled immigration, and unskilled immigrant demand is the same as unskilled native demand. Then, the relative demand for lower-quality housing rises. Saiz argues that there will be three effects. First, in the short run, the unskilled experience greater rent hikes than the skilled. This is because, if the range of qualities occupied by unskilled renters is small, prices must rise

significantly to induce an increase in supply. Second, unskilled renters displace skilled renters from dwellings popular with the unskilled, but at the lower end for the skilled. In other words, the immigration shock raises the “quality cutoff level” of housing. Since large price increases are needed to induce an increase in the supply of lower quality housing, those same increases would be expected to induce skilled renters to search for more upscale housing. Third, if an immigration shock spikes prices of low-quality housing in the short run, the resulting drop in the real unskilled wage induces out-migration of unskilled natives and, all other things equal, increases the nominal unskilled wage. If moving costs are negligible, the nominal wage should return to pre-immigration levels, as out-migration will continue until the marginal unskilled person is indifferent between any two locations. Consequently, the nominal and real unskilled wages should be invariant to immigration in the long run and most of the short-run impact of immigration on unskilled persons is felt through higher housing prices.

Saiz (2003) does not formally derive his third effect from his model, however, a shortcoming he corrects in Saiz (2007). In the latter paper, Saiz formally derives the rental price and uses it to analyze the effect of unexpected immigration on price in both the short and long runs. His model shows that the long-run response of the market includes supply adjustments and out-migration, which cause the impact of the immigration shock on rental prices to be less than in the short run.

Finally, we want to point the reader’s attention to a theoretical paper by Borjas (2009), which links the wage effects of exogenous immigration to the elasticity of product demand and market size. He develops a model of a two-good economy (a domestic good and an imported good) with homogeneous labor, and allows for the possibility of changes in product demand, both because immigration may have changed the price of the domestic product and because the size of the market changes. Consumers are assigned quasi-linear utility functions, labor supply is perfectly inelastic, and production obeys a CES function. In contrast to Bodvarsson et al. (2008), Borjas shows that the short run wage effect of immigration will always be negative and will partly depend upon product demand elasticity and the impact of immigration on market size. Missing from his model, though, is an internal migration response and the possibility that the stimulus to consumer demand from more immigrant consumers can dominate the depressing effects on demand due to out-migration and drop in earnings.

## 5.5 Concluding Remarks

Theoretical models of the distributional effects of immigration in the destination country have moved beyond the traditional labor market model, but many areas have not yet been investigated. One reason for the gap in economists’ research on immigration’s effects on destination countries is the long-standing split between labor economists and international trade economists on how to model distributional effects. Trade economists traditionally build multisector models of an open

economy, focusing their analyses on longer-term effects. In contrast, labor economists traditionally build single-sector models of a closed economy and focus their analyses on short-term effects. Labor economists tend to focus on how the production, labor demand, and labor supply functions influence short run distributional effects. In contrast, trade economists focus on the long-run features of post-immigration equilibrium.

Because of these distinct approaches, there are two big missing pieces to the theoretical puzzle. The first missing piece is a general equilibrium model that differentiates between short- and long-run adjustments to immigration and takes account of the product market effects of immigration for open versus closed economies, as well as for economies with single versus multiple goods sectors. For example, there is no model that examines the long-run effects of immigration when the destination economy experiences a complete set of secondary adjustments—capital responses, internal migration, changes in output mix, and technological and product market responses. We will return to the long-run consequences of immigration in Chap. 9, where we specifically address the effect of immigration on long-run economic growth.

The reason that it is so important for theoretical work in this area to continue is because, as we will see in the next two chapters, there remain large discrepancies between what theoretical models predict and what the data tell us regarding the wage and employment responses of native-born workers to immigration shocks. While it is tempting to dismiss these discrepancies as being due to data and econometric problems, theory also has a very important role to play in their resolution. If theory does not distinguish reasonable hypotheses, empirical work cannot ask the right questions or be confident in the answers.

We conclude this chapter by noting that economic theory has probably not induced enough reasonable hypotheses yet. Why has it taken so long, for example, to inspire models that look at the product demand effects of immigration when the field of macroeconomics has for decades linked employment to product demand? Seemingly trapped within the culture of labor economics, the economic theory of immigration has focused predominantly on the labor market effects, specifically, how immigration affects the wages of native-born workers. Policymakers, most likely, are more directly interested in what immigration means for tax revenue, government expenditures, school-age populations, and crime rates. Native workers want to know whether immigrants will displace them from their jobs, and homeowners want to know how immigration will influence housing values. Native residents also seem to be very concerned about how immigrants will change their culture and their communities. These latter issues go well beyond the labor market, of course, but economics can still say a lot about how economic forces will shape social change. The economics of immigration needs to address these issues.

In the next two chapters, we detail the empirical evidence on immigration's economic effects on the destination economy. Some of this empirical evidence was inspired by the models in this chapter. Some of the evidence was motivated by policymakers and social scientists seeking answers to broader questions about immigration.

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# Chapter 6

## How Immigration Impacts the Destination Economy: The Evidence

**Abstract** This chapter supplements the previous chapter by examining the available evidence on how immigration impacts the destination country's labor markets. In this chapter, we discuss studies that use one of the three popular statistical modeling approaches to estimating the labor market effects of immigration: the *spatial correlation method*, the *production function method*, or the *skill cell method*. The spatial correlation method exploits geographic variation in immigrant concentrations and yields estimates from regressions of labor market outcomes on those concentrations. The production function method produces estimates of immigration's impact through the identification of factor price elasticities. The skill cell method partitions the national labor market into measured skill categories and estimates the impact of exogenous immigration to those categories. Studies applying the production function and spatial correlation methods show that immigration has little or no impact on native-born wages or employment, while the skill cell method suggests more substantial impacts, at least in the short run.

### 6.1 Introduction

Since the late 1970s, many researchers have estimated the effects of immigration on destination country labor markets. In their meta-analytic assessment of the empirical literature, Longhi, Nijkamp, and Poot (2005) note more than 350 estimates of the elasticity of the native wage with respect to the relative supply of immigrant labor. The empirical literature on immigration's impact on the labor market is much larger than the empirical literature on the determinants and composition of immigrant flows. Perhaps wages and employment are what the public and policymakers are primarily interested in, and economists have simply responded to the demand for analysis by providing estimates of immigrants' effects on destination country labor markets. The public and policymakers in destination countries are probably concerned about other issues related to immigration, like government expenditures,

tax receipts, law enforcement, education, and other social changes, but, given that it has been the field of labor economics that has most enthusiastically embraced the issue of immigration, it should not come as a surprise that the economics literature's contribution to the study of immigration has consisted primarily of studies that estimate the impact of immigration on destination country wages.

Recall the popular elementary textbook model discussed early in the previous chapter where native- and foreign-born workers are substitutes. That simple model predicts that the wages of native workers in the destination economy fall when immigrants arrive. The consensus from the many statistical studies is actually quite unsupportive of this model: Immigration appears actually to have little or no effect on native-born labor market outcomes. In a survey of the literature, Friedberg and Hunt (1995, p. 42) conclude, "Despite the popular belief that immigrants have a large adverse impact on the wages and employment opportunities of the native-born population, the literature on this question does not provide much support for this conclusion." More recently, after many more studies, Borjas (2003, p. 1335) observes that "The measured impact of immigration on the wage of native workers fluctuates widely from study to study (and sometimes even within the same study), but seems to cluster around zero."

This chapter explains why the evidence is so unsupportive of the elementary textbook model. We first discuss the methods used as well as the results generated from their application. We then sort through past and current debates over why the evidence is so unsupportive of the basic labor market model. We break the empirical literature into three parts according to the methods used. The two parts discussed in this chapter correspond to two popular methods for estimating immigration's impact on destination country labor markets—the *spatial correlation* and the *production function* methods.

The spatial correlation approach has been the most widely-used, but most researchers now agree that it is biased towards underestimating immigration's true impact. Many researchers suggest that the *skill cell method* may be the most accurate of the three approaches.

## 6.2 The Spatial Correlation Method

The *spatial correlation*, or geographic correlation, method has been the most commonly used method to estimate the wage and employment effects of immigration in the destination country. To grasp the logic behind the spatial correlation method, suppose the world consists of two regions in the same country, say region A and region B, that have identical labor markets. Suppose that workers in A are perfect substitutes for workers in B and that labor supply is perfectly inelastic in both locations. Suppose that region A receives a group of immigrants, who are perfect substitutes for workers already residing there, but region B receives no immigrants. This model, therefore, predicts that wages fall in A after immigration, but wages remain the same in region B.

Suppose, however, that at the time the immigrants arrive in region A, both regions are negatively impacted by a recession that lowers demand throughout the national economy. In this case, the researcher running a regression in which immigration is the explanatory variable is likely to attribute the decline in wages entirely to immigration and nothing to the fact that a recession is at least partially responsible for the wage decline in region A. The spatial correlation method prescribes that the researcher include not only data on region A in the regression, but also data for a *control* region that does not receive immigrants and whose wage level is, therefore, exclusively the result of national economic conditions. The researcher then can test to see whether immigration explains the difference in the wage changes. Such tests are used to see if differences between regions or years explain the differences in labor market outcomes. This is why this type of analysis is often referred to as “difference in differences” analysis in the econometric literature.

The difference-in-differences test has been applied to the case of immigration in two different ways. The first is called the *cross section* approach, which involves using a large number of observations on different regions in a regression equation with controls for other explanatory variables that are hypothesized to also affect wages or employment. One or a few of the regions experience immigration inflows, while most of the other regions experience little immigration. The second approach is to take advantage of unexpected sudden surges in immigration, which we call the *unexpected extraordinary supply shock* (UESS) study. This approach uses time-series data that consists of many “normal” years and one exceptional year when there is a sudden, huge inflow of immigrants. Regression analysis is then used to look at the differences between the regions or years with little immigration and the region and year with a large amount of immigration to distinguish the effect of immigration on wages, employment, and other labor market outcomes. We detail both methods below.

### 6.2.1 Cross Section Applications

The cross section approach involves estimating a regression equation where the dependent variable is some labor market outcome like wages, and the most often-used explanatory variable is the proportion of immigrants in the population, or what labor economists refer to as *immigrant density*. The observations may be for a set of different geographic regions, or they may be for a set of different occupations. In the case of a set of geographic observations, a cross-section regression model takes on the form

$$\ln(Y_{jt}) = \beta(\ln M_{jt}) + \alpha(\ln X_{jt}) + \varepsilon_{jt} \quad (6.1)$$

where  $Y_{jt}$  is a labor market outcome experienced by natives who live in region  $j$  during period  $t$ ,  $M_{jt}$  is the fraction of immigrants comprising region  $j$ 's labor force

during  $t$ ,  $X_{jt}$  is a vector of other variables hypothesized to influence the dependent variable in region  $j$  during period  $t$  (the so-called “control variables”), and  $\varepsilon_{jt}$  is a random error term. If native-born and immigrant workers are substitutes in the sense that they compete in the same labor market, this standard model of immigration hypothesizes that  $\beta < 0$ , that is, the higher is the concentration of immigrants in the local labor market, the lower is the wage, all other things equal.

Unbiased estimation of (6.1) requires that the allocation of immigrants across regions is random. That is quite unlikely, however. For example, US immigrants tend to cluster in a small number of states (California, New York, Texas, Florida, Illinois, and New Jersey) and cities (Los Angeles, New York, Chicago, and Miami). There are two likely reasons for this clustering. First, immigrants have a strong tendency to settle where labor markets are strong, hence immigration is also endogenous to local economic conditions. This endogeneity creates the problem of *simultaneity bias* in estimates of  $\beta$ . If immigrants choose areas where pay is higher ( $\varepsilon_{jt}$  is high), then the correlation between pay and immigration is the result of the simultaneous influences of each variable on the other. High pay influences immigration, and immigration influences the wage. The resulting positive correlation between  $Y_{jt}$  and  $M_{jt}$  will bias the estimate of  $\beta$ . The solution is to modify the immigration variable so as to cut the line of causality from the wage to the immigrant density variable.

Another source of bias in the regression equation (6.1) is that immigrants tend to settle in areas where there are high concentrations of immigrants from their home countries who arrived in earlier periods. If those areas coincidentally experience persistently soft or strong labor markets, then the estimate of  $\beta$  will be biased by the *spurious correlation* between immigration and wages, even though in fact immigration has only a weak direct influence on wages. If immigrants choose to settle where there are large concentrations of immigrants and those areas also have relatively low wages for many other reasons unrelated to immigration per se,  $\beta$  will be biased downwards and thus overestimates immigration’s true impact. The downward bias is due, first, to the fact that the regression fails to account for the influence of historical immigrant settlement patterns on  $M_{jt}$ . Second, the regression omits a control for characteristics that are unique to the location, or what econometricians call the *fixed effect* of location. The solution is to remove the influence of the fixed effect(s) and to control for the source of the correlation between wages and immigrant density.

### 6.2.2 Dealing with Simultaneity and Spurious Correlation

Fortunately, there are several econometric solutions to treating both problems above. The first is to exploit variation in immigrant density and labor market outcomes *within* each spatial unit across two consecutive periods. In the regression model (6.1), the variables are measured in *levels*. However, an alternative approach is to use differences in variables, or what is also called *first differences*. In applying

the first difference model, *changes* in labor market outcomes are regressed on *changes* in immigrant density and other control variables. A generic version of such a model is

$$\Delta Y_{js}(t, t') = \beta_t \Delta M_{js}(t, t') + X_{js}(t) + \varepsilon_{js}(t, t') \quad (6.2)$$

where  $\Delta Y_{js}(t, t')$  is the change in a labor market outcome experienced by residents of region  $j$  who belong to skill group  $s$  between years  $t$  and  $t'$ ,  $\Delta M_{js}(t, t')$  is the size of the immigrant supply shock to region  $j$  for that skill group over the  $(t, t')$  time interval,  $X$  is a vector of control variables, and  $\varepsilon_{js}(t, t')$  is a random error term. The  $\beta_t$  coefficient measures the impact of immigration on the change in labor market outcomes. Note that when there is no immigrant population in  $t$ , the variable measuring immigration is the same as in the nondifferenced specification and  $\beta_t$  has exactly the same interpretation as in the nondifferenced model.

Testing for changes over time requires time-series data. If time-series data are not available, the difference in differences method can also use cross-section data to test differences across different markets at the same point in time. For example, suppose that there is substantial variation in the amount of immigration and wages across occupations. Then, the researcher can estimate the effect of immigration in each profession by testing those differences across different occupations.

Goldin (1994) applied a differencing model to city-level data for 1890–1923 from the US Census to estimate the effect of changes in immigrant density in cities on changes in native wages in different occupations and industries. She found that a 1 percentage point rise in the city's fraction of immigrant residents reduced native wages by 1.0–1.6 %.<sup>1</sup> LaLonde and Topel (1991) performed first difference regressions using 1970 and 1980 US census data for individual males in cities. An advantage of working with individual data is that it is possible to control for many of the variables and personal characteristics that induce people to move to areas with strong demand for labor, which reduces the likelihood of encountering spurious correlation. LaLonde and Topel focus on the effects that different immigrant cohorts have on each other's wages. Overall, LaLonde and Topel's results indicate no significant effects of immigration on wages in US cities. However, they did find that for the sub-group of recent male immigrants, an increase in the fraction of immigrants comprising the city's male labor force by 10 % reduces the wage of the average worker in that group by 0.3 %. Immigration was not found to affect the wages of young native blacks and Hispanics.

First differencing prevents spurious correlation, but does not prevent simultaneous equations bias if immigration depends upon *anticipated* changes in the wage.

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<sup>1</sup> Friedberg and Hunt (1995) point out that Goldin's results may be affected by a "composition" problem, which results from the use of aggregate data. In Goldin's study, city-level wages are a composite of immigrant and native wages. If immigrants on average earn less, then cities with higher immigrant densities will have lower mean wages, even absent an adverse effect of immigration. This problem can be avoided by the researcher distinguishing between native and immigrant earnings in the data, something Goldin could not do.

The solution is still to first difference, but to convert the immigrant density into an exogenous variable through instrumental variables (IV) estimation. What would be a sensible instrument? Recall our earlier discussion about how immigrants prefer to settle in areas with already high concentrations of immigrants. Preexisting immigrant concentrations are unlikely to be correlated with current economic conditions if these concentrations are measured with an adequate time lag.

Altonji and Card (1991) sought to explain changes in wages and unemployment rates of low-skill workers across US cities from 1970 to 1980, controlling for changes in educational attainment and mean age in each city. The low-skilled include white males who did not finish high school and black and white females and black males with a high school degree or less.<sup>2</sup> The reason for Altonji and Card's focus on the low-skilled is that they are the group most likely to be adversely affected by immigration. Like Lalonde and Topel, Altonji and Card's results indicate that immigration generally exerts only very modest effects on the labor market outcomes of low-skilled native-born workers. Employment effects are ambiguous and very small, while there is some evidence of negative, but still small, effects on wages (wages are measured as log earnings per week). Altonji and Card estimate that for their full sample, if the immigrant population share increases by 1 %, the wage will fall by 1.2 %. However, the magnitude of this effect is not large because it measures a percentage point change in the immigrant share. For example, suppose that immigration increases from 5 to 6 % (a 20 % increase) and the wage is predicted to fall by 1.2 %. Then a 10 % increase in immigrant share implies only a 0.6 % drop in weekly earnings.

Altonji and Card also found that for black male high school graduates, immigration exerts a slightly positive effect on the employment rate and a very modest negative effect on earnings (a 10 percentage point increase in the city's foreign-born share is predicted to reduce earnings by 1.9 %). For comparable black females, there is no effect on immigration on the employment rate and only a very mild negative effect on earnings (a 10 percentage point increase in the city's foreign-born share reduces earnings by 1.37 %). For white males without a high school degree, there are no effects on employment and very mild adverse effects on the wage (a 10 % increase in foreign-born share reduces earnings by just 1.1 %). There are no wage and employment effects of immigration on white female high school graduates.

Applications of the spatial correlation approach continued through the 1990s. Important studies during this period include Butcher and Card (1991), Borjas, Freeman, and Katz (1997), Schoeni (1997), De New and Zimmerman (1994) and Pischke and Velling (1997), to name just a few. These studies all found little effect of immigration on native-born labor market outcomes. Some of the more recent spatial correlation studies used both time-series and cross-section data, or what is

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<sup>2</sup> This choice of members of this group likely reflects the researchers' recognition of discrimination in the labor markets, where blacks and females with high school degrees are treated similarly to white males who did not finish high school.

often referred to as panel data. Butcher and Card (1991) tracked relative growth rates of wages for low- and high-paid workers in 24 US cities using *Current Population Survey* data from 1979 to 1989. They found no evidence of a negative wage effect of immigration, either across cities or within cities over time. Growth in wage inequality was positively correlated with growth rates in immigration, but higher inequality came in the form of more rapid increases in the 90th percentile of wages, but not with a relative decline in the 10th percentile.

Borjas et al. (1997) estimated a version of (6.2) for the years 1960, 1970, 1980, and 1990 across US states and occupations, and they found that the  $\beta$  coefficient changed significantly across decades. For example, they found a negative coefficient for the 1960s, but a positive one (and larger in absolute value) for the 1970s, followed by a negative coefficient during the 1980s. Schoeni (1997) observed a similar pattern. He found that a three-point increase in the foreign-born share of the population, e.g. from 6 to 9 %, cut the earnings of male high school graduates by 1 % in the 1970s, but would have increased the same group's wages by 0.8 % during the 1980s.

### 6.2.3 *Recent Applications of the Spatial Correlation Method*

As the number of applications of the spatial correlation method grew, so did concern over the apparent failure of these studies to confirm the predictions of basic labor market models. For example, Borjas (1994, p. 1700) wrote, “A fair appraisal of the literature thus suggests that we still do not fully understand how immigrants affect the employment opportunities of natives in local labor markets; nor do we understand the dynamic processes through which natives respond to these supply shocks and reestablish labor market equilibrium.” Borjas (1999) suggested that the reversal of sign on the estimated effect of immigration on native wages may have been due to the long-term changes in the wage structure that are not fully understood and accounted for in the regressions.

Recall, also, the Leamer and Levinsohn (1995) hypothesis discussed in the last chapter. Local effects of large immigrant flows to some areas will be diffused elsewhere by internal migration responses, capital adjustments, product market responses and other secondary adjustment processes. The degree to which an uneven distribution of immigrants across areas results in persistent and observable differences in native labor market outcomes depends on how flexible markets are in the destination economy. If changes in wages or unemployment induce quick and large shifts in workers between regional labor markets, then factor prices are likely to equalize across areas.

In one of the most thorough applications of the spatial correlation approach, Card (2001) considered the possibility of internal migration responses. Earlier studies, such as Altonji and Card (1991) and LaLonde and Topel (1991), had modeled demand responses to immigration, but they did not include empirical

controls for demand in the empirical models. In contrast, Card (2001) estimates regression equations derived directly from his theoretical model.

Like most previous applications of the spatial correlation approach, Card uses the city as his spatial unit, but he further stratifies the sample along *occupational* lines. Card argues that there is ample evidence that the population of US immigrants consists of a great variety of people with very different backgrounds, cultures, work experiences, and lifestyles: “Given this heterogeneity, the overall fraction of immigrants in a city is simply too crude an index of immigrant competition for any particular subgroup of natives” (Borjas, 1994, p. 1700). It would make little sense to conduct a study where, for example, native-born high school teachers are assumed to compete for jobs with foreign-born dental hygienists (and for immigrant high school teachers to compete with native-born dental hygienists). Card effectively argues that it is more sensible to distinguish between public school teaching and dental hygiene as separate labor markets and then have natives and immigrants competing within each market. He thus uses local *occupational density*, the fraction of local population comprising an occupation, rather than overall immigrant density in the local market, as most previous studies have done.

Card’s data set is a cross-section drawn from the 1990 US Census, and includes labor market outcomes of men and women aged 16–68 in 1989 who had at least 1 year of potential labor market experience. He used 100 % of all foreign-born persons in what is described as a 5 % public use micro sample from the full Census sample (approximately 840,000 observations) and a 25 % random sample of all native-born persons (approximately 1,900,000 persons) in the 5 % public use sample. The dependent variable is hourly earnings, computed from total annual earnings (including self-employment and wage and salary earnings), information about weeks worked, and hours per week over the year. The data set includes the 175 largest US cities.

Card corrects for some potential sources of bias. For example, the problem with stratifying by occupation is that occupational choice is often endogenous. People are likely to switch out of an occupation if there is excess supply (due to the arrival of immigrants, for example) in a particular occupation. Second, there is the problem of selection bias in the measurement of occupation-specific labor supply. Census data only include information about occupation for those that are employed, however the proper way to measure labor supply to occupation A is the population of individuals who could *potentially* work in A.

Card’s most important finding here is that inflows of new immigrants put more supply pressure on less-educated natives than on other native groups. In general, Card’s results suggest that immigration exerts only modest effects on local employment rates. The estimated coefficients on the occupational density ranged from –0.1 to –0.2. There are several ways to interpret these coefficients. First, a 1 percentage point increase in the occupation’s population share will, all other things equal, lower the employment rate by 0.1–0.2 percentage points. For example, if the share of the lowest occupation group were to rise from 10 to 14 %, the employment-population rate is predicted to fall by 0.02–0.04.

With regard to the question of whether immigrant inflows induce offsetting outflows of natives and previous immigrants, Card estimates a separate outflow rate equation

$$P_{ijc} = X_{ijc}b_j + Z_{jc}\beta + \gamma R_{jc} + d_j + \theta_c \quad (6.3)$$

in which  $P_{ijc}$  is the out-migration probability for person  $i$  in occupation group  $j$  who lived in city  $c$ ,  $X$  is a vector of characteristics for the individual,  $Z_{jc}$  is a vector of group-level characteristics,  $R_{jc}$  is the inflow rate of new immigrants, and  $\theta_c$  is a dummy variable to capture city fixed effects. Card found that city outflow rates of natives and older immigrants were generally not influenced by inflow rates of new immigrants. Card's results, therefore, suggest that researchers may not need to worry about internal migration when estimating the impact of immigration.

Card's estimates from the wage regressions confirm the general finding of earlier studies that immigration appears to induce very mildly adverse to zero effects on native-born wages. Corrected for selectivity bias, the estimated coefficients on the immigrant density for the full sample are  $-0.15$  for native-born men,  $0.063$  for native-born women, zero for pre-1985 immigrant men and  $-0.251$  for pre-1985 immigrant women. The first two coefficients predict that an immigrant inflow rate of  $10\%$  reduces native male wages by just  $1.5\%$  and raises native female wages by  $0.63\%$ . The coefficient estimates across various demographic, occupation, and city groups range from  $-0.15$  to  $0$ . All these results generally match the kinds of results found in earlier studies.

Dustmann, Fabbri, and Preston (2005) performed a cross section spatial correlation analysis on British data to test for the effects of immigrant population shares on both wages and employment rates of native-born persons. Their regression specification incorporates two important implications of their theoretical model: (1) wages depend not only on relative immigrant supply, but also on the diversity of skills in the native population; and (2) the native skill mix and the immigrant labor force share should be separate variables in a regression. The data set is the British Labour Force Survey, an annual household survey providing a wide range of data on labor market variables.

Dustmann, Fabbri, and Preston estimated their regressions equations using OLS, first differences, and instrumental variables. Coefficient estimates vary widely across estimation procedures. The OLS results show a negative and significant relationship between the native unemployment rate and the regional immigrant share, but there is no significant relationship generated by the instrumental variables estimates, however. For native wages, OLS shows a strong positive relationship, no relationship in the first differences equation, and a positive relationship (only significant at  $10\%$ ) in the instrumental variables equation. Overall, these results indicate no strong evidence of immigration's impact on native unemployment rates and very mixed results for wages.

### 6.2.4 Applications of the Unexpected Exogenous Supply Shock Method

The *unexpected exogenous supply shock* (UESS) approach is similar to the two-region example given at the beginning of this section. Only now there is one exceptional year in terms of immigration rather than one exceptional region or city. There have been many surges in immigration that were framed by earlier and later years of very small inflows of immigrants. Choice of the counterfactual is extremely simple in that example because region II is identical to region I save the immigration episode. In reality, the choice of the counterfactual is more complicated because no spatial units are ever alike. Choice of the proper counterfactual is clearly crucial when using the UESS application.

Two prominent applications of the UESS include the classic study by Card (1990) of the 1980 “Mariel Boatlift” of Cuban refugees to Miami and Friedberg’s (2001) often-cited study of mass migration of Russian Jews from the former USSR to Israel during the early 1990s. Other important studies include Carrington and De Lima’s (1996) analysis of the repatriation of roughly 600,000 Portuguese from Angola and Mozambique following independence of those two former colonies in the mid 1970s, Hunt’s (1992) study of the impact of the arrival in France of approximately 900,000 people of mostly French origin from Algeria in 1962 after that country gained its independence from France, and Angrist and Kugler’s (2003) analysis of the effects of the Balkan Wars on migration to European countries. What all these studies have in common are (1) an unexpected case of extraordinary immigration triggered by a shock (in each of these cases, political) in the sending country, and (2) an application of the difference-in-differences test to assessing the effects of the shock on native-born labor market outcomes in the destination country.

The UESS studies generally find very little impact of immigrants on native labor market outcomes. In Hunt’s (1992) study, the repatriation to France of skilled Algerians resulted in the French labor force rising by 1.6 %. Hunt found that a 1 % increase in the immigrant share of the labor force induced a drop in the regional wage by at most 0.8 % and raised the unemployment rate of natives by 0.2 %.

Carrington and De Lima’s (1996) study of the massive repatriation of overseas Portuguese after the independence of Mozambique and Angola, which suddenly increased Portugal’s labor force by nearly 10 %, has two noteworthy features. First, they used Spain and France as the counterfactuals. Second, Carrington and De Lima used a series of specifications to apply the UESS method. Overall, they found that Portuguese repatriation did induce some short-run unemployment among natives, but the primary reason for rising unemployment in Portugal was that unemployment rates rose all across Europe during the 1970s due to oil price shocks. In the long run, once other outside influences were controlled for, immigration seemed to have had little effect on wages or employment.

### 6.2.5 *The Mariel Boatlift*

The *Mariel Boatlift* in 1980 provides a powerful case study on the impact of immigration on a local labor market. Between May and September of 1980, about 125,000 Cuban immigrants arrived in the United States after the Cuban dictator Fidel Castro suddenly reversed his policy of prohibiting Cubans from emigrating. Castro allowed them to leave, but required departure to take place through the small port of Mariel, which explains why the mass migration came to be known as the *Mariel Boatlift*. A flotilla of chartered boats paid for mostly by Cuban-Americans carried the immigrants from Mariel to the United States. About half of the 125,000 immigrants settled in Miami, suddenly and unexpectedly expanding the city's labor force by about 7 %. "There is no way this community can absorb so many people without serious socioeconomic problems," lamented a local school board member.<sup>3</sup>

Card (1990), in what has become a classic study of the consequences of immigration on a destination country, reached a surprising conclusion about the Mariel Boatlift: the sudden large inflow of Cuban immigrants had almost *no* effect on wages in Miami. This clearly is not what the traditional labor supply model of immigration predicts. Card's analysis shows that there was no effect of the immigration surge on average wages in Miami for the population as a whole or among specific groups such as low-wage workers, Cuban-Americans, or other minorities, but there was some shift in migration patterns into and out of Miami. Specifically, the Mariel Boatlift seems to have reduced in-migration and encouraged competing workers, most notably lower-skilled minorities other than Cuban-Americans, to move elsewhere in Florida.

Card used individual micro-data for 1979–1985 from the Merged Outgoing Rotation Group (MORG) samples of the Current Population Survey (CPS) to test for the effects of the Mariel influx on the wages and unemployment rates for five different groups of workers—white, black, non-Cuban Hispanic, earlier Cuban immigrant, and all low-skilled workers for the first 5 years following the influx. Card's counterfactual group included four cities—Tampa, Atlanta, Houston, and Los Angeles. Card selected these cities because they experienced patterns of economic growth similar to Miami during the period.

Card observed that during 1979–1981, only the Cuban wage fell in Miami, whereas the wage for whites, blacks, and Hispanics in the comparison cities all fell. The white unemployment rate even fell from 5.1 to 3.9 % in Miami while it fell only slightly in the comparison cities from 4.4 to 4.3 %. While the black unemployment rate rose from 8.3 to 9.6 % in Miami, it rose even more in the counterfactual group from 10.3 to 12.6 %. This is unusual because blacks are likely to be the non-Cuban group most substitutable for the Mariel immigrants. Card's difference-in-differences calculation on black unemployment rates reveals that the unemployment rate fell in Miami by 1 % relative to the rate in the counterfactual group during 1979–1981.

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<sup>3</sup> The new wave of Cubans is swamping Miami (1980, August 25). *Business Week*.

For the most part, the Miami labor market seems to have absorbed the new workers relatively easily by expanding employment opportunities. Card (1990, p. 23) suggests that “in many respects Miami was better prepared to receive [the immigrants] than any other city.” Miami’s industrial structure was already skewed toward low-skill jobs and its large Hispanic population made it easier for Spanish-speaking immigrants to find employment. The relatively flexible labor markets throughout the United States also helped to dissipate the effects throughout the region, as suggested by the out-migration of competing workers. Miami had already proven it could absorb earlier waves of Latin American immigrants from Cuba, Central America, and the Caribbean.

Perhaps the most important question posed by Card’s study is the following: Did the Boatlift reduce the relative earnings of less-skilled natives in Miami? If the Boatlift reduced the wage of less-skilled natives, then one would see a decline in the wage of workers occupying the lowest skill quartile relative to workers occupying the upper quartiles. By calculating predicted wages using the coefficients obtained from the counterfactual regressions, Card adjusted Miami wages for economic conditions in the comparison cities. He found no evidence that those in the lowest quartile were made worse off relative to the other quartiles, even during 1979–1981. Card concluded that there is no evidence to support the hypothesis that the Boatlift had an adverse impact on native-born workers in the Miami labor market.

Card suggested that the primary reason for the benign effects of the immigration shock was that it triggered offsetting out-migration from Miami and deterred prospective migration to Miami. The expansion of employment in response to the massive Cuban immigration in 1980 also suggests, however, that the expansion of the number of workers increased demand for labor. The new workers spent some of their incomes to demand local goods and services. That is, immigrants may be employed providing some of the goods and services they themselves demand or that others demand as a result of the multiplier effect of the immigrants’ local expenditures. The traditional models of immigration generally ignore these direct and indirect effects that immigrants have on the demand for their own labor services.

### ***6.2.6 Russian Immigrants in Israel***

Friedberg (2001) studied the nearly one million Russian immigrants who arrived in Israel during the 1990s. When the Soviet Union lifted emigration restrictions in 1989, many Jewish Russians chose to leave, and most went to Israel because that was their only immediate alternative. Unlike most other potential destination countries, Israel had no entry restrictions and no waiting period for immigrants who were Jewish. This is not to suggest Israel was or is open to all immigrants; in fact, Israel routinely expels Palestinians and other non-Jewish people residing in territory that Israel claims. Friedberg reports that during 1990 alone, the influx of Jewish Russians increased population growth in Israel by 4 % during each of the years 1989–1995. These annual levels of migration were proportionally much larger than anything experienced by the US or Western Europe.

There are several important features of this particular natural experiment. First, it is a clear-cut case of exogenous immigration driven by a change in policy in the source country. Second, Israel is a very small country, and there were really no geographic areas unaffected by the Russian immigration. Recall that if an immigration shock penetrates only part of a country, then flexible markets will diffuse the effects of the shock to unaffected areas, thus hampering the researcher from estimating the true effects of immigration. Third, the Jewish Russians who immigrated to Israel were highly educated and experienced. Friedberg points out that while in the short run, labor market outcomes in the destination country may not depend on the immigrant skill distribution because language difficulties force many immigrants to compete with less-skilled natives for blue-collar jobs, in the long run the country's reaction to immigration may be different if the migrants are high-skilled.

Friedberg stratifies the labor market along occupational lines to make it possible to use the spatial correlation method. Equalization across occupations is unlikely because large investments in retraining are required and workers may have a strong preference for remaining in their original occupations of choice. This is especially likely for high-skill persons who have incurred years of expensive training. Friedberg effectively assumes that any disequilibrium caused by immigration will persist much longer than for the case of immigration to a region. Second, the likelihood of endogenous immigration to an occupation is also assumed to be less likely.

Friedberg's data set was drawn from several sources. Information about the Russian immigrants came from the Israeli Immigrant Employment Survey (IES), which interviewed a random sample of 3,300 new immigrants who came to Israel in 1990. She specifically used information coming from a survey of a cohort of Russian immigrants who arrived in Israel or received immigrant status between October and December of 1990. This cohort was interviewed annually during 1992–1994. The data set includes information on an immigrant's education and job experience prior to immigration.

Friedberg found large differences between the estimated wage effects of immigration across various specifications of regression models. For example, the estimate of her OLS regression for groups of people in each profession yielded a coefficient on  $r_j$ , the immigrant density for employment group  $j$ , equaling  $-1.54$ , i.e. a 10 % gain in employment due to immigration induced a 15.4 % drop in average wages, whereas the first differenced version yielded a coefficient of  $-0.616$ . However, the 2SLS first differenced version yielded a statistically insignificant coefficient. These results suggest that the OLS regressions reflect simultaneity bias. Since the 2SLS method explicitly tries to account for this bias, its results are probably the more reliable in this case. Thus, it appears that the Russian immigrant influx did not adversely affect native Israeli labor market outcomes. Friedberg achieved wider ranging estimates from her regressions for samples of individuals rather than groups of individuals, but she still failed to find consistent evidence showing immigration reduced the welfare of natives.

In assessing her results, Friedberg speculates that there may be complementarity between the Jewish Russian immigrants and the native Israelis. For example, many Russian doctors took lower-paying, less desirable positions in Israeli hospitals,

which may have allowed native Israeli doctors to move to more desirable and more lucrative positions. Second, there was rapid growth of the high-tech industry in Israel, which is likely to have stimulated labor demand across many occupations, including those with higher Russian immigrant concentrations.

### 6.2.7 Assessing the Spatial Correlation Method

A drawback of the spatial correlation method is that estimates of immigration's effects on destination country labor markets will tend to be biased towards zero because of endogenous movement between regions and particular labor market segments. That is, the adverse effects on wages caused by immigration will induce natives to move elsewhere or pursue other careers. It is not clear to what extent this potential bias affected the studies reviewed above, which strongly suggests that immigration has little or no effect on local native labor market outcomes.

Interestingly, Borjas, Freeman, and Katz (1996) applied the method to 1980 and 1990 US Census data for 236 US cities, splitting their sample by decade and gender, and measuring immigrant density as the ratio of immigrants to natives in each city. Then they repeated the regressions after aggregating their data from individual cities to states, and then finally to regions. They showed that the larger the region, the more negative the coefficient on immigrant density. That is, the overall state effects of immigration were more adverse than the individual city effects, and the regional effects were more adverse for native workers than the state effects. They concluded that this confirmed that estimates of immigration's impact were biased in spatial correlation studies because they ignored the offsetting internal migration responses. Borjas et al. (1996, p. 249) wrote, "If native migration responses are sufficiently large over the relevant period, comparisons of small areas will mask the true effect of immigrants on native wages."

Friedberg (2001) agrees, suggesting that factor price equalization is much less likely across borders than within because of restrictive immigration policies, international differences in tax rates on capital, investment risks, and trade restrictions. Accordingly, the effects of immigration shocks on the *national* labor market should be easier to detect than effects on local labor markets. This serious shortcoming of the spatial correlation method served as the inspiration for the next two empirical strategies, which we begin to discuss below.

## 6.3 The Production Function Method

In contrast to the spatial correlation method, in which wages or employment rates are directly regressed on measures of immigrant labor supply, the strategy behind the production function method is to first estimate the degree of substitutability between native and immigrant workers. The method requires the researcher to specify a

production function where immigrants and natives are distinct inputs, estimate it using national, regional or local data, and use coefficient estimates to calculate the factor price elasticity of native-born labor with respect to foreign-born labor.

### 6.3.1 Grossman's Pioneering Production Study

The production function method was pioneered by Grossman (1982). She assumes that the destination economy is a city with four inputs—the quantity of native labor with native parents (N), the quantity of native labor with immigrant parents (SG), the quantity of immigrant labor (FN) and the capital stock (K). She began with a translog production function, from which she derived factor shares denoted as  $S_j$ , where  $j = N, SG, FN$ , and K. Grossman estimated factor share equations, from which she computed a measure of factor complementarity,  $C_{ij}$ , which measures the percentage change in the relative wage of factor  $i$  in response to a 1 percentage point change in the employment of factor  $j$ , holding price and other inputs constant. Two inputs are substitutes (complements) if  $C_{ij} < (>) 0$ . The factor price elasticities ( $\eta_{ij}$ ) were then computed as follows:

$$\eta_{ij} = S_j C_{ij} \quad (6.4)$$

The factor price elasticity measures the percentage change in the market price of factor  $i$  due to a 1 percentage point change in the supply of factor  $j$ . A large and negative elasticity indicates a high degree of substitutability between natives and immigrants and that immigration will generate strongly adverse effects on natives. A positive elasticity indicates that natives and immigrants are complements and that immigration boosts native wages.

Grossman focused on estimating the elasticities of first and second generation natives with respect to the supply of immigrant labor. She found that the elasticity of the first generation native wage with respect to the supply of immigrant labor was  $-0.02$ , meaning that the wage of first generation natives falls only  $0.02\%$  when the supply of immigrants increases by  $1\%$ . The elasticity of the second generation native wage was just  $-0.03$ . Therefore, immigration's effects on native wages overall appear to be very mildly negative. However, the immigrant group's own factor price elasticity was estimated to be more negative ( $-0.23$ ), indicating that immigrants' primary competitors in the labor market are other immigrants.

Grossman's results point to two likely causes of immigration's mild labor market effects on natives. First, immigrants' labor market share was less than  $10\%$  for the USA at the time of Grossman's study, and as (6.4) indicates, if immigrants comprise only a minor portion of the labor force, then even a very strong degree of substitutability still yields an elasticity close to zero. Second, estimates show that immigrants are least substitutable for first generation natives ( $C_{n,f} = -0.32$ ), more substitutable for second generation natives ( $C_{s,f} = -0.61$ )

and most substitutable for immigrants ( $C_{f,f} = -4.65$ ). Thus, immigrants compete much more with other immigrants than with natives.

In Grossman's study, the labor force is divided into only three very broad groups. Borjas (1987) later argued that Grossman's failure to control for within-group variation biased her estimates of elasticities of complementarity and factor price elasticities. To control for within-group heterogeneity, Borjas broke the labor force down into nine categories—white, black, Hispanic, and Asian native males, white, black, Hispanic, and Asian immigrant males, and females. The dependent variable is 1979 annual earnings and the nine earnings functions were estimated simultaneously. Controls were included for years of schooling, years of labor market experience and experience squared.

After making these adjustments, Borjas (1987) found that immigrants generally are substitutes for the white native-born population, but increases in immigrant labor supply exert only modest adverse effects on the earnings of white natives. Factor price elasticities of white natives with respect to immigrant labor supply range from just  $-0.002$  for black immigrants (a 10 % increase in black immigrants reduces the white native wage by 0.2 %) to  $-0.025$  for white immigrants. There is evidence of both substitutability and complementarity between immigrants and other native groups, though. Black natives are complements to white immigrants (elasticity = 0.02), but neither substitutes nor complements with respect to the other three immigrant groups. Hispanic natives are substitutes for white and black immigrants (elasticities are  $-0.015$  and  $-0.021$ , respectively), but complements for Hispanic immigrants and Asian immigrants (elasticities are 0.01 and 0.014, respectively). There was no evidence of any relationship between the wages of Asian-Americans natives and immigrants.

### **6.3.2 Gang and Rivera-Batiz**

The production function approach was also applied to a study of the USA and Europe by Gang and Rivera-Batiz (1994). They questioned the appropriateness of treating natives and immigrants as distinct inputs. Gang and Rivera-Batiz asked (p. 159), "... in what sense is the labor of immigrants and native-born workers of the same sex with identical human capital characteristics (education, experience, etc.) different?" They suggested that rather than regarding nativity or ethnicity as having distinct roles in production, one should follow human capital theory and concentrate on worker differences in human capital endowments, specifically differences in education, experience, and other skill indicators.

Gang and Rivera-Batiz first estimated a traditional individual earnings equation, and then they estimated rates of return to human capital in the earnings equation. First, factor price elasticities were obtained by estimating a translog production function. The elasticities were then used to calculate the *elasticity of the native wage with respect to immigrant labor supply*, which is the percentage change in the wage of native group  $t$  due to a 1 percentage point change in the

supply of immigrant group  $i$ . These elasticities will indicate complementarity or substitutability between education, experience, and unskilled labor. If the elasticities are negative, this indicates that immigration exerts downward pressure on a native's earnings, all other things equal. However, the technical relationships between education, experience, and unskilled labor aren't the only determinants of how immigration impacts natives. What matters also is how important each of these characteristics is in production and what impact they have on native/immigrant differences in skill distributions.

A principal finding from Gang and Rivera-Batiz' estimation is that education contributes roughly the same to income in both the USA and Europe (44 % for the USA and 43 % for Europe). In the second stage, estimating the human capital factor price elasticities, Gang and Rivera-Batiz found that in both the USA and Europe, unskilled labor, education, and experience are all complementary. They also found that the elasticities are quite small in absolute value for both the USA and Europe, with the relatively larger elasticities observed for those pairs of groups with the biggest differences in skill endowments. This confirms Borjas (1995, 1999) point that the distributional effects of immigration are most important when there are big differences in skills between immigrants and natives.

The more detailed US data allowed Gang and Rivera-Batiz to disaggregate their sample into 11 native groups and 13 immigrant groups classified by ethnicity or national backgrounds. Overall, the factor price elasticities were found to be close to zero, with positive and negative elasticities scattered widely across all the native/immigrant pairs of groups. Elasticities with respect to the European-born group were found to vary from  $-0.037$  for Mexican Americans to  $0.0293$  for Americans of East Indian ethnicity. Elasticities with respect to the Mexican-born group varied from  $-0.158$  for Mexican Americans to  $0.142$  for Indian Americans. Assessing their results for Europe and the USA, Gang and Rivera-Batiz conclude that "... it appears that employed United States and European workers have very little to fear from immigration" (Gang & Rivera-Batiz, 1994, p. 159).

### 6.3.3 Assessing the Production Function Method

We should also mention a study by Suen (2000), who applied the production function approach to simulating the effects of the continual immigration from mainland China to Hong Kong over the past several decades on the wages of persons born in Hong Kong. He found the effects of mainland immigrants to be extremely modest. Suen's simulations show that a 40 % increase in the stock of new Chinese immigrants lowered wages by only 1 % or less.

Across these studies, there appears to be a very consistent pattern: Immigration appears to exert relatively modest effects on native labor market outcomes. While all the factor price elasticities in Grossman's study are negative, only about 60 % in Borjas' study are negative, and less than half in Gang and Rivera-Batiz's study are negative. There is even some weak evidence that immigration *raises* natives' wages.

The very mild effects of immigration appear to be due to low degrees of substitutability stemming from large differences in skills. The generally small immigrant labor shares also serve to keep estimates of substitutability low.

## 6.4 The Skill Cell Approach

Researchers often suspected that estimates of immigration's effects on local wages were biased because their regression models failed to account for shifts in native worker migration in response to the arrival of immigrants in a particular city or region. Some researchers have addressed this concern by adopting an estimation approach that looks at wages in specific skill groups across larger geographic areas. This method became known as the *skill cell method*. If there is little mobility between skill cells, and there are observations for workers in skill cells across an entire country, then the estimates of immigrants entering that particular skill cell should not be biased by geographic migration.

### 6.4.1 Borjas' Use of National Data Versus Regional Data

Borjas (2003) defined the “labor market” as a nationwide group of workers comprising a skill cell. A skill cell is a group of workers with the same level of measured skills. For example, skill cells are often defined according to workers’ education and work experience. In such a case, skill cells might be defined so that cell A includes persons with 16 years of education and 0–5 years of employment experience, cell B includes those with 16 years of education and 5–10 years of experience, etc. If there is little or no mobility between skill cells, this approach allows for an unbiased test of immigration’s impact because immigrant inflows to a cell will not be expected to trigger out-migration the way inflows to geographic regions do. Hence, the researcher avoids the biased estimates of immigration’s impact when immigration causes outflows of native workers.

Borjas (2003) used data from the four decennial Censuses from 1960 through 2000 for men aged 18–64 who were civilian labor force participants. He classified the male workers into four distinct schooling groups: workers who did not graduate from high school, high school graduates only, those with some college, and those with at least one university degree. He further distinguished between eight work experience groups, which gave him 32 education/experience cells for five decades, that is, a pooled data set with 160 observations.

In contrast to much of the evidence discussed in the two sections above, Borjas found statistically significant adverse effects on native workers’ earnings. When the dependent variable was weekly earnings, the elasticity with respect to immigration was estimated to be –0.40, which implies that a 10 % rise in immigrants reduces

weekly earnings by 4 %. The elasticity for annual earnings was  $-0.64$ , and the elasticity for time worked was  $-0.37$ .

Borjas then compared these results with those that would have been obtained if skill cells were defined by state of residence. While in this case estimates of factor price elasticities were still consistently negative, Borjas found that defining labor cells geographically (by state) diminished the impact of immigration by approximately two-thirds. He cited this as strong evidence that the effects of immigration to a state are diffused to other states through internal migration, capital reallocation, and other adjustment processes. This indicates the importance of looking at immigration's effects beyond the labor market of one region or city.

Borjas' estimates were not without their potential sources of bias. One potential shortcoming of his results, which he openly recognized, is that they don't account for an important source of measurement error in the experience variable. According to the findings of Chiswick (1978), US employers attach less value per year of pre-migration experience than they do to post-migration experience due to the imperfect transferability of human capital. Thus, failure to correct for lower valuation of pre-migration experience of immigrants relative to the valuation of native workers' experience can result in biased estimates. To correct for this measurement error, Borjas converted the data on experience into destination country equivalents, calling the corrected variable "effective experience." Borjas then reestimated his regressions with effective experience substituted for reported experience. His new estimates differ little from his earlier results.

Borjas also recognized that his results may be biased by his assumption that each cell comprises an isolated labor market. To test for this possibility, he again adjusted his model, this time incorporating a specific production function that explicitly accounts for interrelationships in production across inputs. After making a number of assumptions and generating cross-cell elasticities, Borjas found that immigrant inflows adversely affected the pay of most natives, especially those at the ends of the education distribution. For example, Borjas found that workers who did not finish high school experienced a relative wage decline of 8.9 %, and university graduates experienced a 4.9 % drop. Workers with only a high school degree experienced the smallest drop in relative wage, 2.6 %, while the pay of workers with some post-secondary education hardly changed. These results are compatible with the observation that the educational attainment of immigrants to the USA is, relative to the native US population, strongly skewed towards the extremes of very little education or very high levels of education. Overall, the wage elasticity of the average native worker with respect to immigration is  $-0.32$ , which implies that a 10 % increase in immigrant labor supply reduces the wage by 3.2 %.

In sum, Borjas' use of national data rather than regional or city data avoids the estimation bias of models that do not explicitly account for changes in regional migration by native workers in the face of immigrant arrivals. His national sample of workers classified by skill cells avoids the bias, and Borjas (2003) results more closely mirror the effects predicted by the traditional labor market model of immigration.

### 6.4.2 Ottaviano and Peri's Extension of Borjas' Skill Cell Model

Ottaviano and Peri (2005, 2008, 2012) extended Borjas (2003) model to include endogenous adjustments of the capital stock to immigration shocks and imperfect substitutability between native- and foreign-born workers within a skill cell. In their 2005 study, they analyzed the same period as Borjas (2003), 1960–2000, using the same data sources. Ottaviano and Peri also used the same 32 skill cells that Borjas used. Elasticities were calculated from simulations, where the values for some parameters were taken from other studies while others were calculated using Ottaviano and Peri's own data. It is important to recognize, that estimates such as these are highly dependent on the particular models used, the data used, and the assumptions made.

Ottaviano and Peri found that during the decade 1990–2000 in the USA, the elasticity of mean wages to immigration was 0.275, that is, the 8 % increase in foreign-born workers that occurred during that decade *increased* the average wage by 2.2 %. More specifically, the top three schooling groups all gained from immigration, but the lowest schooling group experienced a 2.4 % decline. Immigration thus appears to benefit all labor groups except the least educated.

In their 2012 study, Ottaviano and Peri focused on estimating the effect of immigration during the 1990–2004 period. Using the same procedures as in their 2005 study, they estimated that the within-cell elasticity of substitution averaged 5.88, again confirming imperfect substitutability. University graduates' real wages are estimated to have risen by 0.7 % and high school graduates' wages by 3.5 %. The real wage of workers who did not complete secondary school is estimated to have fallen by only 1.1 % during 1990 and 2005 because of immigration. Note that the impact of immigration on the extremes of the educational distribution is similar, but not identical, to what Borjas (2003) found.

Ottaviano and Peri noted that their results change substantially when they assume perfect substitutability between natives and immigrants rather than the partial substitutability their model suggests. Also, when they use Borjas (2003) model and assume a fixed capital stock, their results change quite substantially. Therefore, it appears that assuming imperfect substitutability between natives and immigrants and including endogenous capital investment in the model substantially changes estimates of immigration's impact. Therefore Ottaviano and Peri's results are, on the whole, more similar to the results derived by the models in the first two sections of this chapter.

Borjas, Grogger, and Hanson (2008) argued that the Ottaviano and Peri results are fragile and are very sensitive to the way the sample of working persons is constructed. Borjas, Grogger, and Hanson found that Ottaviano and Peri's finding of imperfect substitution disappeared once the analysis was adjusted for the heterogeneity of labor market classifications. For example, the finding of immigrant-native complementarity disappeared entirely when high school students were removed from the data; Ottaviano and Peri had classified currently enrolled high school juniors and seniors as workers without a high school degree. More generally,

when other standard methods of classification of workers were introduced, Borjas, Grogger and Hanson found that it was no longer possible to reject the hypothesis that comparably skilled immigrant and native workers are substitutes.

Ottaviano and Peri (2008) responded to Borjas, Grogger, and Hanson by retesting the theoretical model used in their earlier studies on a larger data set (1990–2006) and improving their estimates of elasticities of low-skill native wages with respect to low-skill immigrant labor supplies. They emphasized that to obtain these factor price elasticities, it is imperative to obtain accurate estimates of the elasticity of substitution between workers who have not graduated from high school and workers with at most a high school degree, something previous studies had not been as successful in doing. They found small negative effects in the short run on natives without a high school degree (factor price elasticity is  $-0.7\%$ ) and on the average native wage ( $-0.4\%$ ), but small *positive* effects in the long run (which takes into account capital adjustments) on natives without a high school degree ( $0.3\%$ ) and on the average native wage ( $0.6\%$ ). As with the 2005 and 2006 studies, these estimates indicate that immigration has a less adverse effect than earlier literature suggests.

The points made in these papers are indeed valid ones. Clearly, when native and immigrants workers are not perfect substitutes, statistical results based on a model that assumes perfect substitutability will tend to overstate immigration's adverse effects (or, perhaps we should say understate immigration's benefits). There are likely to be complementarities in production generated by immigration, and there is also the long-run adjustment in the capital stock triggered by immigration shocks. However, it is important to emphasize that these studies suppress other responses to immigration that could be important, e.g. labor demand responses, changes in industry mix, choice of production technologies, as well as native labor supply responses (in all three studies, native labor supply is perfectly inelastic, for example). Once these other responses are accounted for, estimates of the wage impact of immigration could vary, perhaps significantly. Fortunately, there are sure to be more papers by authors on both sides of the argument about the impact of immigration on native wages, so, perhaps, a consensus will eventually develop.

Cohen-Goldner and Paserman (2011) extend the skill cell model by analyzing how distributional effects generated by the arrival of a new group of immigrants will be felt in the long run. They estimate to what extent immigrants with different amounts of time in the destination country exert different effects on natives in the labor market. Cohen-Goldner and Paserman run regressions with and without cell fixed effects, and with and without Borjas' "effective experience" variable. They find that coefficient estimates are very sensitive to the omission of cell fixed effects and the use of the effective experience variable.

For male workers, Cohen-Goldner and Paserman find that when skill cell fixed effects are excluded, immigrants have a statistically significant negative initial effect and a positive long-run effect on native wages. This suggests that male natives and immigrants are substitutes in the short run, but adjustments in other inputs over the longer term will drive wages back towards pre-migration levels.

However, when they included skill cell fixed effects in their regression, the short- and long-run effects were no longer statistically significant. For female workers, Cohen-Goldner and Paserman found a similar pattern as they found for males; when skill cell fixed effects were included in the regression, the short-run and long-run effects were much weaker. They also ran regressions with employment as the dependent variable, but immigration had no significant effect in any case.

Cohen-Goldner and Paserman's results thus suggest that immigration does not have a negative impact on native wages, contrary to Borjas (2003) estimates. Furthermore, Cohen-Goldner and Paserman's results suggest the importance of taking into account assimilation when measuring immigration's impact.

#### ***6.4.3 Other Types of Labor Market Cells***

The creation of schooling-experience cells, as in the case of the studies in the previous section, is obviously not the only way of segmenting the national labor market in a nongeographic way. Card (2001), Friedberg (2001), and Orrenius and Zavodny (2007), for example, segment by occupation under the assumption that occupational barriers to entry such as training and certification costs keep people from quickly moving between occupations.

Orrenius and Zavodny focused on three groups of occupations—professional workers, service-related workers and manual laborers. Their results show considerable variation in the impact of immigration across occupation groups and type of immigration. For example, in the case of a subgroup of immigrants to the USA who adjusted their status from illegal to legal after the 1986 legislation giving amnesty to long-term unauthorized immigrants living in the USA, there appears to be no impact of immigration on natives in both the professional and service groups. For manual laborers, a 1 % increase in the supply of new immigrants lowers the average native wage by just 0.04 %. For the subgroup of new arrivals, the results are considerably different. Immigration to the professional group has positive effects on natives (a 1 % increase in immigration induces a 0.094 % increase in the wage), but no effect on native wages in the other two groups.

In sum, when Borjas (2003) applied the skill cell method to estimate immigration's effect on US wages, he found that immigration lowered native wages. On the other hand, other economists who applied the skill cell method in order to trace immigration's effects found immigration to have a more benign effect on wages. The discrepancies between the studies are largely due to the way substitutability between the skill cells and between immigrants and natives is estimated. The discrepancy between the traditional labor market model of immigration and the empirical evidence thus remains to be explained.

## 6.5 Concluding Remarks

In this chapter we surveyed and assessed three empirical methods used to estimate the impact of immigration on the destination country's labor market—the *spatial correlation* method, the *production function* method, and the *skill cell* method. The spatial correlation method has received the most attention, and it continues to be used despite the likely bias in of its estimates. There was a brief flurry of interest in the production function method in the 1980s, but the method has lost favor among researchers. Recently, empirical work on the destination country labor market responses to immigration has increasingly applied something akin to the skill cell method in order to examine the effects of immigration across larger geographic areas. It is widely believed that immigration causes shifts in regional migration by native workers, and this migration effect biases the results of studies that use data for small regions.

A comparison of the evidence from all the studies surveyed in this chapter makes it clear that, with very few exceptions, there is no strong statistical support for the view held by many members of the public, namely that immigration has an adverse effect on native-born workers in the destination country. In fact, there is even evidence from some studies surveyed in this chapter that native-born wages and employment rates increase in response to immigration. But, it should also be clear from this brief survey of the empirical literature that the statistical evidence is not definitive.

The popular statistical modeling strategies described in this chapter have missed many potentially important economic effects of immigration. The arrival of immigrants triggers many reactions, and not only in the labor markets. Changes in the quantity and price of different categories of labor will, all other things equal, cause changes in the demand for products in the destination economy, the mix of products produced, the technologies with which the products are produced, the amount of education acquired by native workers, and the amount of capital provided to workers, among other things. Some of these changes occur quickly and are often picked up in the data used to estimate the effects of immigration, but others are long-run adjustments that only gradually show up in the data. The likelihood that immigration triggers a variety of dynamic responses throughout the economy suggests that the empirical methods described in this chapter do not come close to accurately capturing the full long-run effects of immigration.

In the next chapter, we focus on estimating additional hypothesized effects of immigration that the methods described in this chapter were not designed to pick up, such as adjustments in the capital stock that are likely to accompany the growth of the immigrant labor force and the increase in the demand for labor and other factors triggered by immigrants' consumption in the destination economy. Then, in Chap. 9 we will examine the long-run growth effects of immigration, which are likely to completely overwhelm the short-run wage effects estimated in the studies covered in this chapter.

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# Chapter 7

## Estimating Immigration's Impact: Accounting for All Adjustments

**Abstract** This chapter surveys the evidence of the long-run effects of immigration on the destination economy. We specifically discuss the most recent literature on how immigration affects domestic migration by native workers, the demand for domestic production and, hence, domestic labor, the industrial mix, and producers' choice of technology. Particular attention is paid to evidence regarding the effects of immigration on local product demand. When product demand effects are accounted for, the evidence shows that broader long-term reactions to immigration are likely to be nonnegative. However, evidence on other potential long-run adjustment responses is more complex.

### 7.1 Introduction

In Chap. 5 we surveyed the economic models of immigration, most of which concluded that the effects of immigration on the destination country cause modest changes in destination country wages or overall employment levels. The previous chapter discussed the empirical estimates of the effects highlighted by the traditional models of immigration. Generally, the empirical results confirm what the theory suggests, namely that immigration causes only small changes in overall welfare, but the net change obscures some rather large redistributive effects.

The empirical results may have been biased by the failure of the underlying regression models to capture the full effects of immigration on the destination country economy. As discussed in the latter part of Chap. 5, the traditional labor market models of immigration fail to take account of the fact that the inflow of immigrants normally induces a series of reactions by native workers, native investors, foreign investors, entrepreneurs, policymakers, and other immigrants, among others. Specific reactions include the out-migration of native workers located in the communities where immigrants arrive, shifts by native workers to other professions, increases in demand as immigrants spend their earnings in the

destination country, and new investment in capital that complements the new immigrant workers. Many of these reactions by other actors in the economy occur later in time, and regression analysis using contemporaneous data generally misses these effects.

One of the proposed solutions to this bias in the estimates of immigrants' impact is to test directly for additional reactions to immigration. By including all the short- and long-run reactions in the analysis, the final estimate of the effects of immigration on the destination economy should be more accurate. But, it is not easy to test for the long-run reactions and adjustments to immigration. Such estimates require more dynamic models that relate current immigration flows to future adjustments. Most important, economists must abandon the traditional labor market models that have restricted the analysis to the immediate labor market effects. Immigrants are consumers, innovators, home owners, students, and community members as well as workers. Below, we describe the early attempts of economists to test and quantify the broader long-term consequences of immigration.

## 7.2 Does Immigration Trigger Internal Migration?

In the previous chapter we reviewed evidence from Card's (2001) study, in which he concluded that increases in the supply of labor to an occupation in a city appears to induce little or no out-migration of natives. Recall that Card tested whether immigration's benign effect on wages was due to a rise in out-migration by native workers. Card found that city outflow rates of natives and older immigrants were generally not sensitive to inflow rates of new immigrants. Card's results, therefore, suggest that researchers may not need to worry about internal migration when estimating the impact of immigration. However, Card's (1990) earlier study on the Mariel Boatlift had suggested that out-migration by native workers was likely to have played an important role in preventing a decline in wages in Miami after the arrival of 125,000 Cuban immigrants in one summer.

### 7.2.1 Evidence That Immigrants Induce Native Out-Migration

More thorough evidence on how native out-migration mitigates immigration's downward pressure on local wages in a labor market receiving large numbers of immigrants was provided by Filer (1992). He used data from the 1980 US Census to examine mobility patterns by natives during 1975–1980 for 272 US cities. Recognizing that native migration responses are likely to occur with a lag, he identified the number of immigrants living in an area in 1975 who were admitted between 1970 and 1974, and these immigrants were used to explain native out-migration during 1975–1980. Filer looked at net native migration, which he defined as the net sum of native workers in the city's labor market in 1980 who

resided elsewhere in 1975 minus the number who lived in the city in 1975 but resided elsewhere in 1980, divided by the size of the city's workforce in 1975. He limited his sample of native workers to adult males. Across cities, the average percentage of adult males who arrived as immigrants was about 1 % of the male labor force, and the mean increase in the adult male labor force from native immigration was just under 1 %. Filer found that mobility patterns of natives and rates of immigrant inflows across cities varied substantially.

Filer regressed native mobility rates on immigrant arrival rates while controlling for a wide range of characteristics of the city, its labor force, and the region. As controls, he included variables such as the growth in adult women and younger workers in the labor force, housing, pollution, commuting and demographic characteristics, various amenities, and regional controls. Filer's OLS regressions provide reasonably strong evidence that higher immigrant arrival rates deter inflows of natives, but there is little evidence suggesting that out-migration is encouraged. Specifically, Filer found that a 1 % increase in immigrants reduces native net migration by 0.12 % and reduces native in-migration by 0.83 %. There was no significant statistical evidence of out-migration.

Filer recognized that location decisions can be endogenous to city and region characteristics, which would bias his OLS estimates. To test for this possibility, he specified a simultaneous equations model that explicitly accounted for endogenous reactions. The estimated coefficients from this model suggest a much larger migration effect among natives than he estimated in his OLS model. The 3SLS model estimated that a 1 % increase in immigration reduces native net in-migration by 3.34 %. Because the 3SLS coefficients were so much more negative, the OLS coefficients likely suffer from simultaneity bias, as a result of both immigrants and natives being pulled in at greater rates to those cities with stronger labor markets.

Both OLS and 3SLS estimation indicated negative correlation between native net migration and the immigrant arrival rate, thus providing robust evidence that native migratory responses *more* than offset immigrant arrivals. Both the 3SLS and OLS results show that mobility responses were stronger among low-skilled natives. One possible explanation for this "native flight" is that natives leave because they perceive that their labor market opportunities have weakened. Filer actually draws a different conclusion, however. He found that mobility responses were stronger among whites. Filer reasoned that since evidence shows that white wages are impacted less by low-skilled immigration than black wages, there is something other than direct labor market effects influencing native migration. Obviously, prejudice against immigrants and the foreign culture they introduce into the community may drive a substantial portion of native migration. Also, while all native groups may have incentives to leave when immigrants arrive, wealthier whites may be better able to respond due to their having greater access to capital markets, can more easily find jobs in other cities, and, because native white culture dominates in all parts of the country, they will find it easier to move elsewhere compared to minority groups.

Strong evidence of native migratory responses was also found by Frey (1995) and Frey and Liaw (1996). Frey (1995) studied out-migration by natives from

California, and Frey and Liaw (1996) studied multiple US regions. Both studies reported a positive correlation between immigrant inflows and native outflows, a phenomenon Frey called “demographic balkanization” of US cities.

Borjas, Freeman, and Katz (1997) compared native interstate migration during 1970–1990 to immigration during 1960–1970 by estimating *first difference* and *double difference* regression models. They pointed out that one disadvantage of a first difference specification is that it implicitly assumes each state would have had the same growth rate in native population absent immigration. However, many states probably would have had different growth paths during 1970–1990 compared to 1960–1970 even if there had been no immigration. The double-difference model controls for that possibility.

The double difference model used by Borjas et al. is the following:

$$\Delta n_j(70, 90) - \Delta n_j(60, 70) = \alpha + \beta [\Delta m_j(70, 90) - \Delta m_j(60, 70)] + \nu_j \quad (7.1)$$

In this equation,  $\Delta n_j(t, t') = \frac{N_{jt'} - N_{jt}}{L_{jt}}$  is the growth rate of natives in state  $j$  between time period  $t$  and  $t'$  relative to the state's population in  $t$  ( $L_{jt}$ ),  $N_j$  is the number of natives residing in state  $j$ ,  $\Delta m_j(t, t') = \frac{M_{jt'} - M_{jt}}{L_{jt}}$  is the growth rate of immigrants in state  $j$  between periods  $t$  and  $t'$  relative to the state's population in  $t$ ,  $M_j$  is the number of immigrants in the state,  $\beta$  measures the impact of a gain in immigrants on the size of the native population relative to pre-immigration conditions in the state, and  $\nu_j$  is a random error term. Note that Borjas, Freeman, and Katz' first difference model estimates the impact of an additional immigrant arriving in the state between 1970 and 1990 on the change in the native population during that period. In contrast, their double difference model estimates whether a change in the growth rate of immigrants entering the labor market between the two periods induced a change in the growth rate of natives entering the same labor market.

Using the first difference model, Borjas, Freeman, and Katz found a positive association between immigration in each state and the growth rate of the state's native population. The double difference model, on the other hand, showed a negative relationship. Therefore, immigration does not decrease the native population, but it does decrease the native labor force. Apparently, immigration causes natives to commute to neighboring labor markets.

Hatton and Tani (2005) analyzed geographic migration between 11 UK regions using annual data for the years 1981–2000. Hatton and Tani found relatively strong evidence of a negative native mobility response to immigration, particularly for the UK's six Southern regions. For all 11 regions, a 1 % increase in net in-migration of foreigners to region  $i$  relative to region  $j$  is estimated to have reduced net in-migration to region  $i$  by 0.064 %. When estimation was restricted to the six Southern regions, however, the mobility response coefficient was 0.162 %. Hatton and Tani noted that gross flows of international migration historically have tended to be larger for the Southern regions, particularly London, hence the importance of

doing a separate estimate for that group of regions. Overall, their results strongly confirm that immigration induces native-born residents to relocate to other cities, either because of a softening in the labor market or because of other factors about the locality that they perceive as becoming less attractive with the arrival of immigrants.

### 7.2.2 Evidence That Immigration Has Little Effect on Native Out-Migration

Contradicting the empirical results reviewed above, Wright, Ellis, and Reibel (1997) found no correlation between native out-migration and immigrant arrivals after controlling for area size, a factor they argued could have biased other studies. They also tested for whether native out-migration varied across five different educational categories. Wright, Ellis, and Reibel found that variation in out-migration by unskilled natives across cities was due more to variation in the population size of cities than variation in immigrant arrival rates. They confirmed their results through robustness checks, using different samples of cities, and excluding outliers such as the highest immigration cities.

Card and DiNardo (2000) used 1970–1990 census data to test whether immigrant inflows during the 1980s altered the distribution of native-born skills across 119 US cities. Card and DiNardo’s study is the first to focus on the relocation decisions of specific native skill groups. They estimated the effect of immigrant inflows on the relative proportion of native-born workers in three equally sized occupational groups defined by average weekly wages in each occupation. They estimated the following equation, which relates the relative growth rate of natives in skill group  $j$  in a city to the growth rate of immigrants in that same skill group:

$$\left( \frac{\Delta N_{jc}}{P_{jc}} - \frac{\Delta N_c}{P_c} \right) = a + b \left( \frac{\Delta M_{jc}}{P_{jc}} - \frac{\Delta M_c}{P_c} \right) + \nu_{jc} \quad (7.2)$$

where  $\Delta N_{jc}$  ( $\Delta M_{jc}$ ) is the change in natives (immigrants) in skill group  $j$  in city  $c$ ,  $\Delta N_c$  ( $\Delta M_c$ ) is the change in natives (immigrants) in city  $c$ ,  $P_{jc}$  is the population of skill group  $j$  in city  $c$ ,  $P_c$  is the population of city  $c$ , and  $\nu_{jc}$  is a skill-group- and city-specific random error term. A value of  $b = -1$  means the arrival of a new immigrant to skill group  $j$  results in one native from that skill group relocating. If  $b = 0$ , the mobility of natives in a skill group is independent of immigration to that group. In general, a zero value for  $b$ , however, does not mean that native location decisions are immune to immigration, only that changes in native population are not affected by changes in the arrival rate of immigrants to the same skill group.

Card and DiNardo estimated (7.2) using first weighted OLS and then instrumental variables to mitigate the potential bias due to immigrant and native population growth being endogenous to city- and skill-group-specific labor market conditions.

The OLS estimates do not show any evidence that, within the lowest skill group, immigrants displace natives from an SMSA. In fact, these estimates indicate a positive association between native and foreign-born in-migration. After controlling for relative growth of the native population, city population growth, the fraction of immigrants in the skill group in 1980, and other city effects, weakly significant estimates showed that a 1 % increase in immigrants to the lowest-skill group in a city induces a 0.24 % increase in native in-migration to the same skill group in that city. The instrumental variables estimate was considerably larger, although also barely statistically significant. Even though these estimates are not strong, they do directly contradict the findings of Filer and others who found that immigrants displaced natives.

### 7.3 Migration Biases Estimates of Immigration's Wage Effect

Borjas (2006) asked how much of the difference between the estimated wage effects of immigration obtained from national studies and those obtained from local studies can be explained by the diffusing effects of internal migration. Recall from Chap. 5 that Borjas' theoretical model predicts that the longer after an immigration shock when the wage is measured, the closer the wage will be to what it would be in the absence of immigration. Borjas (2006) provides a framework that connects the parameters measuring the wage effect of immigration at a national level, the parameters that measure the effect at a local level, and the geographic mobility of native labor.

Borjas' approach was to estimate the wage effect of immigration in the national labor market, the labor markets defined by the boundaries of the nine US Census regions, state labor markets, and individual city labor markets. Specifically, he estimated the following wage regression

$$\log w_{ijt} = \theta_w P_{ijt} + s_i + r_j + \pi_t + s_i \pi_t + r_j \pi_t + s_i r_j + \varphi_{ijt} \quad (7.3)$$

where  $w_{ijt}$  measures the wage paid to a worker in skill group  $i$  in spatial unit  $j$  at time  $t$ ,  $P_{ijt}$  is the foreign-born share of the labor market for workers in skill group  $i$ ,  $s_i$  is a vector of fixed effects which controls for the group's skill level,  $r_j$  is a vector of fixed effects controlling for place of residence,  $\pi_t$  is a vector of fixed effects controlling for the time period, and  $\varphi_{ijt}$  is a random error term. He applies data for 1960–2000. He then analyzes how the coefficient  $\theta_w$ , which is intended to capture the wage effect of immigration, varies with the size of the geographic area.

When the labor market is national and the sample includes both men and women, Borjas estimated the coefficient at  $-0.532$ , which implies a 10 % increase in the immigrant share reduces weekly earnings by 5.32 %. The coefficient was  $-0.35$  when the spatial unit is the Census division,  $-0.27$  for the state-level regression,

and between zero and  $-0.06$  for the city regression. The estimated wage effect thus nearly evaporates when the labor market is disaggregated down to the local level.

Borjas also directly estimated the impact of the immigrant share on the native workforce and migration rate. He found that the impact of immigration on the native workforce diminished with the size of the area. At the city level, for every ten immigrants that arrive, slightly over five natives leave. At the state level, around two natives will leave the workforce for every ten immigrants that enter. At the Census division level, the estimated effect was found to be unstable, varying between nil and approximately two natives.

The final step in Borjas' strategy was to examine whether the large differences in the wage effects of immigration across geographic definitions of the labor market could be accounted for by native labor mobility. He assumed that the national labor market approximates a closed economy, so that the estimated wage effects of immigration at the national level reflect the true elasticity of the native-born wage with respect to immigration. Borjas concluded that: (1) native mobility responses account for about 40 % of the gap between state-level wage effects and national-level effects; and (2) mobility responses account for as much as 60 % of the difference between city wage effects and national effects. Overall, these results all suggest that internal migration is a very important secondary adjustment process.

Federman, Harrington, and Krynski (2006) tested for natives' response to the arrival of immigrants within an occupation. That is, they tested whether natives "migrated" out of a profession when immigrants entered. Their test case is the manicurist profession in California. The proportion of Vietnamese-born immigrants in California's manicurist labor market jumped from 10 % in 1987 to nearly 60 % in 2002. At the same time, the population density of manicurists in the state grew from 1 to approximately 1.5 per 1,000 residents, an increase three times the 12 % growth of real per capita income. While the growth of per capita income suggests there was an increase in the demand for manicurist services, the very high increase in the number of manicurists also implies an increase in supply driven primarily by an influx of mostly Vietnamese-born women who had the appropriate skills. The question is whether this large influx of immigrants into the profession induced native-born manicurists to abandon the profession and whether it deterred prospective native manicurists to enter the profession.

Federman, Harrington, and Krynski ran regressions using weighted least squares (the weights are population of each city) and instrumental variables. Coefficient estimates from both types of estimation confirmed a negative displacement rate. The weighted least squares regression estimates predict that for every ten Vietnamese manicurists that entered the local market, approximately five non-Vietnamese manicurists were displaced. The instrumental variable estimates predict that about four non-Vietnamese manicurists were displaced. Inflows, as well as exit rates, of non-Vietnamese manicurists were regressed on the Vietnamese manicurist density and other controls to ascertain the underlying reason for the observed displacement effect. The authors concluded from this analysis that the displacement effect was primarily due to the entry of Vietnamese manicurists deterring the entry of native manicurists, rather than the exit of natives.

In summary, the evidence on internal migration responses to immigration is very mixed, with some studies showing strong evidence of offsetting native mobility responses, others showing little or no evidence, and still others indicating a positive association. An appropriate description of the state of the evidence is given by Freeman (2006, p. 157): “Analysts have reached no consensus about the extent to which internal migration explains the absence of any relation between immigration and wages among local labor markets.”

## 7.4 Does Immigration Change Industry Structure?

International trade theory suggests that the inflow of immigrants will, all other things equal, change the industrial structure of the destination economy. As described in Chap. 5, traditional trade theory suggests that the inflow of a certain category of workers will increase the share of production of those industries that require relatively high amounts of that category of labor in their production process. This is known as the *Rybczynsky theorem*, which is derived from the Heckscher-Ohlin model of trade. Very little empirical work has been done to test the hypothesis that immigration triggers changes in industry structure, however.

Lewis (2003) studied how US cities absorbed inflows of workers in four different education groups during the 1980s. Applying US Census data to a first difference specification, Lewis tested for a positive association between a city’s share of immigrants in education group  $j$  and the employment share of industries that employ large amounts of group  $j$  workers, that is, industries that are *relatively  $j$ -intensive*. Lewis found that the relative sizes of the  $j$ -intensive industries were weakly related to immigration in that education group. In contrast, he found a strong positive association between inflows of workers in education group  $j$  and the share of an industry’s workers from that group. Lewis concluded, therefore, that immigration does not increase immigrant-intensive industries, but only increases employment shares of immigrants across all industries.

Card and Lewis (2005) used 2000 US Census data on employment shares in three-digit classified industries for 150 larger cities to determine whether local reactions to immigration shocks are changes in industry shares or changes in skill-group employment shares within industries. They used the decomposition method introduced by Lewis (2003) to distinguish how immigration affected labor market shares in industries. They focused on high school dropouts. Card and Lewis’ analysis effectively rejected the standard international trade model. They found that when US cities experience an increase in the supply of workers with less than a high school education, local industries respond by adjusting their labor forces in favor of poorly educated workers, not by growing those industries that normally employ large numbers of poorly educated workers.

Card and Lewis (2005) results supports the models of endogenous technological change by Acemoglu (1998) and Beaudry and Green (2003). These models predict that production technology is driven by the relative scarcities (prices) of factors of

production. Also supporting the endogenous technology explanation is Lewis (2004), who used data on the number of advanced production techniques adopted by US manufacturers in the late 1980s and early 1990s and found that the adoption of advanced techniques slowed significantly following inflows of unskilled workers to local labor markets. Similar evidence was obtained for Israel by Gandal, Hanson, and Slaughter (2004), who examined how production techniques of Israeli industries adjusted to the massive inflows of Russian Jews in the early 1990s. A large proportion of adult Russian immigrants to Israel were highly educated and had been in high-skilled professions in Russia. About the time of the immigrants' arrival, Israel's high-tech industry began a period of rapid growth. It is not clear that the adoption of high skilled-intensive technologies in Israel was endogenous to the Russian immigrant inflows, however; there were many other fundamental reasons why Israel's high tech industry grew rapidly, such as foreign investment, the high level of education of Israel's native population, and shifts in government policies to promote economic growth.

## 7.5 Measuring the Demand Effects of Immigration

As pointed out in Sect. 5.3, immigrants are not only workers, they are also consumers. This suggests there is likely to be a “Say’s law of immigration” in the sense that immigrants, at least partially, demand their own labor. Specifically, if immigrants spend at least part of their destination economy earnings on goods and services produced locally, then immigration will trigger changes in the derived demand for their own labor. They will also affect the demand for other categories of labor, and thus will affect native-born wages and employment rates. Changes in immigrant remittance rates and changes in public spending on goods and services for immigrants could further shift derived demand. Finally, if new immigrants compete with native-born workers for jobs, then the resulting lower labor costs will shift the product supply curve and generate lower costs for consumers. Thus, immigration is likely to change product prices directly through consumer demand or indirectly through product supply channels.

This demand effect of immigration has not been widely analyzed, as evidenced by the small number of studies cited in Chap. 5. There have been even fewer attempts to actually quantify the demand effect of immigration.

### 7.5.1 Hercowitz and Yashiv’s Estimates

The theoretical model developed by Hercowitz and Yashiv (2002) predicts that an exogenous immigration shock will trigger offsetting effects on product price, among other things. Hercowitz and Yashiv develop a dynamic model that captures the timing of the various effects of immigration. The model predicts that

immigrants will delay entry to the destination economy's labor market but will enter the goods market immediately. As seems to have happened in a number of recent cases of mass immigration, the adverse labor market effects of immigration will be delayed.

Specifically, Hercowitz and Yashiv tested these predictions using the following empirical specification:

$$\ln p_{m,t} = a + bX_t + \sum_{q=1}^Q c_q \frac{\Delta P_{I,t-q}}{P_{N,t}} + \epsilon_t, \quad (7.4)$$

where  $p_{m,t}$  = the real price of output in period  $t$ ,  $X$  is a vector of controls,  $\Delta P_{I,t-q}$  is an exogenous immigrant inflow that occurred  $q$  periods earlier,  $P_N$  is native population, and  $\epsilon_t$  is a random error term.

Of particular importance in (7.4) is the sum of right-hand terms, namely the product of  $c_q$  and the past immigrant inflows. The variable  $c_q$  is a vector of immigrant "participation factors" that describes how labor market participation varies with the length of time since immigration. In (7.4), these terms generate what statisticians call *impulse responses*, which in this case are the effects of immigration on prices after various lengths of time immigrants have been in the destination country. The impulse responses are assumed to be linearly related to immigrant participation in the labor and product markets according to the following specification

$$c_q = -\omega_1(\theta_y)_{-q} + \omega_2(\theta_I)_{-q} \quad (7.5)$$

The vector  $\theta_y = \{(\theta_y)_{-1}, (\theta_y)_{-2}, \dots\}$  consists of immigrant "participation factors" that describe how differences in time since migration influence the extent of labor market participation. The coefficients  $\omega_1$  are functions of the elasticities of native labor supply and other labor market characteristics. The vector  $\theta_I = \{(\theta_I)_{-1}, (\theta_I)_{-2}, \dots\}$  consists of immigrant participation factors in the product market, determined by the price elasticities of demand and the time since migration, among other things.

Note the negative sign on  $\omega_1$  and the positive sign on  $\omega_2$  in (7.5). The opposite signs reflect the conflicting effects that immigration has on the product market. As consumers, immigrants push up product demand and price. But, as workers, they cause prices to fall by lowering wages, all other things equal. Furthermore, shifts in immigrant participation factors over time determine whether, overall, immigration raises or lowers prices. New immigrants are likely to immediately enter the product market as consumers, but they may not enter the labor market until after they have had some time to settle in the destination country. Hence, the impulse response term will exert a positive effect on price for low values of  $q$ , but since cohorts that have been in the destination country longer will be participating in both markets, those older cohorts will exert an ambiguous effect on prices.

Hercowitz and Yashiv estimate their regression model based on (7.5) using quarterly data on the arrival and assimilation of Jewish Russian immigrants to Israel over the years 1990–1999. The chosen number of lags,  $Q$ , was nine quarters, and the coefficients on immigration lags were restricted to lie on a polynomial distributed lag for the technical reason that this distribution allows for more convenient estimates of the impulse responses.

Hercowitz and Yashiv found that the impulse response of immigration on product prices was positive at the first lag, negative from lag 2 onwards, but only statistically significant at lags 4 and 5. Those significant estimates were negative; the only positive coefficient occurred for the first lag, but that was statistically insignificant. These results very weakly confirm a decline in *relative* participation by immigrants in the goods market with length of stay. Hercowitz and Yashiv also found that significant negative effects of immigration on native employment occur after a year following an immigration shock. They interpret this result to also reflect the net stimulus effect of immigration on the product market during the first year.

Hercowitz and Yashiv's study has two important implications for future research on the effects of immigration on product market demand. Unlike other adjustment processes, the consumer demand response to immigration starts up very quickly. Therefore, in the short-term native-born workers can enjoy net benefits from immigration. However, while the consumer demand response continues for the long term, it will lose its ability to counteract the adverse labor market effects of immigration on native-born workers and that loss occurs faster than many would probably expect.

### 7.5.2 *Bodvarsson and Van den Berg's Lexington, Nebraska, Study*

Bodvarsson and Van den Berg (2006) estimated a model of an immigration shock to a local export-driven industry, inspired by the case of Lexington, Nebraska, a small rural city that received several thousand Hispanic immigrants in the early 1990s. Lexington provides a special case that facilitates the estimation of immigrants' demand effect because immigrants work almost exclusively in the "export" market, namely new large food processing plants producing for the national market. Yet, the immigrants consumed in the local market. Hence, after controlling for other changes that affected the local market, including native migration, immigration can be entered into the regression equation to estimate its effect on local demand without having to worry about immigration's effect on the labor market for local production.

Lexington, Nebraska, is located in the west-central part of the Great Plains corn and cattle region. Lexington experienced an extraordinary episode of endogenous immigration in 1990 when a multinational meat processing firm retrofitted an abandoned agricultural equipment manufacturing plant in the county to a state-of-the-art meatpacking facility. Virtually overnight, Dawson County saw an influx of approximately 2,500 workers, almost all of whom were foreign-born Hispanics.

Following the initial immigration shock, there were subsequent waves of Hispanic migrants during the 1990s, many desiring closer proximity to family and friends, and soon other meatpacking and assorted manufacturing plants settled in Lexington. By 2000, about half of the city's residents were Hispanic immigrants, compared to just 3 % before 1990.

To estimate the demand effect of immigration, Bodvarsson and Van den Berg first estimated the effect on retail wages using the regression equation

$$W_R = \delta_0 + \delta_1 I_0 + \delta_2 IM + \delta_3 N_0 + \delta_4 OM + \delta_5 P_X + \delta_6 V_N + \delta_7 V_I + \alpha' X' + \beta' Z' + \epsilon \quad (7.6)$$

in which  $W_R$  is the real county retail wage,  $I_0$  is the initial stock of immigrants,  $IM$  is the volume of net in-migration during the period,  $N_0$  is the initial stock of native-born persons,  $OM$  is net out-migration in the county during the year,  $P_X$  is the price of the export good,  $V_N$  is the real reservation wage of native-born workers,  $V_I$  is the real reservation wage of foreign-born workers,  $X'$  is a vector of county fixed effect controls,  $Z'$  is a vector of other control variables, and  $\epsilon$  is an error term. The coefficients of the most interest are  $\delta_2$ , which measures the effect of the immigration shock on the wage, and  $\delta_4$ , which measures the native mobility response to the immigration shock.

Bodvarsson and Van den Berg included eight other counties in Nebraska, Kansas, South Dakota, and Iowa in their sample. These other counties were chosen because they most closely resembled Dawson County, in which Lexington was located, but, unlike Dawson County, they experienced little or no immigration during the sample period. These other eight counties serve as the *counterfactual* in the sample. The sample period begins in 1980 and ends in 1999.

Bodvarsson and Van den Berg found that, all other things equal, the addition of one new immigrant raised the annual retail wage by \$0.17, implying that the arrival of nearly 6,000 immigrants raised annual real wage income in the local economy by about \$1,000. Furthermore, using data on real median housing prices in the nine counties, Bodvarsson and Van den Berg tested for the Hispanic influx's effects on the local housing market. Estimating an equation like (7.6), but using the real median housing price as the dependent variable, they found that the addition of one immigrant to Dawson County raised the housing price by over \$2, all other things equal. Bodvarsson and van den Berg thus conclude that there indeed were positive demand effects linked to immigration.

### 7.5.3 *Estimating the Demand Effect of the Mariel Boatlift*

Bodvarsson, Van den Berg, and Lewer (2008) reexamined the Mariel Boatlift to determine to what extent Card's (1990) finding that the Boatlift had a benign effect on Miami's labor market can be attributed to a boost in local consumption spending

by immigrants. Recall from Chap. 5 that Card conjectured that the small effect of the Boatlift on Miami wages and unemployment rates was due to offsetting out-migration of native workers. Lewis (2004) argued that the Boatlift encouraged Miami's industries to adopt more unskilled-intensive production technologies. Bodvarsson, Van den Berg, and Lewer argue that while these adjustment processes may have been at work, Saiz's (2003) finding of strong positive effects of the Boatlift on housing prices suggests that immigration also caused an increase in local product, and thus labor, demand. But how important was this demand effect for keeping wages and unemployment rates largely unchanged despite the arrival of nearly 100,000 immigrants?

To estimate the demand effect of immigration, Bodvarsson, Van den Berg, and Lewer set up a regression model in which an exogenous immigration shock is the net sum of (1) the substitution of immigrants for natives and (2) the stimulation of labor demand due to the consumer demand effect. In general, when labor demand is stimulated, native wages can rise, fall, or stay the same, depending upon the shock's intensity and the various labor elasticities.

The authors applied an econometric methodology developed by Wacziarg (1998, 2001), which allows for the estimation of a simultaneous equations regression model in which an independent variable affects the dependent variable through different *channels* of influence. Specifically, the Wacziarg model includes a set of *channel equations*, each describing one of the processes by which the fundamental causal variable influences the channel variable, and an *aggregate equation* that explains the dependent variable and includes, among other determinants, each of the channel variables as explanatory variables. The overall effect of the fundamental causal variable on the dependent variable is the sum of the effects of the causal variable on each channel variable, each multiplied by the channel variable's influence on the final dependent variable. In this case, the native wage is the final dependent variable, and the two channel variables represent, respectively, the input substitution and the consumer demand effects.

Specifically, the following model was used to estimate the net effects of immigration on Miami wages:

$$W_N = a_0 + a_1(W_I) + a_2(P) + a_3(Z) + \delta, \quad (7.7)$$

$$W_I = b_0 + b_1(\theta_I) + b_2(R) + \varepsilon, \quad (7.8)$$

$$P = c_0 + c_1(\theta_I) + c_2(S) + \omega, \quad (7.9)$$

where  $W_N$  and  $W_I$  are the wages of natives and immigrants, respectively,  $P$  is product price,  $Z$ ,  $R$ , and  $S$  are vectors of other variables hypothesized to influence native wages, immigrant wages, and product prices, respectively. The variable  $\theta_I$  is the proportion of immigrants in the local labor market, and  $\delta$ ,  $\varepsilon$ , and  $\omega$  are random error terms. The effect of immigration on wages through the immigrant wage channel is  $(b_1 \dots a_1)$ , and the effect of immigration through the product price

channel is  $(c_1 \dots a_2)$ . The total effect of immigration on the native wage is  $(a_2 \dots c_1) + (a_1 \dots b_1)$ , of which the consumer demand effect accounts for the proportion  $(a_2 \dots c_1)/[(a_2 \dots c_1) + (a_1 \dots b_1)]$ .

Bodvarsson, Van den Berg, and Lewer used the same data set and the same four comparison cities as Card's (1990) study. Like Card, they also broke the sample down into four categories of workers (whites, blacks, Cubans, and Hispanics) and three categories for the other cities (whites, blacks, and Hispanics). Estimation of (7.7) and (7.8) confirmed that the Boatlift induced a negative input substitution effect. However, estimation of (7.9) confirmed a strong, positive consumer demand effect. Specifically, a 1 % increase in the Cuban share of the Miami population induced an increase in retail sales per capita in excess of \$23, all other things equal. More important, the positive contribution of the post-Boatlift consumption stimulus to the native-born wage exceeded the negative contribution that resulted from the substitution of immigrants for natives in the retail labor market. In fact, the consumer demand effect was nearly *twice* as strong as the input substitution effect, implying that the Mariel Boatlift net boosted the native-born wage. Similar results were found when the sample was split into three unique ethnic groups. The positive consumer demand effect for whites, blacks, and Hispanics suggests that the new Cuban immigrants patronized shops and businesses of all ethnic backgrounds. However, while native white wages were positively affected by a larger Cuban immigrant share, native black and Hispanic wages were on balance not affected by the Mariel influx. These findings led Bodvarsson et al. (2008, p. 35) to conclude that “...there is a ‘Say’s Law of Immigration’: Immigrants do indeed spend a substantial portion of their incomes in their new home communities and thus demand at least some of the labor they supply.”

#### 7.5.4 Additional Estimates of the Demand Effects of Immigration

Lach (2007) explicitly analyzed the price effects of Russian Jewish immigrants to Israel. By estimating the price effects, Lach effectively estimated the effect of immigration on local demand. Lach looked at demand in more detail than Bodvarsson and Van den Berg (2006) and Bodvarsson et al. (2008), and he analyzed both the shift and change in the shape of the demand curve.

First, Lach used the 1990 Russian Jewish immigrant supply shock in Israel to test the immigrant price elasticity of demand. Lach's sample includes store-level price data for over 900 products sold in about 1,800 retail stores located in 52 cities during 1990. There is considerable cross-city variation in the Russian immigrant density, and Lach took advantage of this variation to identify the effect of immigration on prices. Overall, Lach found a negative effect of immigration on consumer prices: a 1 percentage point increase in the ratio of immigrants to natives in a city will *decrease* prices by 0.5 percentage points. He attributed this result to the change in the composition of demand. He found that immigrants were more price sensitive and more likely to substitute cheaper goods for more expensive goods.

Hence, it is not certain that the price decline in any way implies that immigrants have a negative demand effect. To the contrary, since Lach builds supply growth into his analysis, his results probably show only that immigrants are more careful shoppers than natives and, therefore, do not increase demand as much as a similar increase in the number of natives would. Nevertheless, his results do suggest that immigrant remittances are not the only thing that reduces the demand effect of immigrant workers below that of increases in native workers.

A number of studies have estimated the effects of immigration on housing prices and house rents. Housing price data is often readily available, and all immigrants must acquire housing. Saiz (2003) hypothesized that immigration causes unskilled individuals to experience greater escalation in rental prices than skilled individuals and unskilled renters to displace skilled ones from dwellings at the lower end of the rental market. He used observations from rental units in the 1974–1983 national and SMSA Annual Housing Survey (AHS) to perform a difference-in-differences test on Miami-area prices following the Mariel Boatlift. Saiz compared the evolution of rental prices in Miami with that of ten metropolitan areas with the closest median growth rate to Miami. The identifying assumption in his sample is that there is no factor other than the Mariel shock specific to Miami that accounts for any deviation in the trend of rental prices.

According to Saiz, the Boatlift contributed to a significant spike in all rental prices. The differential rent increase varies from just over 7 % to approximately 10 %, depending upon the comparison group used. Through 1981, the differential rent hike was even larger, varying between approximately 8.5 and 12 %. Saiz also observed that units in the bottom three quartiles were the ones significantly affected by the Boatlift, whereas prices in the top quartile were generally unaffected. Thus, the Boatlift had a disproportionate impact on the rental prices of dwellings used by persons with lower incomes. Furthermore, the impact of the Boatlift appears to have been strongest in low-income Hispanic neighborhoods, where the Mariel immigrants were most likely to have settled.

Although it was not a focal point of their study, Ottaviano and Peri (2005) estimated regressions of housing values on increases in local employment due to immigration using data for individuals in 86 US cities (1970–2000) and 117 cities (1970–1990). They found that the impact of immigration on housing values of native-born local residents was substantially positive. Specifically, Ottaviano and Peri estimated that an increase of foreign-born workers equal to 1 % of total city employment generates a 1.1–1.6 % increase in native-born housing values.<sup>1</sup>

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<sup>1</sup> Cortes (2008) addresses another more specific question, which is the following: How does immigration affect the product supply curve? She uses US data for 1980–2000 to measure local immigrant densities and low-skilled labor shares, as well as store-level price data and constructs estimates of local price indices for nontradable low-skilled services. Cortes finds that an increase of 10 % in the share of low-skilled labor in a city decreases the price of these services by approximately 2.5 %. However, her estimate does not take into account any effects of immigration on service demand.

Finally, in a recent study, Aydemir and Borjas (2011) argue that some of the weak estimated impact of immigration on native wages found in the literature may be also due to systematic measurement error in the immigrant density, particularly when sample sizes are small. They observe that the fraction of the destination economy's workforce that is foreign-born, the key independent variable used in most of the wage impact studies, suffers from sampling error because it is typically calculated from a sample of workers in the labor market of interest. After controlling for permanent influences on wages, there is usually only a small amount of variation in immigrant workforce share available to help account for variation in native wages. This leads to consistent underestimates of the wage impact of immigration. In fact, the bias accelerates as the size of the sample used to calculate the immigrant workforce share declines. Aydemir and Borjas document the magnitude of attenuation bias, which can be substantial. Furthermore, they show that the lagged immigrant share is not a good instrument when cell size is relatively small.

Aydemir and Borjas introduce a number of correction techniques, including the *unbiased split sample instrumental variable* (USIV) method, developed by Angrist and Krueger (1995). Using Canadian and US Census data for selected years during the period 1971–2001 for Canada, and decennial US census data (IPUMS) for 1960–2000 for the US, Aydemir and Borjas show that correcting for attenuation bias using USIV can significantly increase existing estimates of the wage impact of immigration. Note that Aydemir and Borjas do not provide *an* estimate of native wage impact for each country, but rather use their study to demonstrate the degree to which estimated wage impact can be made more accurate through correction of attenuation bias. Their paper has the major implication that earlier studies would need to be reestimated using the correction technique employed by Aydemir and Borjas. Thus, we end this chapter suggesting that the estimation of the long-run distributional effects of immigration depends not only upon proper and complete modeling of all the different secondary effects, but also addressing key empirical problems such as those delineated by Aydemir and Borjas.

## 7.6 The Costs of Government Services for Immigrants

Discussions of the economic effects of immigration in destination countries often focus on immigrants' use of public services and their receipts of government transfers. In most developed economies, which are the principal destination countries for immigrants, such services and transfers are a large portion of GDP. This means that even small changes in the amount of taxes paid by immigrants or services used by immigrants are much greater than the small estimated overall net economic effects of immigration on the destination country. It is not entirely surprising, therefore, that policymakers and taxpayers in the destination countries are concerned about how government costs are affected by the arrival of immigrants.

### 7.6.1 Recent Studies for the USA

The evidence does not support the popular belief that immigrants are a fiscal burden in the USA, however. First of all, except for refugees and elderly immigrants, the remaining immigrants to the USA actually use government services to a lesser degree than natives. If we include refugees, who are high users of government services and recipients of government transfers, immigrants as a group still use government services only slightly more often and receive only slightly more welfare payments than natives. For example, according to the 1990 census, 9 % of immigrant families received welfare payments, a percentage that was only slightly more than the 7.4 % of US-born families that received welfare payments. A 1992 study for the United States Department of Health and Human Services by Kirchner and Baldwin (1992) found that pre-1982 legal immigrants to the USA living in the six states with the largest immigrant populations were found to pay more in total taxes than they received in government-provided benefits. Zawodny (1997) notes that, counter to some popular myths, immigrants do not seem to make settlement decisions based on the availability of welfare and social services; they settle where there are jobs and where they have close family. That is, immigrants use state and local government services, but they do not seem to immigrate just to take advantage of those services.<sup>2</sup>

A 1992 study for the United States Department of Health and Human Services determined that the fiscal burden of immigrants fell mostly on state and local governments. The federal government actually enjoyed net gains from increased income tax and Social Security tax revenues.<sup>3</sup> According to the historical data, the average immigrant in 1990 was less educated and had a larger family compared to natives, and immigrants were, therefore, more likely to use state and local government services, especially education. But, because immigrants were also younger than natives, they were large contributors to Social Security, a federal program.

With time, however, the situation changes at the local government level. The children of immigrants pay more taxes and receive fewer transfers, and their increased incomes make them even greater net contributors to the Social Security fund. According to Kirchner and Baldwin (1992), “When it’s all added up...most long-run calculations show that immigrants make a net positive contribution to public coffers.” Also, not all levels of government are affected the same way by immigrants; the fiscal burden of immigrants in the USA has fallen mostly on state and local governments. The federal government actually enjoyed net gains from increased income tax and social security tax revenues. Apparently the average immigrant is less educated and has a larger family compared to natives, so immigrants were more likely to use state and local government services. But, because immigrants are also younger than natives, they are large contributors to social security, a federal program.

<sup>2</sup> See also Vedder, Gallaway, and Moore (2000, pp. 347–364).

<sup>3</sup> Kirchner and Baldwin (1992).

A study of immigration in Europe countries suggests that the tax-transfers ratio is not as burdensome as is often feared because governments adjust both taxes and transfer programs in order to improve the balance for native workers. A study by Razin, Sadka, and Swagel (2002) found that for 11 European countries, both taxes on workers and transfers to the poor were reduced as immigrants came to represent a higher percentage of the population. The recent welfare reforms in the USA, which reduced benefits to noncitizens, are further evidence that the political process adjusts immigrants' access to welfare benefits as immigration rises.

### ***7.6.2 Are US Immigrants More Costly Today than in the Past?***

The image of the many immigrants that arrived in the USA at the end of the 1800s and the early 1900s is that they “came to this country not with their hands out for welfare checks,” but “for freedom and the opportunity to work.”<sup>4</sup> Since so many Americans are descendants of those turn-of-the-century immigrants, the myth of the self-reliant immigrant is enthusiastically kept alive, even as polls reveal that many Americans believe that today’s immigrants are coming to the USA for welfare benefits and free schools.

One hundred years ago, in 1909, about half of all public welfare recipients in the USA were members of immigrant families, even though immigrants made up about 15 % of the total population. At about the same time, two-thirds of people receiving public assistance in Chicago were foreign-born.<sup>5</sup> According to the 1990 census, 9 % of immigrant families received welfare payments, a percentage that was only slightly more than the 7.4 % of US-born families that received welfare payments. In the early 1900s, nearly three-quarters of all students in New York City’s public schools were children of immigrants; over half of all students in public schools of the 30 largest US cities were children of immigrant families. The so-called fiscal burden of immigrants, if there is one at all, is clearly not a recent phenomenon.

### ***7.6.3 Estimates of Fiscal Costs for Other Countries***

Studies on the fiscal impact of immigration have been performed in many countries, and a great variety of methods have been used. For example, Dustmann, Frattini, and Halls (2009) assessed the fiscal consequences for the UK of migration from the

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<sup>4</sup> The words of Rep. Bill Archer of Texas, chairman of the House Ways and Means Committee, in describing earlier immigrants and justifying his committee’s 1995 bill to deny welfare payments to most legal immigrants.

<sup>5</sup> Rose, F. (1995, April 26). Muddled masses, the growing backlash against immigrants includes many myths. *Wall Street Journal*.

Central and Eastern European countries that joined the EU in May 2004, the so-called *A8 countries*. They examined the extent to which A8 immigrants claimed various UK government benefits, and they found that during the years 2005 through 2007 these immigrants were 60 % less likely than natives to receive state benefits or tax credits, and 58 % less likely to live in subsidized housing. Such simple reporting of events can be misleading, of course, since immigrants and natives do not, on average, have identical characteristics. Immigrants are more likely to be of working age and of better health, for example. When they adjust their estimates for demographic characteristics, Dustmann et al. found that immigrants would still be 13 % less likely to receive government benefits and 28 % less likely to live in subsidized housing.

Dustmann et al. furthermore examined the taxes paid by the new immigrants, and they conclude that immigrants made a positive contribution to public finance. This was during a period when the UK governments across all levels were running overall budget deficits. The positive balance for immigrants was due to immigrants' higher labor force participation rate, their larger indirect tax payments, and their much lower use of benefits and public services.

Grubel and Grady (2012) estimate that in Canada in 2005 the average immigrant resulted in a fiscal burden \$6,051 per year. Javdani and Pendakur (2011) present an alternative estimate of Canada's per immigrant fiscal burden of \$450. The difference in the estimates is due to the fact that Javdani and Pendakur covered the period 1970–2004, while the former's study covered 1987–2004. According to Grubel and Grady (2012), the later immigrants performed worse than earlier immigrants "for a number of reasons, including their greater numbers, their different source countries as well as changes in immigration policy that placed less emphasis on employability and more on more difficult to measure factors such as educational attainment, knowledge of both languages, and humanitarian objectives such as family reunification." Grubel and Grady also argue that Javdani and Pendakur's lower cost estimate is due to their different assumptions about immigrants' absorption of government spending on pure public goods, education, and public housing.

Grubel and Grady's (2012) focus on a more recent immigrant cohort also leads them to conclude that further find that there is no compelling evidence to conclude that the children of recent immigrants are going to be able to earn enough to compensate current and future generations of Canadians for the fiscal transfers made to their parents by existing Canadians. This conclusion seems to concur with Borjas (1995, 2003) argument that recent US immigrants, or their children, are not assimilating as fast as earlier immigrant groups. Grubel and Grady do find that Canadian immigrants who arrived with pre-arranged jobs waiting for them did have a greatly superior economic performance. This latter finding provides support for Canada's point system for awarding immigrant visa, which gives extra points to people who have an employment offer in hand.

Another example is Storesletten's (2002) study of Sweden, a country in which government accounts for a very large share of GDP and provides a very broad range of social benefits. Storesletten furthermore looks at the present value of a long period of costs and benefits rather than a single annual flow of costs and benefits.

He reasons, quite correctly, that costs and benefits change over an immigrant's lifetime, and thus the whole multiyear flow should be analyzed. Two-thirds of Swedish government expenditures are age-dependent, such as retirement benefits, education, and health services. Obviously, the present value depends critically on the assumed discount rate, a common problem for assessing long-run costs and benefits.

Not surprisingly, Storesletten finds that Swedish government enjoys net fiscal benefits from immigrants between the age of 20 and 30. On the other hand, very young and very old immigrants are a net fiscal burden. Overall, the calculations are very sensitive to assumptions about the discount rate, return migration, the long-run growth of wages, and labor market conditions. In short, there is much research left to do concerning the fiscal effects of immigration. Given that the future is impossible to predict with any degree of certainty, immigration policy that seeks to maximize national welfare must remain flexible and open to repeated adjustments as more information becomes available.

## 7.7 Immigration's External Effects

Immigration may generate externalities that cause gains or losses that exceed those represented in the static model of immigration. For example, the arrival of immigrants can increase productivity throughout the economy by increasing the size of the market and thereby raising the level of competition. Or, immigrants may raise the level of technology by introducing new products and production methods, which raises the productivity of all factors in the economy. Also, by increasing the total size of the economy, immigrants permit greater exploitation of economies of scale.

### 7.7.1 *Economies of Scale*

Economies of scale refer to the case where output increases faster than inputs, a common attribute of large-scale production. The effect of population on economies of scale has been emphasized by Julian Simon (1992, p. 397):

In addition to the acceleration of progress in knowledge-creation and technology,...,a larger population also achieves economies of scale. A larger population implies a larger total demand for goods; with larger demand and higher production come division of labor and specialization, larger plants, larger industries, more learning-by-doing, and other related economies of scale. Congestion is a temporary cost of this greater efficiency, but it does not seem to present an ongoing difficulty in the context of production.

Simon's point is essentially the same as Adam Smith's well-known discussion in *The Wealth of Nations* on how the *extent of the market* determines the size of the gains from specialization. The larger is the population, the more opportunities there are for people to specialize in particular tasks and professions, and, therefore, raise per worker productivity.

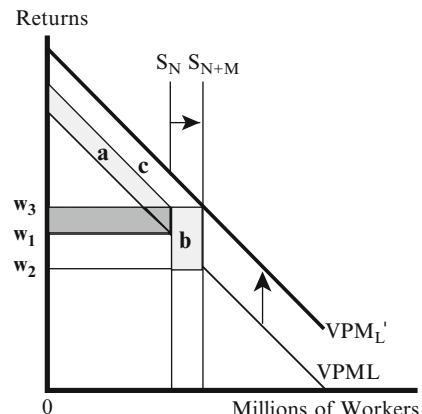
Nathan Rosenberg, an economic historian noted for studying the growth of technology over the ages, attributes the rapid economic growth of the USA in the 1800s to “rapid growth in demand and circumstances conducive to a high degree of product standardization.” (Rosenberg, 1994, p. 113) That is, the USA was able to exploit economies of scale because its market grew rapidly and, because of the country’s large middle class, the market was very uniform. What caused this growth of the market? According to Rosenberg (p. 113), “Probably the most pervasive force of all was the extremely rapid rate of population growth... with immigration assuming a role of some significance in the 1840s.” This discussion of scale effects and US economic growth in the nineteenth century deals with an important issue; despite having a very protectionist trade policy in the 1800s, the USA was able to grow rapidly without taking advantage of international trade because immigration increased its population and thus mitigated the constraints of national borders on the division of labor. Effectively, the USA used immigration rather than international trade to achieve economies of scale.<sup>6</sup> Immigration enabled US industry to exploit increasing returns to scale despite the strong protectionist bias of US trade policy throughout the nineteenth century.

Suppose for a moment that the static labor market model of immigration correctly describes the effects of immigration, and we can ignore for the moment the demand-side effects of immigration discussed earlier in this section. The *externalities* from immigration cause output to rise, and the demand for labor to increase, and thus the  $VPM_L$  curve shifts up. The combined effects of immigration, (1) the increase in the supply of labor and (2) the rise in the  $VPM_L$  curve, are illustrated in Fig. 7.1. The positive externalities, perhaps in the form of increasing returns to scale, prevent the wage from falling from  $w_1$  to  $w_2$ . Instead, if the externalities are large enough, the wage could even rise, say to  $w_3$ . If the wage does rise, there are gains to everyone in the destination economy, even the labor that competes directly with the new immigrants. Native labor gains the checkered area between  $w_1$  and  $w_3$ , which is equal to the shaded area **a**, immigrants gain additional income equal to **b**, and other factors gain area **c**. Researchers have produced little formal evidence measuring such externalities to immigration, and certainly no one has come up with a credible estimate of the magnitude of areas such as **a** and **c**.<sup>7</sup> Obviously the fortuitous outcome shown in Fig. 7.1, where everyone gains from immigration, is only one possible outcome; the wage could fall rather than rise even with positive externalities. The positive externalities have to be added to the demand-side effects of immigration, which also shifts the  $VMP_L$  curve.

<sup>6</sup> Other economic historians who reach similar conclusions about nineteenth-century US immigration and economic growth are Irwin (2000), Hill (1971), and Crafts and Venables (2001).

<sup>7</sup> For example, Borjas (1995) presents exactly the model we present in Fig. 3.5 but offers no clues as to the likelihood or magnitude of areas **a** and **c**.

**Fig. 7.1** Immigration: positive externalities in the destination country



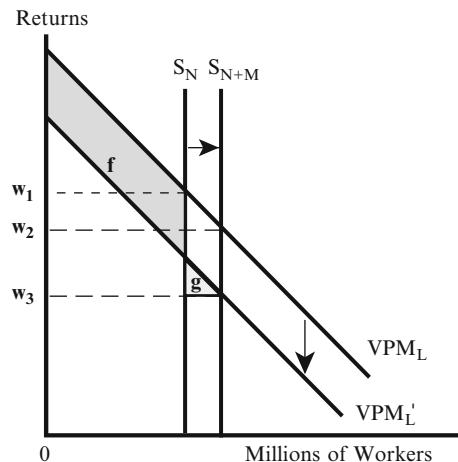
### 7.7.2 Are There Negative Externalities Associated with Immigration?

Immigrants may cause negative externalities. The arrival of immigrants can cause increased congestion in public services such as schools, roads, sewers, electric power systems, and parks. Many people in fact criticize immigration because they feel their community is getting “too crowded,” and some people attribute increased crime, pollution, and the destruction of traditional culture to the arrival of immigrants in their country. The increase in the number of people holding more than one passport, a situation openly promoted by many source countries as a way to increase immigrant remittances, has caused concern to some nationalists. Mark Krikorian, director of the Center for Immigration Studies, a lobby organization sponsored by special-interest groups opposed to immigration, suggests that dual citizenship will loosen the traditional notion of “us” and “them.” He asks, “If people can become dual citizens, why not have allegiances to three, four or even eight countries?”<sup>8</sup> Well, why not?

Immigration’s negative externalities, all other things equal, cause a downward shift of the demand for labor curve that partially offsets the positive effects of higher demand and increased investment. Figure 7.2 illustrates the case where the negative consequences of congestion lower real output and, hence, the VMP curve. Note that in this case immigration causes the wage to fall not to  $w_2$ , but to  $w_3$ . So long as  $w_3$  is high relative to the source country wage, immigrants will still tend to come to the destination country, but the destination country no longer gains welfare from immigrants’ arrival. In this case, if there are no positive demand-side effects, total welfare for natives will fall if the negative externalities cause a large enough downward shift in the  $VPM_L$  curve so that  $f > g$ . Recall from earlier diagrams that the area  $g$  is immigration’s net gain in welfare for the destination country. There is

<sup>8</sup> As quoted in Pascal (1998).

**Fig. 7.2** Immigration:  
negative externalities in the  
destination country



little evidence that immigration generates negative externalities large enough to generate the result shown in Fig. 7.2. Recall that studies of immigrants' use of government services and transfers do not confirm that immigrants are a large fiscal burden on destination countries.

## 7.8 Concluding Remarks

This chapter has surveyed recent research on the longer-term effects of immigration in the destination country. This literature includes studies on internal migration responses, capital adjustments, product market responses, and adjustments in industrial composition and technological choice, to immigration. The majority of the research has focused on internal migration responses, and this effect has been found to be ambiguous. It is still not clear how important internal migration is as a long-term adjustment process. Little is known empirically about how the capital stock adjusts to immigration. The small number of studies done on industrial structure responses to immigration suggests that capital adjustments may not be substantial.

The strongest long-term adjustments to immigration involve the so-called demand effects. The evidence in that particular literature is clear: Immigration boosts the prices of local goods and services, especially housing, through increases in consumer demand. Furthermore, there is preliminary evidence that immigration, by lowering labor costs, can lower product prices too.

Clearly, one of the promising areas for future research on the effects of immigration is the development, and empirical testing, of models that account for both the short-term and long-term effects of immigration shocks in destination countries. It would certainly be interesting to blend elements of the models by Ottaviano and Peri (2005, 2012), Hercowitz and Yashiv (2002), Borjas (2006), and Card and

Lewis (2005) to specify a “unified” general equilibrium theory of the distributional effects of immigration in the destination country, and to estimate such a model while controlling for the various adjustment processes. However, it is even more important that the adjustment processes themselves be modeled and tested more rigorously. Internal migration responses, capital stock adjustments, and demand effects are, by themselves, at least as important as the small estimated net effect of immigration in the specific destination community. The labor literature has been constrained by the simple labor-market model to analyzing only the labor market outcomes of immigration. It has, therefore, missed much of the action that accompanies, as well as follows, immigration flows.

Finally, the finding that there are substantial long-run adjustments to immigration flows suggests that economists need to take a dynamic approach to immigration. Static analysis simply cannot accurately capture the many slow adjustments that the arrival of immigrants causes in an economy. In particular, conspicuously absent from the immigration literature in economics is the analysis of immigration’s long-run effects on economic growth. This is surprising because some of the countries that have received the greatest number of immigrants have also been the economies that have grown to be among the world’s wealthiest economies. The net static gains captured by the traditional labor market model of immigration cannot begin to explain immigration’s full, and varied, long-run effects on, say, Australia, Canada, New Zealand, or the USA. Chapters 9 and 10 will take up the role of immigration in a growing, changing economy. Specifically, we will examine how immigration affects the process of economic growth and development in the long run, as well as how immigration interacts with all the dynamic changes that take place as an economy develops over time. We will also suggest how researchers can proceed to bring growth into their analysis of immigration.

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# Chapter 8

## Immigration and the Source Country

**Abstract** This chapter examines the effect of migration on the source country. The standard labor supply and demand model shows that immigration causes the destination country to gain welfare while the source country loses welfare. There are more complex outcomes, however. This chapter first focuses on income *remittances*. The second half of this chapter covers the *brain drain*. The policy debate has been complicated by the lack of consensus on the actual costs and benefits of the brain drain for the source country. Offsetting the obvious negative consequences, the brain drain may also increase remittances back to the source country, and overseas opportunities provide incentives for all people in the source country to acquire more education.

*After all, intellectual breakthroughs must cross hallways and streets more easily than oceans and continents.*

(Glaeser, Kallal, Scheinkman, & Schleifer, 1991)

The simple labor supply model of immigration, presented in the introduction to Part I of this book, suggests that the source country suffers a decline in total production but enjoys a rise in per capita income after immigrants depart, all other things equal. These are the net results of an increase in income of workers that remain behind and a decrease in welfare of the owners of the economy's other productive factors whose marginal products decline with the departure of the immigrants. Just as is the case for an immigrant destination country, the full effects of immigration on the source country are much more complex than the simple labor supply model of immigration lets on. This chapter discusses the many potential economic changes that occur in the source country when some of the residents of a country emigrate.

Among the issues discussed in this chapter are the source country demand effects of workers leaving the country, the positive and negative externalities associated with the decline in population and departure of workers, the effects of remittances back to the source country by overseas workers, and the dynamic effects of the loss of innovative resources when people leave the country. This chapter also discusses the role of immigrants in transferring technology and knowledge between countries. If emigrants help to build a network through which knowledge flows

back to the source countries, then the departure of people may have the negative effect on an economy described by the labor market model of immigration. The latter phenomenon, namely the losses associated with the departure of talented people, has been referred to as the *brain drain*.

## 8.1 Remittances and Demand Effects in the Source Country

Most early articles on the effect of immigration on the source economy found unambiguous negative effects. For example, Grubel and Scott (1966), Bhagwati and Hamada (1974), and Kwok and Leland (1982) conclude that the source economy suffers a loss in income when natives immigrate to other countries. However, the more recent literature is more ambiguous in its conclusions. By linking immigration to human capital formation, introducing real world complications such as return migration and network effects, and technology flows between countries, source countries need not suffer economic declines from the departure of people. This chapter discusses the contributions of both the early and more recent literature. To begin the discussion, however, we go back to the familiar static labor supply and demand model.

### 8.1.1 Supply and Demand Effects

Recall from the basic labor supply model of immigration in Chap. 2 that when some source country workers leave to go to their destinations, the supply of labor is reduced. Figure 8.1 shows that the leftward shift in the labor supply curve causes wages in the source country to rise from A to B for the remaining workers. As a result, immigration increases total wages accruing to the remaining workers from the area  $f$  to  $f + e$  in the source country. On the other hand, the income accruing to the economy's other factors declines from  $d + e + g$  to just  $d$ . The size of the source country economy shrinks by the areas  $g + h$  that lie between the original and post-immigration labor supply curves S and S' and under the fixed value of the marginal product of labor, or labor demand, curve. The effect of immigration on the source country is a mixed result, with per capita total income rising, the size of the economy shrinking, and some groups gaining at the expense of others.

The simple labor supply model of immigration is incomplete, however. First of all, the departure of a substantial number of workers implies that there are fewer consumers living in the source country, and the total income of that reduced number of consumers is also lower by the areas  $g + h$ . All other things equal, immigration reduces labor demand in the source country.

Figure 8.2 illustrates how the demand effect of out-migration alters the conclusion of the simple labor supply model in the source country. When the immigrants depart from the country, total output and income fall, the demand for labor declines

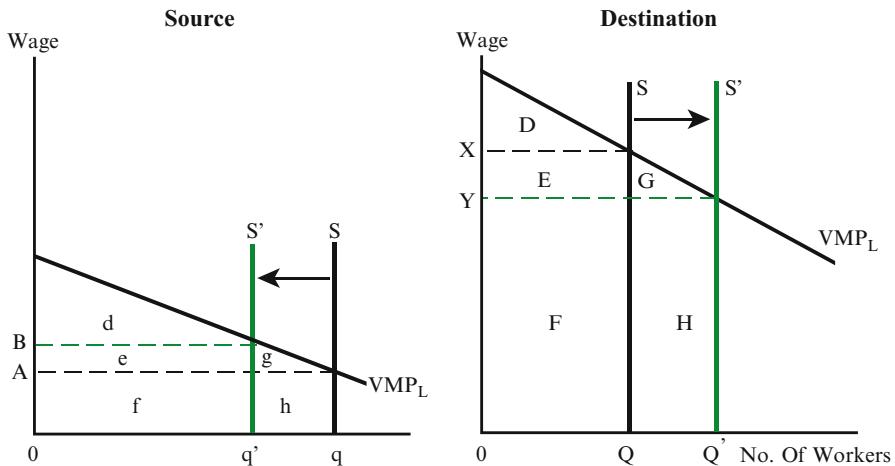


Fig. 8.1 Immigration's effect on labor markets

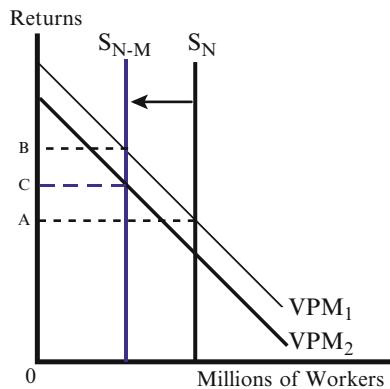
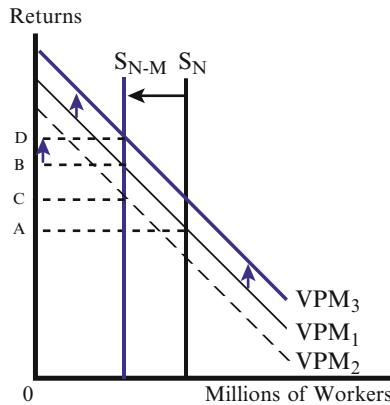


Fig. 8.2 Immigration and demand for labor in the source country

from  $VMP_1$  to  $VMP_2$ , where VMP stands for the “value of the marginal product” of labor. The wage thus rises only to C, not all the way to B as in Fig. 8.1.

Recall from Chap. 7 that immigration has a *demand effect* when there is some barrier to the completely free flow of goods and services across borders. If there are no transport costs, trade restrictions, or any other constraints that favor local products over foreign products, then demand will be optimally spread across all products produced throughout the world. Immigrants would already be spending a portion of their income in the destination country prior to their arrival, and they would continue to spend the same portions of their total income in the source, destination, and remaining countries of the world after they immigrate. More precisely, immigrants’ higher income after migrating to the higher wage country would, in the case of completely costless and unrestricted trade, increase total



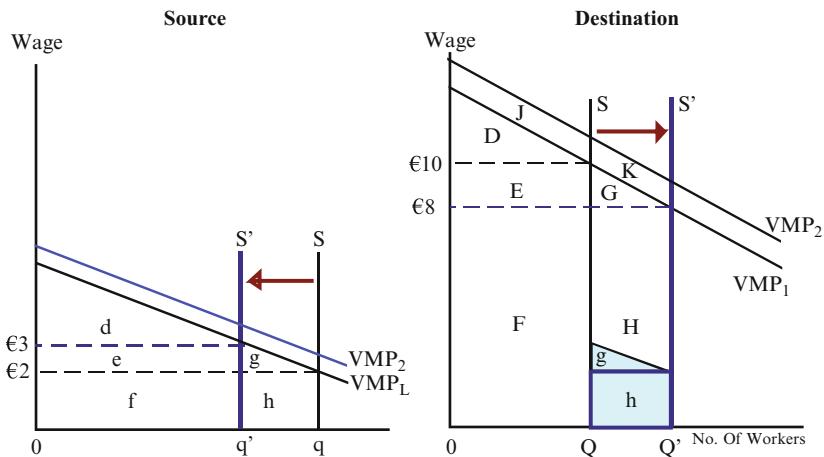
**Fig. 8.3** Immigration and demand for labor in the source country with remittances

worldwide demand, and some fraction of that increase in overall demand shows up as an increase in labor demand in the source country. In the real world, however, trade is not costless. There are transport costs, customs procedures, tariffs, marketing costs, distribution costs, and myriad other costs associated with exporting and importing. Many goods and services are what economists call *nontradables*. Thus, the movement of people from one country to another also shifts some demand from one economy to another, and the conclusions from the basic labor supply model of immigration must be modified as suggested in Fig. 8.2.

### 8.1.2 Immigrants and Remittances

Many immigrants send a portion of the income they earn in the destination country back to the source country to support family left behind or to store wealth for their own future return to their native country. Such transfers of income are commonly referred to as immigrant *remittances* in the economics literature. Immigrant remittances shift income, and thus labor demand, from the destination country to the source country. In fact, if immigrants remit a substantial enough portion of their higher destination country incomes to the source country, then total demand for labor in the source country could actually increase even though people leave the country.

If remittances exceed the loss in income due to the shrinking of the economy after the departure of the immigrants, the demand curve for labor could on balance shift upward rather than downward. Figure 8.3 shows two different scenarios in the source country for labor demand following emigration. In the absence of remittances (scenario 1), labor demand falls from  $VMP_1$  to  $VMP_2$ , causing the wage to fall from  $B$  to  $C$ . With remittances (scenario 2), labor demand rises from  $VMP_1$  to  $VMP_3$ , causing the wage to rise to  $D$ . Note, however, that the fraction of income remitted back to the source country must be sufficiently high for the wage to rise.



**Fig. 8.4** The labor markets after immigration and remittances

### 8.1.3 A Two-Country View of Remittances

The increase in the demand for source-country labor comes at the expense of demand for labor in the destination country. Demand for labor decreases in the destination country when purchasing power residing in the destination country is remitted to consumers in the source country. In fact, critics of immigration in destination countries often claim that their country does not gain from immigration precisely because immigrants send their earnings back to the source countries. Evidence suggests that immigrant remittances are not large enough to substantially reduce the demand for labor in high-income destination countries. On the other hand, because per capita income is much lower in source countries, immigrant remittances make possible the interesting case where immigration generates total income gains in both the destination and source countries.

The labor supply model of immigration in Fig. 8.4 shows that in the absence of remittances, the total income of the workers and owners of other factors remaining in Source following emigration decreases by the area  $g$ . This implies that if remittances exceed  $g$ , income will rise in Source. This requirement is not difficult to meet. Since immigrants usually move from low-income countries to countries where the marginal return to labor is many times greater, they need only remit a small portion of their high Destination wages for Source to enjoy an increase in total income. In Fig. 8.4, the pre-immigration wage is assumed to be €2 in Source and the post-immigration wage in Destination is €8. Such a fourfold difference in incomes between source and destination countries may actually be a conservative assumption; when a Mexican worker immigrates to the USA, his or her wage may increase as much as tenfold or more. Given the numbers assumed in Fig. 8.4,

the area g is only about one-sixteenth the size of the area H (the total earnings of immigrants in Destination), and the area h is one-fourth of the area H. If immigrants send home to Source more than €2.50 for every €8 they earn, the source country's total income increases. There will then tend to be an increase in labor demand in Source, shown as a shift from  $VMP_1$  to  $VMP_2$  in Fig. 8.4. The destination country still experiences a net gain in total income following immigration so long as the area G plus the gains in real output caused by the demand effect discussed above, the areas J + K, are greater than the g + h remitted. In sum, remittances by immigrants open up the possibility that the economies of both the source and destination countries increase their gross national incomes. The income of the workers and other factor owners remaining in Source thus rises with immigration so long as remittances exceed the area g in Fig. 8.4. The requirement that remittances equal one-eighth of immigrant earnings overseas is an even less restrictive criterion. The gross domestic product (GDP) of Source still shrinks with the departure of the immigrants, although the total income of Source natives, migrants, and those remaining definitely increases.

## 8.2 What We Know About Immigrant Remittances

Immigrant remittances have become an important component of the balance of payments for many countries. Immigrant remittances are recorded as unilateral transfers in the current account of a country's balance of payments. Because most immigrant remittances are from high-income immigrant destination countries to lower income immigrant source countries, unilateral transfers have become large net negatives in the accounts of the former countries and large positives in the accounts of the latter. Researchers have supplemented balance of payments data with indirect measures and detailed case studies to provide an interesting picture of immigrant remittances.

### 8.2.1 *The Growth of Immigrant Remittances*

The growth of immigration over the past 50 years has been accompanied by an even more rapid growth of remittances. Not surprisingly, immigrants in the USA send the most money back to relatives in their native countries. A 2004 survey of immigrants living in the USA revealed that more than 60 % of Latin American immigrants in the USA send some money to relatives in their native countries, and total immigrant remittances from the USA to Latin America alone were estimated by the Inter-American Development (2004) to exceed \$30 billion in 2004. According to several reports, Mexican immigrants in the USA sent \$6 billion to family and relatives in Mexico in 1999, they sent \$6.8 billion in 2000, by 2003 they

**Table 8.1** Immigrant remittances and other financial flows (US\$ billions)

	1995	2000	2004	2005	2006	2007	2008	2009	2010e
All remittance Flows	101.3	131.5	237.0	274.9	317.9	385.0	443.2	416.0a	440.1
Developing countries	55.2	81.3	159.3	192.1	226.7	278.5	324.8	307.1	325.5
Other resource flows to developing countries									
FDI	95	149	208	276	346	514	593	359	—
ODA	57	49	79	108	106	107	128	120	—
Private debt and portfolio equity	83	27	93	165	211	434	157	85	—

*Note:* This table reports officially recorded remittances. The true size of remittances, including unrecorded flows through formal and informal channels, is believed to be larger. Private debt includes only medium-and long-term debt. FDI = foreign direct investment; ODA = official development assistance; — = not available. 2010e = 2010 estimate. Sources: *World Development Indicators* database and World Bank Migration and Remittances Unit.

remitted \$14.5 billion, and in 2005 they reportedly remitted over \$20 billion.<sup>1</sup> Table 8.1 shows that Mexican immigrants in the USA remitted \$22.6 billion in 2009, the year in which the US economy hit the deepest point of its recession. According to a Federal Reserve Bank of Dallas report by Cañas, Coronado, and Orrenius (2007), Mexicans living in the USA sent had already sent more than \$23 billion back to Mexico in 2006; this report makes use of alternative indicators that may have better captured nonbank transfers than the World Bank data shown in Table 8.1. Research by Handlin, Krontoft, and Testa (2002) suggests that temporary Mexican workers in the USA send about half of their income home, while permanent Mexican immigrants to the USA send about 15 % of their US income to family in Mexico.

### 8.2.2 Remittances as a Percentage of Source Country GDP

India has received immigrant remittances in excess of 1 % of its gross domestic product for many years. For example, as far back as 1982, the World Bank estimated remittances by Indians working overseas to be equal to 1.6 % of Indian GDP. Total remittances by overseas Indians were reported to have reached \$8 billion by 2000, about 2 % of Indian GDP.<sup>2</sup> By 2010, they were over \$55 billion, as shown in Table 8.2, although India's rapid economic growth over the past half-decade meant that the share of remittances in Indian GDP grew only slightly.

Egypt had so many of its citizens working in other countries throughout the 1990s and 2000s that its balance of payments recorded remittances equal to more than 10 % of its GDP. Filipinos reportedly sent home more than \$6 billion, or nearly 10 %

<sup>1</sup> The 1999 number was reported in *The Economist* (2000); the 2000 figure is reported by Fidler (2001); the 2003 figure is from Thompson (2003); and the 2005 number is from Laper (2006).

<sup>2</sup> From NationsBanc Montgomery Securities, Tokyo-Mitsubishi International, as reported in *Wall Street Journal* (1998).

**Table 8.2** Immigrant remittances: top ten countries

	2009 \$'s		2009 % of GDP
<b>Recipients</b>			
India	\$55.0 bn	Tajikistan	35.1 %
China	\$51.0 bn	Tonga	27.7 %
Mexico	\$22.6 bn	Lesotho	24.8 %
Philippines	\$21.3 bn	Moldova	23.1 %
France	\$15.9 bn	Nepal	22.9 %
Germany	\$11.6 bn	Lebanon	22.4 %
Bangladesh	\$11.1 bn	Samoa	22.3 %
Belgium	\$10.4 bn	Honduras	19.3 %
Spain	\$10.2 bn	Guyana	17.3 %
Nigeria	\$10.0 bn	El Salvador	15.7 %
<b>Senders</b>			
USA	\$48.3 bn	Luxembourg	20.1 %
Saudi Arabia	\$26.0 bn	Lebanon	17.0 %
Switzerland	\$19.6 bn	Oman	9.9 %
Russian Fed.	\$18.6 bn	Maldives	8.9 %
Germany	\$15.9 bn	Kuwait	8.2 %
Italy	\$13.0 bn	Bahrain	6.6 %
Spain	\$12.6 bn	Saudi Arabia	6.5 %
Luxembourg	\$10.6 bn	Guinea-Bissau	5.4 %
Kuwait	\$9.9 bn	Guyana	5.2 %
Netherlands	\$8.1 bn	Tonga	4.3 %

of GDP, in 2000. Filipinos living overseas sent home over \$20 billion in 2009.<sup>3</sup> Many Caribbean nations receive over half of their national income from remittances by former citizens living overseas (Siegel, 1993, p. 150). Cuba receives over \$1 billion from Cuban-Americans annually, which enables it to earn dollars to pay for needed imports despite the US trade embargo (Barriónuevo & de Cordoba, 2004).

### 8.2.3 *The Reliability of Remittance Data*

The most recent estimates, shown in Table 8.1, suggest that total worldwide remittances by overseas immigrants was at least \$300 billion in 2006 and well over \$400 billion in 2010. Such estimates of immigrant remittances must be used with caution, however. Money is often carried back home in the form of cash, and is, therefore, not recorded in the balance of payments accounts. Furthermore, because foreign exchange transactions are often regulated and restricted in many developing countries, remittances often are carried out in parallel markets where

<sup>3</sup> Zachary, G.P. (1998) and Table 8.1.

exchange rates are more favorable compared to official exchange rates, and such transactions are also unlikely to be accurately recorded in the balance of payments accounts from which estimates of remittances are often derived. For a variety of reasons, the estimates have probably gotten more accurate in recent years. First, fewer countries restrict foreign exchange transactions, so there are no longer such large differences between official and “black” exchange rates; this has, no doubt, brought remittance payments back to official channels where they can be recorded. Also, some private banks have reduced their fees and captured a larger role in intermediating remittance payments through official channels, where they can be recorded. Finally, estimates of remittances have increasingly found alternative sources of information to amend the numbers that show up in the official balance of payments accounts. Cañas, Coronado, and Orrenius (2007) attribute a large part of the estimated increase in immigrant remittances to improved data gathering rather than an increase in actual remittances. In the past, remittances were probably underestimated to a greater extent than they are now. Table 8.1 shows data that are the best available, although we have no way of knowing how accurate they really are.

#### ***8.2.4 The Recent Data on the Growth of Immigrant Remittances***

Despite the data problems, it is pretty obvious that immigrant remittances have indeed grown substantially over the past several decades. That growth of remittances is a direct consequence of the growth of immigration. The acceleration of immigration in recent years, both legal and illegal, also contributes to the sharp rise in immigrant remittances; the acceleration means that there are a lot of new immigrants overseas, and recent immigrants tend to send more money back to source countries than immigrants who have been in the destination country longer.

Evidence suggests that many immigrants from poor countries leave their native countries to work overseas with the specific intent to remit income back home. For example, according to a recent poll of Ecuadorian families who have members working overseas, “the majority of Ecuadorian emigrants were motivated for reasons other than personal economic problems. Instead, their decision to emigrate is the product of a family consensus, in which the younger, healthier and best-equipped family members were chosen to make the journey.”<sup>4</sup> The poll also found that the cost of emigration was usually financed by the family remaining behind. Thus, remittances by recent Latin American immigrants to the USA are large because remittances were the principal reason many immigrating.

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<sup>4</sup> Reported by Quesada (2003).

### ***8.2.5 Policies to Encourage Remittances***

The growth of remittances and the potentially positive impact of remittances on the source country's overall welfare are well understood by source country policy makers. Governments in some labor abundant countries have even adopted policies that effectively encourage people to immigrate to countries where incomes are much higher. The Philippines, for example, has a state-sponsored program to send workers abroad. When the Prime Minister of India made an official visit to the USA in 2002, he formally asked the USA to streamline the process for Indians to get visas to work in the USA.

Of course, the source country's eventual gains from the out-migration of its citizens depend on future remittances, so governments have also taken measures to ensure that remittances continue long after immigrants have taken up foreign residence or even foreign citizenship. Evidence shows that individual remittances decline the longer immigrants reside in their destination countries. Over time, family ties weaken, young relatives become adults who can take care of themselves, and older relatives pass away. To prevent a decline in remittances, some source countries have recently changed their national laws to encourage permanent immigrants to keep their native country citizenship. In the past, nearly all countries cut off citizenship when citizens immigrated and acquired citizenship in another country. In recent years, however, Colombia, Ecuador, Brazil, Mexico, and the Dominican Republic, among others, have changed their laws to permit dual citizenship. Mexico now even allows former citizens to reclaim Mexican citizenship after they had lost it by becoming citizens in the USA. In 2004, President Fox asked the Mexican Congress to approve letting millions of Mexican citizens living in the USA to vote in the 2006 Mexican presidential election (Weiner, 2004). The Mexican state of Zacatecas passed a law in 2003 to let the 800,000 Zacatecans who now live in the USA come back to run for local political office (Authers, 2004). The motive for these legal changes was clearly to maintain ties with the people who left the country and to encourage their continued remittances to relatives at home.

The increase in the number of people holding more than one passport has caused concern among some nationalists in the destination countries. Mark Krikorian, director of the Center for Immigration Studies, a lobby organization sponsored by special-interest groups opposed to immigration, suggests that dual citizenship will loosen the traditional notion of "us" and "them." He asks, "If people can become dual citizens, why not have allegiances to three, four or even eight countries?"<sup>5</sup> So many formal allegiances are unlikely, but dual citizenship certainly has become a common occurrence in the twenty-first century.

To further facilitate remittances, many source country governments have pressured banks and other financial institutions to lower the costs of making remittance payments. The banks and other financial services companies have long enjoyed hefty profits from remittance payments. For example, one study found that for some

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<sup>5</sup> Zachary, G.P. (1998).

Latin American countries, the cost of remittances in amounts under \$500 exceeds 20 % of the amount remitted!<sup>6</sup> McKinsey & Company (2004) estimated in 2004 that banks and other firms earned \$12 billion worldwide from immigrant remittances (McKinsey & Company, 2004). Most Latin American immigrants were using relatively expensive wire transfer companies to move money to their relatives abroad because they did not have bank accounts. Around 2000, only about half of all Latin American immigrants had bank accounts, and among illegal immigrants, an even smaller percentage have bank accounts. A recent program approved by the US government and several governments of immigrant source countries permits foreign consulates in the USA to issue identification cards that can legally be accepted by US banks as identification for opening a bank account, and this has substantially increased the use of banks by foreign immigrants (Federal Reserve Bank of Dallas & El Paso, 2004). The recent growth of international banking, which has led to large multinational banks operating in both developed and developing economies, is likely to reduce remittance costs because immigrants and the recipients of remittances will be able to deal with the same bank in both the sending and receiving countries.

### ***8.2.6 How Remittances Are Used in the Source Countries***

The welfare effects of remittances in the source country depend critically on how remittances are used. If remittances are used for high-return investments, then the long-run welfare effects will be greater than if they are used for short-run consumption needs. This is not to say that consumption is bad for human welfare; to the contrary, remittances can greatly alleviate poverty in source countries by providing people with the means to raise their consumption levels above mere subsistence. However, when remittances are used to acquire consumer durables, to improve housing, and, perhaps most important, to increase education, they can raise long-run welfare by much more than their current consumption value.

Statistical tests of how remittances affect source countries face several econometric problems. First of all, the data on remittances is notoriously inaccurate, largely because many private transfers pass through informal financial channels. Secondly, because remittances are, at least in part, more like insurance payments than steady income flows, remittances are likely to rise when economic conditions worsen in the source country. That is, recent immigrants send home more money to family in the source country when their family needs the money most. Hence, remittances will appear to be correlated with declining economic conditions. Finally, omitted variables influence remittance flows, which makes any estimated relationship between remittances and source country economic conditions suspect. There are, fortunately, econometric methods to take account of these difficulties, and several recent studies provide suggestive results.

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<sup>6</sup> See, for example, Suro, Bendixen, Lowell, and Benavides (2002).

Yang and Martínez (2006) study remittances to the Philippines from overseas Filipinos. They use the econometric technique of *instrumental variables* to address the econometric problems described in the previous paragraph, and they find a clear positive relationship between remittances and reductions in poverty in the Philippines. They find that remittances raise incomes, all other things equal, of the families who directly receive them, and overall poverty is also reduced in the communities where remittances are received. Yang and Martínez suggest that these spillovers to other households in the community may be due to a multiplier effect from the recipient families' increased expenditures or from direct transfers within the communities.

A detailed World Bank study of Guatemala by Adams (2006) reveals that remittances substantially reduce the severity of poverty. In Guatemala, remittances from relatives working overseas, mostly in the USA, account for over half the household income of the very poorest households and raise their levels of consumption. A study by Cox Edwards and Ureta (2003) finds that in El Salvador remittances have a very strong influence on whether children remain in school. Their empirical analysis confirms that schooling is positively correlated with income in general, but in El Salvador's urban areas increases in income from remittances have ten times more impact on school attendance than general increases in income. This evidence suggests that one of the reasons why family members emigrate and remit their foreign earnings is specifically to finance the schooling of children and siblings.

Not all studies find that remittances have positive effects on source country economic welfare. An econometric study of remittances for a large sample of countries over the period 1970–1998 by Chami, Fullenkamp, and Jahjah (2003) of the International Monetary Fund is not as optimistic about the long-run benefits of immigrant remittances. Their study examines the moral hazard associated with remittances. They specifically ask whether recipients of remittances behave more carelessly once they have remittance income than they would normally behave with money they themselves earned. An example of such a moral hazard problem is detailed in a 2002 *New York Times* story of a young Bangladeshi wife in an arranged marriage to an older disabled military man. She went to Penang, Malaysia to work for 5 years, sent back as much of her income as she could, and when she returned, not only had all the money been spent, but her husband had used her overseas earnings as collateral to increase the family's debt (Sengupta, 2002). In their empirical study of the issue, Chami, Fullenkamp, and Jahjah (2003) conclude,

The dependency on these transfers induces recipients to use remittances as a substitute for labor income, and to lower their work effort... The aggregate impact of moral hazard can be quite significant, and our empirical results suggest that this particular moral hazard problem does affect economic activity in many economies.

Moral hazard extends beyond the immediate recipients of remittances, however:

Governments, too, may succumb to a moral hazard problem created by the receipt of remittances...the government may be able to ignore imbalances in the domestic economy and avoid taking politically costly steps to address them. At worst, governments could intentionally pursue politically beneficial but economically unwise policies, in the expectation that remittance flows will continue to insulate the domestic economy from any

negative consequences. Such policies would likely exacerbate the conditions that led to large-scale migration and remittance transfer, leading to heavier dependence on immigrant remittances and decreased effort on the part of domestic workers, firms, and entrepreneurs.

Unlike most other studies of remittances, Chami, Fullenkamp, and Jahjah conclude that, all other things equal, remittances have a negative effect on economic growth. Some source countries have tried to overcome the moral hazard associated with remittances. For example, the state government of Zacatecas, Mexico, has tried to channel remittances to public projects by offering three dollars in government funds toward specific infrastructure projects in migrants' native towns and villages for every dollar the migrants contribute to the investment funds. For such schemes to work, immigrants must have confidence in the source country government's ability to spur economic growth for this scheme to stimulate remittances, however. In that light, note that Ratha (2003) finds that worker remittances are a contributor to developing country economic growth only in countries "with sound economic policies."

### 8.2.7 *Remittances: Tentative Conclusions*

We know that immigrant remittances are large, that they are much larger than official overseas development assistance (foreign aid), and that they account for huge percentages of some countries' national products. Remittances are clearly an important result of immigration, and they can substantially alter the costs and benefits of immigration experienced by the destination and source countries. In general, it is not clear whether remittances turn immigration into a positive factor for source countries.

There is clearly a need for much more research. First, we do not yet have accurate data on remittances. We also need to examine the long-run dynamic growth effects of remittance payments in source countries. Complicating matters is the fact that remittances are just one component of the overall phenomenon of immigration, which in turn is just one component of the overall phenomenon of globalization. As the world integrates, goods, services, investment, and people increasingly move, and all types of payments between countries expand. As important as remittances have become, a final judgment of how immigration affects the source country depends on much more than remittances. In the remainder of this chapter, we examine several other important consequences of immigration in the source country that are not easily captured in the standard immigration models.

## 8.3 The Brain Drain

When people immigrate, they carry both their own labor and their accumulated human capital with them. Development economists have occasionally extended their analyses beyond the overall numbers of immigrants to evaluate the implications of the simultaneous movement of humans and human capital.

That this distinction matters is evidenced by the fact that destination countries often favor highly educated and talented immigrants over less educated immigrants. There is a widespread belief that human capital is beneficial to economic growth. On the flip side, the departure of highly educated and talented immigrants has been singled out as a serious cost of immigration for source countries.

### **8.3.1 Human Capital of Immigrants**

Evidence shows that immigrants from less-developed countries are usually much more educated than the average residents of their source countries. These findings may surprise Europeans or Americans, who observe the arrival of many foreigners who are less educated than they are. However, while it is true that the average Mexican immigrant arriving in the USA is less educated than the average American, those immigrants have more education than the average Mexican (Boucher, Stark, & Taylor, 2005). More worrisome to development economists is the finding that it is often the most educated people who leave a poor country and immigrate to high-income countries. This phenomenon has even been given its own ominous name: The immigration of university graduates, doctors, and other professionals from developing countries to high-income countries in Europe, North America, and the Pacific region is usually referred to as the *brain drain*.

Immigration policies in the high-income countries have stimulated the brain drain by making it easier for highly educated people to enter the country while making it more difficult for poorly educated people to acquire work visas. Australia, Canada, and New Zealand have instituted *point systems* for selecting immigrants in place of traditional *country of origin* criteria. Points are awarded for many personal characteristics, but education and professional experience count heavily in the scores used to qualify potential immigrants for entry visas. Even the USA, whose immigration qualifications are predominantly based on the principle of “family reunion,” increasingly award resident visas on the basis of job skills and education. A number of European countries, such as France, Ireland, the United Kingdom, and Germany, have introduced immigration promotion programs to explicitly target highly educated and technical workers.

### **8.3.2 The Brain Drain as a Development Issue**

The brain drain has been seen as a problem for less-developed countries. Bhagwati and Hamada (1974) and Bhagwati and Rodriguez (1975) argued that educated and skilled immigrants take with them the education and training that was, at least part, paid for by people remaining in the source country. In effect, capital-scarce developing countries were investing in human capital that was subsequently carried out of the country when educated people immigrated to high-income countries.

More recently, the brain drain has been linked to the “Schumpeterian” growth models, in which highly educated people are viewed as critical resources for the creation of new technologies and the adaptation of existing technologies from other countries. For example, Miyagiwa (1991) and Wong and Yip (1999) focused on the role of education in the growth process and analyzed how the departure of educated workers affects the source country’s rate of economic growth. Growth models that focus on technological progress suggest that the long-run economic growth rate of immigrant source countries will fall when people move away to other countries. In short, the economic development literature has come to view the brain drain as a serious problem for developing economies. Subsequent analysis and research, however, suggest that the consequences of the brain drain for the source countries are not always so detrimental to growth.

The profession of nursing provides an interesting example that is often used to illustrate the negative effects of the brain drain on source countries. There is a shortage of nurses in most high-income developed economies, in large part because demographic shifts in those countries are causing their populations to age rapidly. Older people require more nursing services than young people. The market for nurses is increasingly global because qualified nurses from poor countries can raise their incomes many fold by immigrating to high-income countries. Nurses are a prominent example of the brain drain we observe in the world. Hospitals and nursing homes in the USA, Britain, and other developed economies routinely travel to Africa and Asia to entice nurses to immigrate. One doctor from Ghana suggests that efforts to meet his country’s needs for nurses would be futile; increase nursing school enrollments means that “we may end up educating more, only to have more leave.”<sup>7</sup> That these strong “pull factors” in developed countries could damage living standards in poor countries has been recognized by government officials in the destination countries. For example, the British government’s guidelines for the National Health Service include a prohibition on recruiting nurses from countries where there are severe shortages of nurses. However, these guidelines are open to interpretation and, therefore, not easily enforceable.<sup>8</sup>

### 8.3.3 How Big Is the Brain Drain?

During the past three decades, over 70 % of newly trained physicians in Pakistan left the country. Over 60 % of Ghana’s doctors emigrated to more-developed countries. There are more Haitian physicians practicing medicine in the USA than in Haiti. Siegel (1993) reports that in 1987 an estimated 30 % of Sub-Saharan Africa’s educated population had immigrated to other parts of the world. This is not a recent phenomenon, as US immigration data show that during the 1970s, of the

<sup>7</sup> Quoted in Zachary (2001).

<sup>8</sup> World Bank (2003), *Global economic Prospects 2004*, Washington, DC: World Bank, p. 159.

500,000 technical and professional workers admitted into the country, nearly three-fourths were from developing economies such as India, Pakistan, and South Korea. Worldwide, the most important source country of professional and highly educated immigrants is India, with Pakistan, Ghana, Sri Lanka, Argentina, and Chile following India in importance. In a news report, Sender (2000) estimated that during the late 1990s over half of India's yearly total of 100,000 engineering graduates moved to other countries after graduation.

Many economists related these departures of professionals from developing countries to the poor economic performance in developing countries. However, the brain drain persists even for economies like Chile, India, and China, whose economies have performed spectacularly in recent years. Of course, the relative differences in wages between these countries and developed countries like the USA and those of the European Union remain very large. In the meantime, the demise of the Soviet Union and the decline of living standards in most former soviet republics and eastern European soviet satellites have created new brain drains. The pool of talented labor in the former Soviet Union and other Eastern European countries is large. Education in engineering and the physical sciences was stressed by the communist governments, and these technical skills are in high demand in Western Europe and North America.

Carrington and Detragiache (1998) used data from the 1990 United States Census, the OECD, and United Nations sources to estimate the extent of the brain drain. Their study covers migration from 61 developing economies to 25 developed economies. This data set permits the authors of the study to calculate the education levels of immigrants from the developing to the developed countries. They classify the immigrants according to whether they completed primary, secondary, or higher education, and this information is then combined with other data on the overall educational attainment of the populations of each of the 61 developing economies in order to arrive at the fraction of each educational category (primary, secondary, or higher-educated people) that migrates to developed economies.

Carrington and Detragiache admit that, for the lack of data, they did not include unauthorized immigrants in their analysis. Nor do they account for immigrants who have returned to their countries of origin. Despite these shortcomings, however, their estimates of the brain drain are stunningly large for a majority of developing countries. The study results, reported in Table 8.3, also show that the great majority of legal immigrants from developing countries have secondary or higher educations. Immigrants tend to be much better educated than the rest of the population of their country of origin. Also, the percentage of highly educated people who immigrate to the more-developed countries exceeds 30 % for some Central American, Caribbean, and African countries. There is no doubt that the brain drain is a substantial phenomenon.

Docquier and Marfoukin (2006) build on the Carrington and Detragiache (1998) study by addressing several methodological shortcomings of the latter and calculating alternative estimates of the proportions of skilled workers among source countries' general populations and among each source country's immigrants.

**Table 8.3** Immigration of skilled workers in 2000

	Rate of emigration		Share of skilled workers	
	Total population (%)	Skilled (%)	Residents (%)	Migrants (%)
<b>By country size</b>				
Large—Pop > 25 million	1.3	4.1	11.3	36.4
Upper-middle—25 < Pop < 10	3.1	8.8	11.0	33.2
Lower-middle—10 < Pop < 2.5	5.8	13.5	13.0	33.1
Small—Pop < 2.5 million	10.3	27.5	10.5	34.7
<b>By income group</b>				
High-income	2.8	3.5	30.7	38.3
Upper-middle income	4.2	7.9	13.0	25.2
Lower-middle income	3.2	7.6	14.2	35.4
Low-income	0.5	6.1	3.5	45.1
<b>Selected groups</b>				
Middle East and North Africa	2.8	8.9	9.4	32.0
Eastern Europe, Former U.S.S.R.	2.7	4.8	17.1	30.3
European Union	4.8	8.1	18.6	32.5
<b>America</b>				
North America	0.8	0.9	51.3	57.9
Caribbean	15.3	42.8	9.3	38.6
Central America	11.9	16.9	11.1	16.6
South America	1.6	5.1	11.1	16.6
<b>Africa</b>				
Total	1.5	10.4	4.0	30.9
Sub-Saharan Africa	0.9	12.9	2.8	42.6
<b>Asia</b>				
Eastern Asia	0.5	3.9	6.3	55.5
South-Central Asia	0.5	5.3	5.0	52.5
South-Eastern Asia	1.6	9.8	7.9	51.4
Western Asia	1.6	6.9	11.4	22.9
<b>Oceania</b>				
Australia and New Zealand	3.7	5.4	32.7	49.2
Melanesia	4.5	44.0	2.7	45.0
Micronesia	7.2	32.3	7.1	43.6
Polynesia	48.7	75.2	7.1	22.7

Source: Frédéric Docquier and Abdeslam Marfouk (2006, pp. 170–171), Table 5.3, pp. 170–171

Despite the substantial changes in methodology, Docquier and Marfouk reach conclusions that are similar to those of Carrington and Detragiache.

Tables 8.3 and 8.4 summarize Docquier and Marfouk's results for 2000. Table 8.3 provides estimates for various groups of countries. The first two columns of percentages give the rates of emigration for source countries' populations in general and their skilled populations in particular. The right-most two columns present estimates of the share of skilled workers in the source countries' general population and the source countries' migrants.

**Table 8.4** Immigration of skilled workers in 2000

Emigration stocks		Rate of emigration		Skilled migrants/total migrants			
		All countries		Highest	Lowest		
United Kingdom	1,441,307	Guyana	89.0 %	Taiwan	78.0 %	Suriname	18.4 %
Philippines	1,126,260	Grenada	85.1 %	Qatar	69.6 %	Moçambique	17.7 %
India	1,037,626	Jamaica	85.1 %	Kuwait	67.8 %	Italy	17.3 %
Mexico	922,964	St. Vincent	84.5 %	UAE	67.3 %	Bosnia & Herz.	17.0 %
Germany	848,414	Haiti	83.6 %	Philippines	67.1 %	Angola	16.9 %
China	816,824	Trinidad & Tob.	79.3 %	Nigeria	65.0 %	Senegal	16.7 %
South Korea	652,894			Saudi Arabia	64.6 %	Bulgaria	16.4 %
Canada	516,471	Population >5 million		Japan	63.8 %	San Marino	16.0 %
Vietnam	506,449	Haiti	83.6 %	Oman	62.7 %	Cape Verde	15.2 %
Poland	449,059	Ghana	46.9 %	South Africa	62.6 %	Tunisia	14.9 %
USA	431,330	Moçambique	45.1 %	Hong Kong	61.9 %	Mexico	14.4 %
Italy	408,287	Kenya	38.4 %	Mongolia	61.1 %	Guinea-Bissau	14.2 %
Cuba	332,673	Lao PDR	37.4 %	India	60.5 %	Algeria	14.1 %
France	312,494	Uganda	35.6 %	Canada	60.1 %	Tuvalu	13.8 %
Iran	308,754	Angola	33.0 %	Venezuela	60.1 %	Comoros	13.4 %
Jamaica	291,166	Somalia	32.7 %	Uzbekistan	59.5 %	Morocco	12.9 %
Hong Kong	290,482	El Salvador	31.0 %	Brunei	59.3 %	Equatorial Guin.	12.4 %
Russia	289,090	Sri Lanka	29.7 %	Malaysia	59.2 %	Portugal	12.0 %
Taiwan	275,251	Nicaragua	29.6 %	Egypt	58.9 %	Mali	10.9 %
Japan	268,925	Hong Kong	28.8 %	Iran	58.5 %	Turkey	8.8 %

Source: Frédéric Docquier and Abdeslam Marfouk (2006, pp. 175–176), Table 5.4

Table 8.4 provides some summary information based on Docquier and Marfouk's estimates for individual countries. Note that the largest stocks of skilled immigrants living outside their native countries are not predominantly from developing economies. The developed countries Australia, Canada, France, Germany, the United Kingdom, and the USA, together, were the destination of 85 % of the world's skilled immigrants. The inclusion of Canada and the USA among the largest *sources* of skilled labor is interesting because these nations are also the two largest *destinations* for skilled immigrants, with the latter receiving about half of all skilled immigrants in the world. It is, therefore, not possible to speak of a brain drain for these net recipients of skilled workers from overseas. The highly skilled workers from these countries often work overseas as businesspeople, teachers, technicians, consultants, and any variety of professional positions.

The brain drain was clearly most substantial for small countries like Guyana, Grenada, Jamaica, and other small island countries. Docquier and Marfouk find five

countries in 2000 where over 80 % of their skilled populations left the country during the period 2000 through. One of those five is not a small country: Haiti has a population of over five million. In general, however, the larger countries have lower emigration rates for their skilled populations. The two right-most columns of Table 8.4 give the countries with, respectively, the highest and lowest skilled to unskilled emigration ratios. These ratios are surprisingly high for many developing economies, whose populations are predominantly unskilled. In short, in countries where most of the population has little education and few of the skills needed in a modern economy, those that immigrate to high-income countries are from among the relatively small group of skilled and educated workers. Even the middle-income source countries that send mostly unskilled workers to high-income countries, such as Mexico, Morocco, or Turkey, still see many of their most educated and skilled workers leaving for higher wage countries. Mexico's stock of skilled emigrants numbers nearly one million people. And, as pointed out earlier, even the so-called unskilled workers are relatively skilled compared to the source country population.

In sum, the Carrington and Detragiache (1998) and Docquier and Marfoukin (2006) studies show that, compared to countries with large populations, small countries see larger proportions of their populations immigrating to other countries. Small island economies in Oceania and the Caribbean are most likely to see their skilled workers migrate to other countries. They also find that workers with above-average education levels are almost three times as likely to immigrate as all workers in developing economies. There is also a nonlinear immigration reaction to income differences because a substantially greater proportion of people in middle-income developing countries immigrate to higher income countries than do people in very low-income countries. Finally, the brain drain is greatest from the poorest countries; the lower the per capita income in the source country, the more likely that the immigrants that leave for high-income economies are educated and skilled. It is clear that the brain drain is a very real phenomenon, but not all developing countries experience large brain drains. There are clearly additional characteristics that determine the size of a country's brain drain.

### 8.3.4 Why Human Capital Flees Capital-Scarce Countries

If it is indeed true that highly educated and talented people are an important productive and innovative resource in source countries, it is fair to ask, Why are they so poorly compensated at home and paid so much more after they immigrate? It appears that the fundamental cause of the brain drain is that professional and technical skills are not fully exploited in immigrant source countries. The lack of demand for educated labor in developing economies may be the result of poor economic policies that repress the demand for the things that highly educated people can provide, such as technical know-how for modern production, entrepreneurship, innovation, the adaptation of foreign technology, the education of others in society, and informed public policies. Immigrants leave their native

countries in part because they have better opportunities elsewhere. However, they also leave because they see *no* opportunities at home.

Labor markets may not function properly. Restrictions on wages paid, taxation of high wages and incomes, and even confiscation and theft of the gains from innovation and successful enterprises may explain why people with high amounts of human capital migrate to countries where human capital is already relatively abundant. Or, perhaps technology is so much less developed in developing economies that the returns to all factors, even the scarcest factors, are lower. Finally, for human capital to earn high returns it must have other inputs to work with. For example, physicians may be very scarce in Malawi, and if they have no hospitals to work in or medicines to dispense, they cannot be very productive. Those same doctors, in well-equipped and well-staffed hospitals, provide much greater health services in developed countries.

On the other hand, even though the marginal physical product of healthcare workers is higher, the full monetary rewards for providing health services in rich and poor countries do not accurately compare the true relative values of those services. The price for health services is higher in wealthy countries for the simple reason that incomes are much higher there. This higher price of health care, and higher pay for healthcare workers, does not imply that human life is worth more in rich countries. The same conclusion holds for the many other jobs performed by immigrants in high income countries: Many locally provided services reflect local demand factors as well as differences in productivity. To the extent that it is local income levels that drive the higher wages, the gain in measured monetary output overstates the gains from shifting scarce resources to high-income countries.

### **8.3.5 Brain Drain and Brain Waste**

Another “drain” associated with the immigration of highly educated persons from poor countries is the inefficient matching of immigrants’ skills to the jobs they perform. There are many anecdotal accounts of trained engineers from poor countries driving taxis or immigrant scientists tending bar in high-income countries. Özden (2006) in fact finds that highly skilled immigrants do not always use their skills after they immigrate. He refers to this as *brain waste* rather than *brain drain*. Özden also relates the performance and earnings of skilled immigrants to their countries of origin, and he finds “striking” differences in the earnings of skilled immigrants from different source countries. Özden’s analysis distinguishes a number of factors that cause such variations in earnings of skilled workers in the destination countries.

Özden finds that when the same language is spoken in the source and destination countries, immigrants are more likely to fully exploit their talents and skills in the destination country. Cultural similarities between source and destination countries also improve skilled immigrants’ earnings. These results reflect the importance of social capital for a person’s economic success. They may also reflect ethnic discrimination in destination labor markets. Immigration policies in the destination

country also matter, and destination countries that more finely base visa requirements on specific skills are more likely to match immigrant skills to their economies' needs. Özden specifically mentions the USA's emphasis on *family reunion* as a criterion for awarding visas as a detrimental factor for immigrant earnings and the likelihood of brain waste because it does not directly match immigrant job skills and job opportunities in the USA. Finally, Özden finds that the quality of education in the source country determines the earnings of skilled immigrants in destination countries. Skilled immigrants from source countries with better education systems earn considerably more in their destination countries than immigrants from countries with poor education systems.

In sum, skilled immigrants are not all the same. Therefore, generalizations based on the estimates of the brain drain in Tables 8.1–8.4 should be made with great caution.

## 8.4 A Reassessment of the Brain Drain

The recent literature on the brain drain has challenged the conclusions of the early literature. This literature has distinguished several reasons why the brain drain may not be a net drain on the source economy. For example, Bhagwati and Rodriguez (1975) suggested that the brain drain serves as a “safety valve” in a poor economy suffering from high rates of unemployment or underemployment of educated workers. If the talents of educated workers are not employed in their native countries, these workers may benefit the source country more by becoming productively employed overseas.

### 8.4.1 Remittances Again

We documented earlier in this chapter that when workers move overseas they often send money back to the source country. Highly skilled and educated migrants are likely to remit more income back to the source economies for the simple reason that they are likely to earn much more income abroad than less skilled workers would. An obvious example is the large number of talented baseball players from the Dominican Republic who play in the USA. They have no opportunity to earn high salaries playing baseball in their own country because there is no major professional league in the Dominican Republic. But those Dominicans who have reached the major leagues in the USA, and there have been quite a few, earned salaries that exceeded what they could have earned in the Dominican Republic by a huge multiple. Most of these players eventually returned to their native country with their accumulated incomes. Even those who have not returned sent more money back to family and relatives than they would have earned had they stayed in the Dominican Republic.

### 8.4.2 *The Brain Drain as an Incentive to Seek Education*

Education levels have improved substantially in most developing countries of the world over the past two decades, the period when the brain drain also became a more prominent phenomenon.<sup>9</sup> This coincidence of the brain drain with increased education has led several economists to build models linking the two phenomena. For example, Stark, Helmenstein, and Preskawetz (1998), Vidal (1998), and Beine, Docquier, and Rapoport (2001) developed models suggesting that overseas opportunities provide incentives for everyone in the source country to acquire more education, even if only some people actually find overseas jobs. This induced rise in education can actually end up contributing to source country growth despite the departure of some of the educated natives. The option of immigrating to a high-income country, where education is rewarded more highly than in a poor country, adds to the incentives for people to acquire more education.

In the absence of other mechanisms through which immigrants raise income in the source countries, the incentive for more people to become more educated will be a benefit for the source country only if a substantial percentage of those who acquire more education with an eye on immigrating actually end up remaining in the country. To the extent that education requires an up-front investment by the source economy, immigration clearly has a “drain” effect for the source country. If education has positive externalities, the drain is even greater. However, if the possibility of immigrating to higher-income countries causes people remaining in the country to also acquire more education suggests that there may be a net “brain gain,” not a brain drain. In the next section, we detail a model by Commander, Kangasniemi, and Winters (2002) that illustrates how this might happen.

### 8.4.3 *A Simple Case*

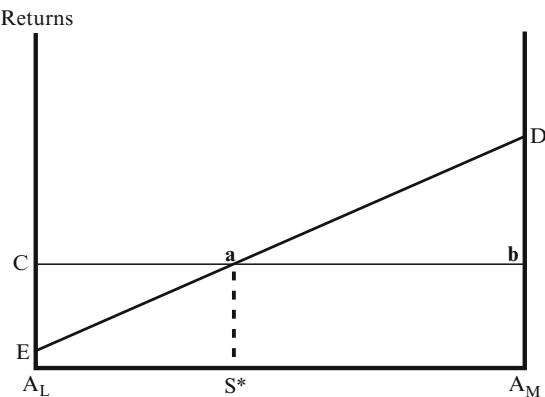
Figure 8.5 can be applied in the case where ability and talent are distributed unequally among the people who comprise the source country population. Assume that ability and talent determines people’s ability to enhance their productivity by acquiring education. In Fig. 8.5, workers are listed from the least able to the most able along the horizontal axis from  $A_L$  to  $A_M$ , and the vertical axis shows the returns to education. The marginal product of workers is represented by the line ED that slopes upward under the assumption that the returns to education increase with ability.

Whether people invest in education depends on whether the marginal gains are greater than the marginal costs of education. To simplify the analysis, we assume that the private returns to education are identical to the social returns and that people earn wages equal to the marginal returns of their education-reinforced labor. Hence, in the case of a constant cost of education at C, people who reside to the

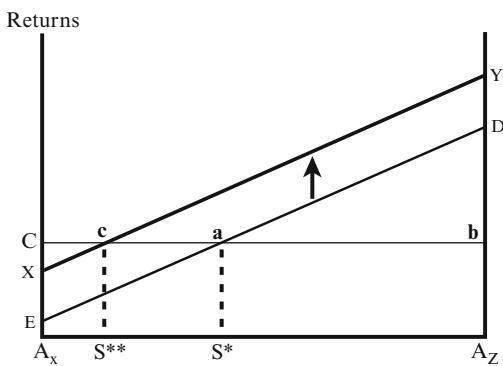
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<sup>9</sup> See, for example, World Bank (2006) or UNDP (2006).

**Fig. 8.5** The returns to education with immigration



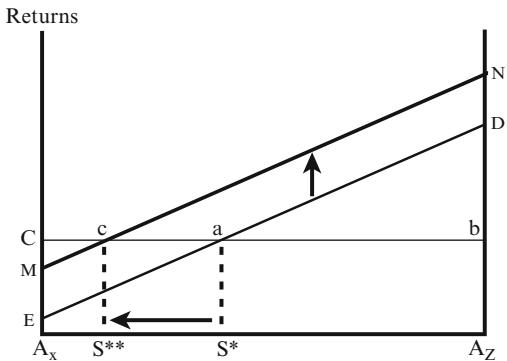
**Fig. 8.6** The social returns to education



right of  $S^*$  along the continuum of abilities will find it in their interest to acquire an education. Hence, the number of people who decide to acquire an education is the difference between  $S^*$ , the individual for whom the return from education just equals the marginal cost of education, and the most able person at  $A_M$ . The proportion of people seeking education is thus  $(A_M - S^*)/(A_M - A_L)$ . In general, not all people acquire education. Only when the private cost of education is very low or the returns to education are very high will everyone acquire education. The total gains from education are equal to the net area under the upward-sloping returns to education curve to the right of  $S^*$ . The net gains to the economy are the area under the line ED and above the cost line C, or the triangle abD in Fig. 8.5.

If there are positive externalities to education, then society's marginal returns to education exceed the private returns. Psacharopoulos (1994) and Schutz (1988) present evidence suggesting this is indeed the case for most countries. In this case, the social returns to education lie above the line ED in Fig. 8.5. For example, society's marginal product of educated workers line may be the line XY in Fig. 8.6. If private individuals pay for their own education and make the choice about whether to acquire education, society will end up with too few educated workers.  $A_Z - S^{**}$  workers should acquire an education, but only  $A_Z - S^*$  do. Society will

**Fig. 8.7** The foreign returns to education



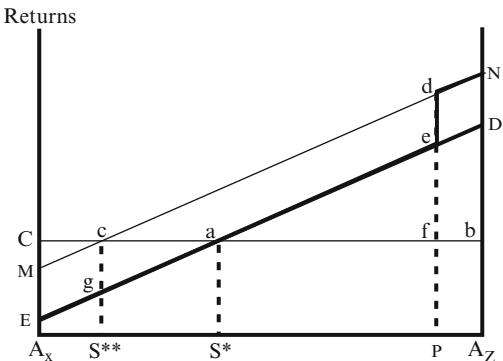
lose net income equal to the area  $caEX$ , which is equal to the total returns to labor from educated workers  $cS^{**}A_ZbY$  minus the cost of education is equal to  $cS^{**}A_Zb$ .

This under-investment in education can be corrected for by means of a subsidy or the provision of public education funded by taxation. Alternatively, workers could be induced to acquire education by offering them the opportunity to use their education in other countries where the earnings of educated workers are higher. A simple version of this latter case is illustrated in Fig. 8.7. The line  $MN$  represents the returns to education when people can immigrate to another country. In this case,  $A_Z - S^{**}$  people will indeed get an education, but they will then also immigrate and use their education abroad. Note, however, that the gains from education are entirely captured by the immigrants and others abroad.

This case in which all educated people in the source country immigrate is approximated in some less-developed island countries according to Carrington and Detragiache's estimates in Table 8.2. The source country gains nothing from the education, and subsequent departure, of its educated workforce. If the cost of education is paid by taxpayers or parents, who remain in the source country, then this case represents the worst-case scenario in which the brain drain causes a net loss to the source country. The source economy incurs costs of education equal to  $cS^{**}A_Zb$ , and the immigrants overseas earn  $cS^{**}A_ZN$ .

The recent literature that links potential gains from the brain drain to the increase in education among the overall population in the source country assumes that only a fraction of the educated workers leave the country. Suppose also that the line  $MN$  in Fig. 8.7 exactly coincides with the domestic social returns to education line  $XY$  in Fig. 8.6. However, assume now that, instead of everyone immigrating, only a fraction of the workers who seek to immigrate to a high-income country are awarded residence visas in those countries. This is a realistic case, since many high-income countries currently ration work visas even for educated workers. More specifically, suppose that of the  $(A_Z - S^{**})$  people from a source country who acquire education, high-income countries only award immigrant visas to the proportion of applicants they judge as most productive. Suppose the fraction admitted into the high-income countries is  $\rho < 1$ .

**Fig. 8.8** The returns to education and immigration



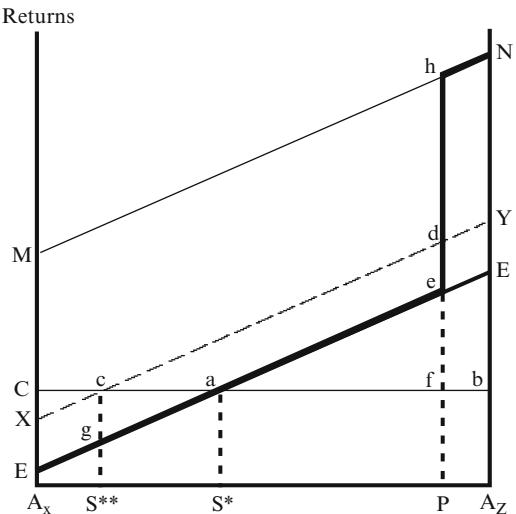
This latest case is illustrated in Fig. 8.8. Only the top portion  $\rho(A_Z - S^{**}) = (A_Z - P)$  of educated source country workers get to enjoy the expected higher foreign returns to their education equal to  $dfbN$ . The educated workers remaining in the source country increase source country output by  $cS^{**}Pd$ , but the source country incurred educational expenses equal to  $cS^{**}A_ZN$ . The net gain for the country is thus  $cS^{**}Pd - cS^{**}A_Zb = cfd - fPA_Zb$ , where the right hand side of the equality consists of the net social gain  $cf$  from educating the source country workers who remained to work in the country minus the cost  $fPA_Zb$  the source country incurred for the education of those who left the country. If  $cf - fPA_Zb > 0$ , the opportunity for some source country workers to use their education abroad still ends up increasing the average income of the workers who remain in the source country.

#### 8.4.4 A More Realistic Case

It may not be realistic to assume that all  $A_Z - S^{**}$  source country workers will invest in education if the probability of getting a higher paying overseas job is less than one. Surely, many workers will rationally conclude that they may not be awarded a work visa in a high-income country. With some positive probability of failure to obtain a foreign work permit, the returns to education curve becomes the *expected* returns to education curve. This curve lies somewhere between the curves  $ED$  and  $MN = XY$  in Figs. 8.6 and 8.7. If the line representing expected private returns to education lies below the social returns to education line, private individuals would not make the optimal investment in education. It also becomes less likely that the partial brain drain increases domestic income enough to offset the lost cost of educating the immigrants.

Suppose, however, that foreign wages are much higher than source country wages. For example, suppose the  $MN$  line is as shown in Fig. 8.9. Note that  $MN$  lies far enough above the source country's social returns to education line  $XY$  to

**Fig. 8.9** The returns to education and immigration



cause the expected returns to education line to again coincide with XY, then we are very likely to satisfy  $cf_d > fPA_Zb$  so that private individuals do invest in the socially optimal amount of education. This is actually a fairly realistic case, since most educated migrants from low-income countries are able to increase their incomes by sizeable multiples when they immigrate to the USA, Canada, Western Europe, and other high-income countries. Of course, it is not difficult to imagine that in the case of a very poor country people could over-invest in education, and many people will end up unemployed and unable to use their education while only a small number of compatriots succeed in immigrating to high-income countries.

## 8.5 Conclusions

The standard labor supply and demand model shows the effects of immigration in both the source and destination countries. Overall, if immigrants are counted as residents of the destination country, then the destination country appears to gain welfare while the source country loses welfare. The immigrants definitely gain from their move. As should already be apparent from the previous chapters, immigration is more complex than the simple labor supply model of immigration lets on.

In this chapter, we focused first on immigrant *remittances*. Remittances enable the source country to share in the gains from immigration that accrue directly to immigrants. Remittances have grown rapidly as more immigrants have sought work overseas. Many immigrants work abroad specifically to earn income that can be remitted back to relatives in the source country.

Secondly, this chapter focused on the *brain drain*. There are no easy solutions to the brain drain. Even walls and taxes have not been successful in keeping human capital in the source country. New policies to deal with the brain drain continue to be suggested (see Zachary, 2012), although few have actually been implemented. Policies to restrict the departure of people inevitably clash with the civil right to leave the country. Measures to prevent people from leaving often solicit comparisons with East Germany and its infamous wall. More humanitarian schemes have been devised to prevent the brain drain, including requirements that highly educated people stay in the source country for a minimum number of years or pay an exit tax to “compensate” the source country for their education and experience. Many developing country governments have argued that they effectively subsidize developed country growth and that, therefore, they deserve foreign aid and other transfers from developed economies.

The policy debate has been complicated by the lack of consensus on the actual costs and benefits of the brain drain for the source and destination countries. For example, there is a debate on how much of the income that immigrants earn overseas is due to the immigrants’ own particular character, ambition, inventiveness, and intelligence, and how much is due to the education funded by the taxpayers of the home country. Estimates vary widely. Source country economic growth may suffer when highly educated people leave because educated people are necessary for a country to adapt and apply foreign technologies. The departure of entrepreneurs could be equally damaging to source country economic growth. On the other hand, remittances serve to mitigate the negative effects of the brain drain just as they serve to reduce the costs to the source country of immigration in general. In fact, educated immigrants earn much more overseas than poorly educated immigrants. The brain drain may, therefore, increase remittances back to the source countries.

In any case, when we consider how easily people can now move between countries, how many immigrants already live in the destination countries of North America, Europe, and Asia/Oceania, and how modern communications makes the huge income differences and job opportunities across countries ever more obvious, the issue for source countries is not so much whether the brain drain is good or bad for a poor country, but rather how to make the best of the inevitable. The efforts by Mexico, Philippines, India, and other source countries to strengthen ties between immigrants living abroad and their native countries represent perhaps the best approach to the brain drain. Also, the evidence suggests that source countries should improve their economic policies in order to ensure that remittances are well invested. Of course, making the institutional and policy changes that improve the returns to investment at home would probably also help to eliminate the fundamental cause of the brain drain in the first place.

This chapter did not discuss all of the long-run dynamic effects of immigration on the source country. In fact, we have not yet looked at the long-run growth effects of immigration for destination countries either. That is the task for the next two chapters.

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# **Chapter 9**

## **Economic Growth and Immigration**

**Abstract** The Solow model concludes that factor accumulation alone cannot generate a permanent economic growth path. Continuous improvements in per capita income can only occur if there are continual improvements in technology. The Schumpeterian model of innovation suggests that immigration could stimulate technological progress in destination countries. There are four channels through which immigration could influence technological progress: Immigrants can (1) facilitate the transfer of technology, (2) contribute to innovation as entrepreneurs and workers in innovative activities, (3) change the size of economies, and (4) increase innovative competition by reducing the ability of vested interests to take protectionist measures to slow the process of creative destruction. The effects of emigration on the source country are more ambiguous.

*A more liberal immigration policy is one of the most obvious reasons why the U.S. economy continues to grow faster than the European.*

Quentin Peel ([2005](#)).

The economic analysis of immigration has been conducted almost exclusively using comparative static models. There is evidence, however, that the movement of people across borders is not exclusively an immediate reaction to current economic conditions alone, as the standard labor market model of immigration assumes. Immigrants are humans who seek to improve their lives, and the lives of their children. They are, therefore, likely to base their decisions to migrate to more than just the current relative incomes across countries. The long-run prospects for economic growth and development at home and abroad thus also play a role.

Just as the process of immigration itself, the economic impact of immigration throughout the economy is not a one-time static event either. Generally, the departure or arrival of immigrants sets off a series of changes that affect countries' long-run economic growth and development. In this sense, the static labor market model of immigration does not accurately describe the long-run changes brought about by immigration. There is evidence that immigrants have a substantial effect on an economy's rate of economic growth.

Growth theory shows that long-run economic growth is driven by technological progress; mere factor accumulation cannot sustain permanent growth in a country's per capita income.<sup>1</sup> Therefore, when assessing the full long-run impact of immigration we must explicitly examine how immigrants contribute to innovation and the technological progress that underlies long-run economic growth. One question we seek to answer in this chapter is the following: Does the inflow of immigrants increase the destination country's rate of economic growth? Equally important is the following question: Does the outflow of immigrants reduce the source country's rate of growth?

To answer these questions, this chapter reviews the principal models of economic growth and systematically introduces immigration into those models. Our analysis thus moves beyond the orthodox labor market model of immigration. In earlier chapters, we extended this model to recognize the fact that immigrants are also consumers, not factors of production. In this chapter, we examine a third dimension of immigrants, namely their role in the long-run process of innovation and economic growth. In sum, this approach requires that immigrants be analyzed as (1) *workers* that increase the labor force, (2) *consumers* that increase the demand for national output, and (3) *innovators* that induce technological progress. The power of mathematical compounding implies that the changes in innovation and technological progress that immigrants induce are likely to overwhelm their short-run effects on the labor force and consumer demand. Clearly, the standard static labor market model of immigration is inadequate for determining the long-run economic effects of immigration on source and destination countries.

## 9.1 The Early Models of Economic Growth

Economists have studied economic growth for a long time, and recent models build on ideas and theories developed over the previous two centuries. Fortunately, recent advances in the field of economic growth have pushed the analysis of economic growth in a direction that is quite useful in understanding the long-run effects of immigration. To help you grasp these recent theoretical advances and their applicability to analyzing the dynamic effects of immigration, we begin this chapter with a review of the major contributions in growth theory over the past two centuries.

We begin with Adam Smith. Then we cover contributions to the theory of economic growth of the *Classical* economists such as Thomas Malthus and David Ricardo. We also discuss the contributions of Karl Marx, before concluding this section with a discussion of the often-misinterpreted twentieth-century Harrod–Domar growth model.

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<sup>1</sup> See, for example, Barro and Sala-i-Martin (2004), Jones (2002), or Van den Berg (2001).

### 9.1.1 Adam Smith's Broad View of Growth

Adam Smith is best known for his masterwork, *An Inquiry into the Nature and Causes of the Wealth of Nations*. Writing in 1776, Smith was no doubt fascinated by the Industrial Revolution that was radically transforming the Scottish economy, and he provided insights that to this day remain useful for understanding economic growth. Smith (1776, p. 7) famously concluded that the key characteristic of the growing economies was the increasing specialization of individual economic activity:

The greatest improvements in the productive powers of labour, and the greater part of the skill, dexterity, and judgment with which it is any where directed, or applied, seem to have been the effects of the division of labour.

In today's language, Smith saw economic growth as fundamentally a process of increasing *specialization* and *exchange*. In his analysis of the Industrial Revolution that was beginning to take form around him, Smith also uncovered another important phenomenon that we now call *economies of scale*. He observed large differences in productivity between the traditional *cottage system* of production and the *factory system* that characterized the Industrial Revolution. He presented his well-known example of the pin factory to explain that those differences in productivity could not be achieved by simply increasing the number of cottage industries. Also, the shift of production to large factories during the Industrial Revolution also underscored the importance of technological change for generating economic change and development.

Smith (p. 13) also recognized that specialization not only improves productive efficiency, but it also serves to increase the efficiency of innovative activity:

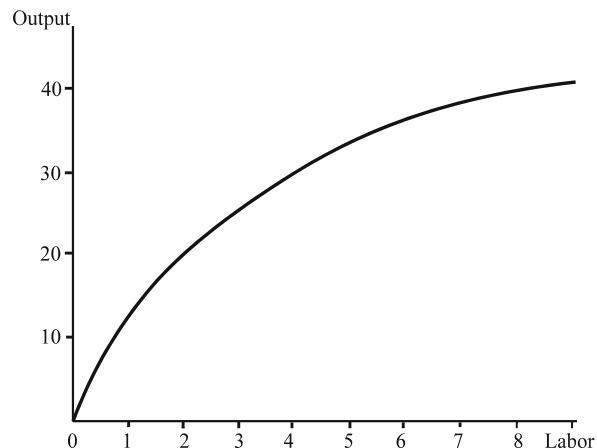
Men are much more likely to discover easier and readier methods of attaining any object, when the whole attention of their minds is directed towards the single object, than when it is dissipated among a great variety of things...

This insight is closely related to the modern concept of *learning-by-doing*.

Some modern growth theorists during the 1960s, 1970s, and 1980s based their models on the learning-by-doing process, in which learning is an unintended by-product to production, because it was a mathematically convenient way to model growth. After some years of debate, in the 1990s another class of growth models became popular, and these models recognize that costly real resources must be applied in order to generate knowledge and technology. Note, however, that over two centuries ago, Smith (pp. 13–14) also recognized that technological improvements were created as a result of intentional efforts to innovate:

All the improvements in machinery, however, have by no means been the invention of those who had occasion to use the machines. Many improvements have been made by the ingenuity of the makers of machines, when to make them became the business of a peculiar trade; and some by that of those who are called philosophers or men of speculation, whose trade is not to do any thing, but to observe every thing; and who, upon that account, are often capable of combining together the powers of the most distant and dissimilar objects. In the progress of society, philosophy or speculation becomes, like every other

**Fig. 9.1** Production with diminishing returns to labor



employment, the principal or sole trade and occupation of a particular class of citizens. . . Each citizen becomes more expert in his own peculiar branch, more work is done upon the whole, and the quantity of science is considerably increased by it.

The “philosophers and speculators” Smith mentions are now usually referred to as *entrepreneurs*.

### 9.1.2 *The Classicals and Diminishing Returns*

Not all economists were as optimistic about economic growth as Smith. Early nineteenth-century economists who formed the *Classical School* concluded that population growth and economic growth interacted to doom the world to stagnation and, most likely, eternal poverty. The *Classicals* hypothesized that output is a function of labor and land, where the amount of land is fixed in quantity but labor can grow or decline depending on birth and death rates. Output is thus determined by how much labor is combined with the fixed stock of arable land. Because labor is combined with a fixed stock of land, production is subject to *diminishing returns*. The classical production function is shown in Fig. 9.1; the more labor is added to society’s fixed stock of land and natural resources, the smaller are the marginal increments in output.

The *Classicals* introduced a second hypothesis, namely that population growth is a function of real per capita income. This hypothesis reflects the seemingly reasonable assumption that when people are well off, they eat better, are healthier, live longer, have more children, and more of these children survive to have more children. Decreases in real per capita income, on the other hand, inevitably increase the death rate due to increases in starvation and disease, making labor more scarce and effectively raising marginal productivity and incomes.

**Table 9.1** World population, real GDP, and per Capita GDP: 1500–2003

Year	Population (millions)	GDP (1990 \$)	GDP per capita (billions 1990 \$)	Period	Population	GDP	GDP/capita (annual % growth rates)
0	231	103	445				
1000	267	117	436	0–1000	0.01	0.01	0.00
500	425	240	565	1000–1500	0.10	0.15	0.05
1820	1,068	695	651	1500–1820	0.29	0.33	0.04
1870	1,260	1,128	895	1820–1870	0.33	0.97	0.64
1913	1,772	2,726	1,539	1870–1913	0.79	2.05	1.64
1929	2,047	3,696	1,806	1913–1929	0.90	1.90	1.00
1950	2,512	5,372	1,138	1929–1950	0.97	1.78	0.80
1973	3,896	16,064	4,123	1950–1973	1.91	4.76	2.86
2003	6,314	27,995	6,432	1973–1992	1.60	2.92	1.44

Source: Angus Maddison (2006), *Historical Statistics for the World Economy: 1-2003AD*, Statistical Appendix; this document was downloaded in August 19, 2006 from the Web site (<http://ggdc.net/maddison/>) maintained by the Groningen Growth & Development Centre at the University of Groningen, Netherlands. Growth Rates are from Angus Maddison (2003), *The World Economy: Historical Statistics*, Paris: OECD, Table 8b

Combined with diminishing returns, this second hypothesis leads to the conclusion that whenever any improvement in per capita output occurs, say because of some fortuitous increase in technology or an expansion of trade, population growth accelerates, the supply of labor expands, and diminishing returns eventually sets in to cause per capita income to again decline. Therefore, there can be no permanent economic growth, and people are effectively doomed to eternal poverty!

Malthus and the Classicals have been unfairly criticized for their pessimistic predication, but their predictions were not unreasonable given the evidence available to them at the start of the nineteenth century. For example, Table 9.1 presents Angus Maddison's (2006) estimates of economic growth over the past two millennia. The numbers in this table suggest the automatic reversion to subsistence and poverty appears is a reasonably accurate description of what had occurred in the real world up to Malthus' time. Population growth accelerated over time, apparently keeping per capita real income from growing hardly at all. The Classicals were also quite correct in their prediction that economic growth would cause population to increase; after 1800, this is exactly what happened. However, the Classicals did not anticipate the acceleration of technological change in the nineteenth and twentieth centuries.

### 9.1.3 The Role of Immigration in the Classical Model

According to the Classical school, population growth will inevitably prevent per capita income from growing over the long-run. This means that if some fortuitous increase in per capita income increases not only the birth rate, but also increases

immigration as foreign workers arrive to take advantage of the higher per capita income, the economy will be even less likely to raise living standards.

In this light, the rapid growth of per capita incomes in countries that received large numbers of immigrants in the nineteenth century represents a strong refutation of the Classical model. During the late 1800s, fast-growing economies such as Argentina, the USA, Canada, and Australia experienced inflows of immigrants equal to over 1 % of their total populations each year.

### **9.1.4 Was the Classical Model a Failure?**

The failure of the Classical model to anticipate technological change reminds us that a model's accuracy in explaining the past does not make it a model useful for designing good policies for the future. In this light, it is tempting to ask whether the Classicals were so influenced by their own logical models that they saw the future as their models described it, not as actual events and shifting trends suggested. Or, *did* they correctly anticipate the very long-run barriers to continued resource-using material production that environmental economists suggest we face today? Are modern growth theorists now making the same mistake we just accused the Classicals of making when they short-sightedly project the exceptional energy-intensive development of the 1800–2000 period into the future? These questions are important for judging the long-run causes and consequences of immigration.

As we contemplate these questions, it is important to note that Classical economists also thought about how economic development changed the shares of income accruing to the owners of the different factors of production and how that would, in turn, impact investment and future economic development. The classical economists specifically modeled the wages, profits, and rent that the owners of labor, capital, and land earned in the process of production. The economists of the Classical School observed that during the Industrial Revolution some owners of industries were clearly becoming quite wealthy. They suggested that this profit stimulated, and paid for, the investment in factories, machines, tools, transport infrastructure and other capital that characterized the Industrial Revolution. The Classicals effectively described elements of the *circular flow* that connects production and demand.

In addition to generating profit, the Classicals described how growing output at first raises the incomes of the workers who operate the machines and tools, and this rise in income then causes the population to grow. But with both population and capital stocks increasing, while land remains constant, diminishing returns to both labor and capital inevitably sets in. The direct effect of diminishing returns to capital plus the reduction of demand for industrial output caused by falling wages to workers eventually reduces profits to where they no longer cover the costs of additional investment in industry. In the end, the capitalists go bankrupt, and each of the increased number of workers is as poor as ever, and economic growth stops.

Karl Marx (1867) greatly extended the Classical analysis to predict a social revolution by the disadvantaged worker class. Marx linked investment in new technologies to capitalists' quest for profit. To increase profits, the capitalist bourgeoisie was motivated to invest, introduce more efficient production methods, and develop new products. Investment requires saving, which, according to Marx, must come out of the capitalists' surplus, since the working class earns no surplus over their needs for survival. But Marx predicted that profit rates would fall as capitalist development proceeded because the capitalists' success in replacing labor with machines and technological improvements inadvertently reduces demand for output, and profits end up declining in a vicious cycle that only ends when the masses of unemployed workers revolt and the working class collectively takes over ownership of capital. This new revolutionary economy would, according to Marx, be viable in the long run because the circular flow would remain in balance as all income accrued to workers who spent all of it on the output they produced. Marx's hypothesis that employment was determined by the demand for output would later be embraced by the twentieth-century macroeconomist John Maynard Keynes (1936), who sought policy prescriptions to deal with the Great Depression of the 1930s.

In short, the Classicals and Marx recognized the impressive spurt of economic growth and change that the Industrial Revolution had brought about, but they concluded that this spurt was nothing more than a temporary improvement in living standards. Also important was the Classicals' conclusion that changes in the distribution of income determines how the economic system evolves and develops over time. The income that fuels demand for output depends on who earns the income from production; the circular flow of output and income thus suggests that when workers' wages fall, demand for output also falls.

Finally, note the relevance of the circular flow to Bodvarsson and Van den Berg's (2006) and Bodvarsson, Lewer, and Van den Berg's (2008) demand-side immigration models. This type of macroeconomic analysis fully recognizes that people are both producers and consumers, although there is no certainty that people will produce enough to absorb all of the goods and services they produce in the country.

The Classical school of economics clashed with other thinkers from the Enlightenment who believed that human society could continually progress by means of scientific discovery. For example, the French thinker Marquis de Condorcet (1795) wrote,

Observations on what man has been and what he is today lead immediately to the ways of assuring and accelerating the further progress for which man's nature permits him to hope.

Condorcet's statement actually goes beyond just linking human progress to technological progress and increased knowledge. He effectively called for active measures for "assuring and accelerating" human progress. Many scientists, politicians, and activists took this challenge seriously and tried to bring change to human society. Karl Marx combined the Classicals' focus on income shares with the Enlightenment's enthusiasm about the possibility of welfare-improving social change, and he concluded that only a revolution was necessary in order to bring about a better society.

### 9.1.5 Forgetting the Classicals and Marx: The Neoclassical School

In the latter half of the nineteenth century, when much of the world economy was firmly embarked on its unprecedented path of technological change and growth, most economists in English-speaking countries increasingly adopted the unsound strategy of *scientific reductionism* by focusing their analysis exclusively on individual markets that, hypothetically, allocated scarce resources within a static, unchanging economic system. These *neoclassical* economists implicitly assumed that the aggregate economic system was a stable, self-correcting, and welfare-maximizing system of markets, so that a good understanding of the system's individual component parts, that is, its markets, would be sufficient for designing the policies and institutions necessary to support the overall economic system. *Neoclassical* economists have, over the past 100 years, developed a theoretical framework that effectively represents the economy as a system of competitive markets. Some refer to the self-correcting nature of their hypothetical market system as *the invisible hand*, a term presented by Adam Smith (1776) 100 years earlier.

Neoclassical economists' faith in markets and scientific reductionism were temporarily suppressed when the world economy plunged into the Great Depression during the 1930s. At that point, mainstream economists recognized that a system of individual product markets, factor markets, asset markets, and money markets did not always automatically generate a welfare-maximizing equilibrium. The Great Depression showed that an economy's equilibrium could change drastically even when the component parts, such as the number of workers, the capital stock, and natural resources, remained the same. Economists' temporarily shifted their focus from the component parts to a broader perspective that could envision how the overall economic system performed.

### 9.1.6 Keynes and the Harrod–Domar Model

In 1936, the British economist, John Maynard Keynes, published his *General Theory of Employment, Interest, and Money*, the work that effectively created the field that is today known as macroeconomics. His macroeconomic model explicitly showed how the major components of the economy interacted to determine the total levels of output and employment. Harrod (1937, 1939) and Domar (1946) provided more detailed dynamic analyses of how the demand and supply sides of the Keynesian model interact, and their contributions came to be known as the Harrod–Domar growth model.

Harrod (1939) and Domar (1946) developed a dynamic model that revealed a potential long-run source of instability in the demand-driven Keynesian macroeconomic model. In analyzing how macroeconomic policy could restore full employment, Keynes had focused on investment as the most volatile category of aggregate

demand for the economy's output. Harrod and Domar also noted that, in addition to contributing to aggregate demand for output today, investment also dynamically increases the economy's potential output in the future. Thus, investment has both demand and supply effects.

Full employment can be maintained in the long run only if investment, consumption, and government expenditures, the sources of aggregate demand, grow just fast enough to exactly absorb the increased output that the new investment makes possible. Domar (1946, p. 138) noted, "The idea that the preservation of full employment in a capitalist economy requires a growing income goes back (in one form or another) at least to Marx."

Harrod and Domar reasoned that if aggregate demand fails to grow over time, investment will cause aggregate supply to exceed aggregate demand, and unemployment will tend to increase. On the other hand, if aggregate demand rises faster than aggregate supply, an inflationary episode is likely to develop.

The supply-side portion of the full Harrod–Domar model was often described as the *knife's edge model*, because it shows that once the economy deviates from its full employment equilibrium, over time the economy dynamically spirals into either a deep depression or hyper-inflation, depending on which side of the knife the economy falls. This explosive nature of the aggregate economy is due to the role of investment, which stimulates demand in the short run while only increasing supply more gradually over time. Or, on the opposite side of the knife's edge, a fall in investment reduces aggregate demand by more than it reduces overall productive capacity in the short run. The Harrod–Domar model thus suggests that when the economy falls off the *knife's edge*, there is an immediate need for active economic policies that can raise or reduce aggregate demand in order to keep the growth in demand and the growth in the economy's supply side more or less in line. Like the Keynesian macroeconomic model that inspired it, the Harrod–Domar model contradicted the neoclassical assumption of a self-correcting economic system and the metaphor of the invisible hand.

In a serious perversion of economic thought, economic development textbooks almost immediately began to present only the supply side of the Harrod–Domar model. The real contribution of Harrod and Domar was not their simplistic investment-driven supply side of their growth model; rather, it was their incorporation of the interaction between the supply and demand sides, the circular flow, into a growth model. To add injury to insult, mainstream economists then criticized this truncated model as incomplete and unrealistic, while calling for a better supply side model. See, for example, Easterly (1999).

Indeed, another supply-side growth model was soon presented by Robert Solow (1956, 1957), and mainstream economists quickly embraced it. However, the Solow model was a response to the simplistic investment-driven supply-side version of the Harrod–Domar model; the Solow model is also purely a supply side model of the aggregate economy, albeit with a neoclassical production function that exhibits diminishing returns. Effectively, the invisible hand was restored, and the potential interruptions to the circular flow that Keynes, Harrod, and Domar identified as the cause of unemployment during the Great Depression were simply forgotten.

## 9.2 The Solow Growth Model

Solow's (1956, 1957) growth model incorporated the marginalist thinking of the nineteenth-century Classical School. Specifically, it assumes that capital investment is subject to diminishing returns, just as the Classicals assumed that population growth suffered from diminishing returns because of the fixity of land. Solow used his model to show that capital accumulation moves the economy along the production function, which can only cause, at best, temporary growth. Continued growth can only occur if the entire production function shifts up, and that requires technological progress.

### 9.2.1 A Graphic Representation of the Solow Model

Suppose that output is a function of two factors, labor and capital,

$$Y = f(K, L). \quad (9.1)$$

$Y$  is total output,  $K$  is the economy's stock of capital, and  $L$  is the labor force. The partial derivatives of output with respect to capital and labor are positive; to model diminishing returns, the second derivatives are assumed to be negative.

Solow also assumed a rate of depreciation for the capital stock. In his model, he assumed that a constant proportion of the stock of capital,  $\delta$ , of the capital stock wears out each period. Thus, the change in the stock of capital over the course of the year, denoted as  $\Delta K$ , is equal to the difference between total new investment,  $I$ , and the amount of existing capital that depreciates:

$$\Delta K = I - \delta K. \quad (9.2)$$

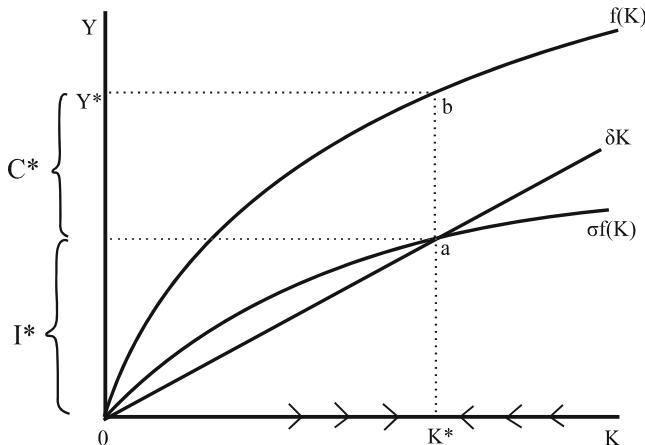
Solow also assumed that people save a constant fraction,  $\sigma$ , of income  $Y$ , or

$$S = \sigma Y. \quad (9.3)$$

If we assume that the stock of labor remains unchanged, we can write the production function simply as  $Y = f(K)$ . Then, if we also assume that all savings are productively invested, Eq. 9.2 becomes:

$$\Delta K = I - \delta K = \sigma Y - \delta K = \sigma f(K) - \delta K. \quad (9.4)$$

When  $\sigma f(K)$  is greater than  $\delta K$ , so that total investment is greater than what is needed to replace that portion of the capital stock that wears out, the total stock of capital and output  $Y = f(K)$  both increase. On the other hand, when  $\sigma f(K) < \delta K$  total investment in new capital is not large enough to replace the capital that depreciates, and the total stock of  $K$  and output  $Y = f(K)$  decrease.



**Fig. 9.2** The Solow equilibrium

Because depreciation, investment, and output are all functions of the capital stock  $K$ , the three functions can all be included in a single diagram in which capital is shown on the horizontal axis and  $Y$ ,  $I$ , and depreciation are measured along the vertical axis. With diminishing returns to capital investment, the production function slopes upward at a decreasing rate as in Fig. 9.2. The constant savings rate,  $\sigma$ , implies that the savings/investment function is a constant proportion of income equal to  $S = I = \sigma f(K)$ , which is just a diminished version of the production function  $f(K)$  that also slopes upward at a decreasing slope. Solow's assumption of a constant rate of depreciation of capital implies that depreciation is represented by a straight line function of capital,  $\delta K$ . Figure 9.2 combines all three functions in one diagram.

The diagram confirms what we already noticed in Eq. 9.4: The economy's capital stock automatically adjusts toward a stable equilibrium level  $K^*$ . When investment is greater than depreciation, or  $\sigma f(K) > \delta K$ , the stock of capital grows. In Fig. 9.2 this occurs to the left of  $K^*$  where the investment curve  $\sigma f(K)$  lies above the depreciation line  $\delta K$ . Because of diminishing returns the slope of  $\sigma f(K)$  declines, and eventually investment only adds just enough income and saving to cover the depreciation of the ever-increasing stock of capital. At that point there is no further growth of  $K$ . To the right of  $K^*$ , the situation is reversed; investment is less than depreciation and  $K$  declines back toward  $K^*$ .

Output is a function of  $K$ , and therefore output also tends to a stable equilibrium level of  $Y^* = f(K^*)$ . At  $Y^*$  consumption and investment are  $C^*$  and  $I^* = \sigma Y^*$ , respectively. Solow defined these stable equilibrium levels of the capital stock and output as the economy's *steady state equilibrium*.

### 9.2.2 *Immigration Similarly Has No Long-Run Effects*

In order to better understand the growth effect of immigration in the Solow model, it is convenient to put the model in per capita terms. In addition to diminishing returns to any single input, Solow also assumed that the production function exhibits *constant returns to scale*. If Eq. 9.1 is a constant returns to scale production function, then for any positive constant  $c$  the following must also hold:

$$cY = F(cK, cL) \quad (9.5)$$

Then, assuming that the supply of labor is a constant and letting  $c = 1/L$ , the production function can be written as

$$Y/L = y = f(K/L, 1) = F(k) \quad (9.6)$$

where  $Y/L$  and  $K/L$  are defined as  $y$  and  $k$ , respectively, and we let the function  $F(k)$  represent  $f(k, 1)$ . Equation 9.6 describes output per worker as a function of capital per worker, which is quite appropriate given that economic growth is normally defined as the change in *per capita* output.

The basic dynamic equation of the Solow model can also be written in per capita terms. Denoting per capita investment  $I/L$  as  $i$ , per capita investment increases the per capita stock of capital only if it exceeds the amount of per capita capital that depreciates. In per worker terms,

$$\Delta k = i - \delta k = \sigma y - \delta k = \sigma F(k) - \delta k. \quad (9.7)$$

Now, if  $\sigma f(k)$  is greater than  $\delta k$ , the capital–labor ratio  $k$  will increase. On the other hand, if depreciation is so large and diminishing returns have reduced the marginal gains in output from investment in new capital to the point where  $\sigma f(k) < \delta k$ ,  $\Delta k$  will be negative and  $k$  will decline.

Immigration changes the size of the population. To analyze the effect of population change in the Solow model, we have to drop our assumption of a constant labor stock. Suppose, therefore, that the labor force can grow at some rate  $n = \Delta L/L$ . For  $k = K/L$  to remain constant when the labor force grows,  $K$  must grow at the same rate as  $L$ . Thus, for  $k$  to remain constant, investment must cover not only the amount of capital that depreciates, but it must also equip new entrants to the labor force. Therefore, the direction of change in  $k$  depends on whether the amount of investment per worker,  $i = \sigma F(k)$ , is greater than or less than the sum of capital depreciation per worker plus the amount of capital needed to equip each new worker with the same per capita amount of capital that existing people already have to work with. The change in the capital–labor ratio  $k$  will thus be

$$\Delta k = i - \delta k - nk = \sigma F(k) - (\delta + n)k. \quad (9.8)$$

**Fig. 9.3** The effect of population growth on the steady state

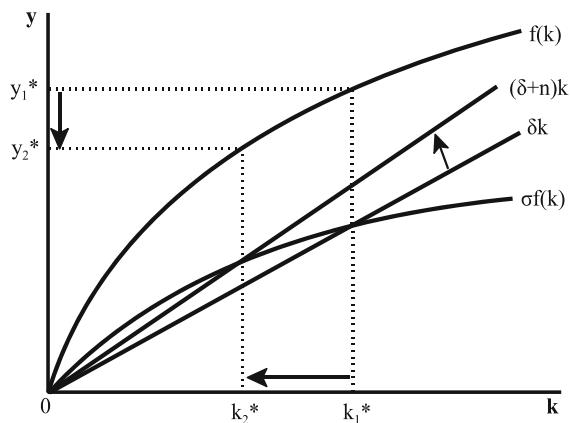
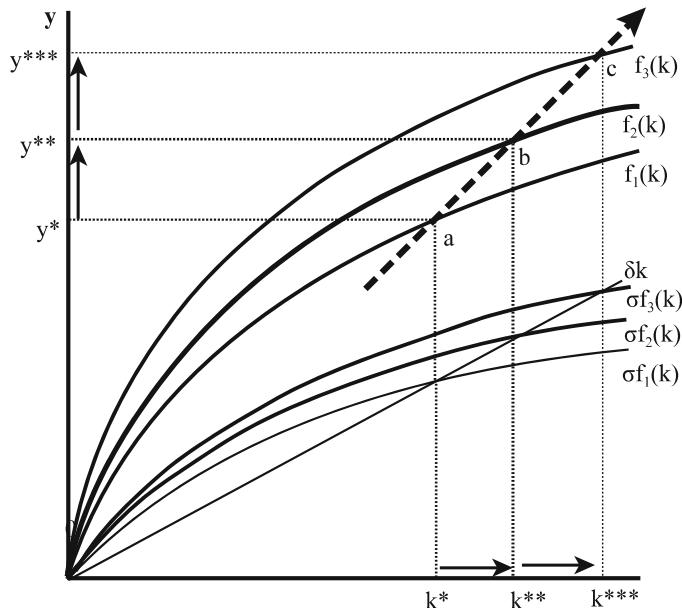


Figure 9.3 illustrates population growth's effect on the steady state rate level of  $k$ , and hence output  $F(k)$ . If  $n > 0$ , the intersection of  $(\delta + n)k$  and  $\sigma f(k)$  occurs at a lower level of  $k$  than the intersection of  $\delta k$  and  $\sigma f(k)$ . All other things equal, the higher the rate of population growth, the lower steady state  $k$ : compare  $k_1^*$ , which represents the steady state for  $n = 0$ , and  $k_2^*$ , which represents the steady state for  $n > 0$ , in Fig. 9.3. And, the lower the steady state  $k$ , the lower the steady state level of per worker output and income. The Solow model therefore predicts that, all other things equal, countries with higher rates of population growth have lower *levels* of per capita output. Thus, if immigration increases and then remains at the higher level, the source and destination countries shift to new steady state levels of output. Immigration lowers per capita income in the destination country but raises it in a source country.

This conclusion that countries receiving immigrants suffer a reduction in per capita income is similar to what the static labor market model of immigration tells us. This conclusion seems to be at odds with the observation that countries such as the USA, Canada, Australia, and New Zealand, which all have traditionally received large inflows of immigrants and continue to receive immigrants, have among the highest per capita incomes in the world. We could, perhaps, rationalize the Solow model by concluding that these countries achieved very high steady state levels of per capita income *in spite of* immigration. The Solow model suggests another, more plausible, explanation for the high per capita incomes in the major immigrant destination countries, however.

### 9.2.3 How an Economy Achieves Permanent Growth

The Solow model shows that the tenfold increase in real per capita income for the world as a whole since 1800 could not have been the result of increased saving and investment. Rather, the Solow model makes it clear that the spectacular growth of the past two centuries must have been caused by *technological progress*.



**Fig. 9.4** Technological progress

Technological progress is defined as an improvement in the efficiency with which an economy uses its resources and factors of production to produce welfare-enhancing output. In the Solow model, technological progress effectively causes an upward shift in the economy's aggregate production function, as from  $f_1(k)$  to  $f_2(k)$  to  $f_3(k)$  in Fig. 9.4. The repeated shifts in the production function change the economy's steady states from points a to b and then to c, which represent the steady state combinations of  $k^*$  and  $y^*$ ,  $k^{**}$  and  $y^{**}$ , and  $k^{***}$  and  $y^{***}$ , respectively. Technological progress in effect shifts the economy's production points along the dashed line in Fig. 9.4, not along a single production function with diminishing returns, as in Fig. 9.3.

According to the Solow model, the rising standards of living that people in most countries have experienced over most of the past 200 years could not have been just the result of *more* tools and machines, it was the result of *more and better* tools and machines, technologies, and production methods. Any assessment of immigration's growth effects must, therefore, examine whether and how immigration affects the economy's rate of technological progress. If immigration causes the whole production function to shift upward, then immigration will, in the long run, increase per capita income, not diminish it. But, this is a very different question than neoclassical mainstream economists normally ask about immigration. In effect, the neoclassical Solow model challenged economist to look at immigrants as potential innovators and inventors. Effectively, immigrants have three potential roles: workers, consumers, and innovators.

## 9.3 Immigration and Technological Progress: A First Examination

Models of technological progress tend to view immigration in a very different light than the Classical, Harrod–Domar, and Solow growth models. Immigrants are not merely factors of production that, in the destination country, reduce the returns to labor by adding more labor resources to a given set of other productive resources. Models of technological progress tend to see people as the resource that thinks of new ideas, develops new technologies, and applies new methods and procedures. The arrival of immigrants, therefore, adds creative and innovative people.

The role of people as innovators and creators is not new. The early social scientist William Petty wrote in 1682 that “...it is more likely that one ingenious curious man may rather be found among 4 million than among 400 persons.” Simon Kuznets (1973, p. 3), the noted economist and Nobel laureate, asked more than 25 years ago, “Why, if it is man who was the architect of economic and social growth in the past and responsible for the vast contributions to knowledge and technological and social power, a larger number of human beings need result in a lower rate of increase in per capita product?” Ester Boserup (1965) and Julian Simon (1992) went further and argued that it is the very congestion created by population growth that provides the incentives for technological progress. Boserup and Simon effectively restate the old claim that “necessity is the mother of invention.” Immigration both creates the necessity of technological progress to overcome diminishing returns, and it provides the innovators.

### 9.3.1 *Immigration and Technological Progress*

There are many reasons why the movement of people from one country to another affects the rate of technological progress in the source and destination countries. Perhaps most obvious, immigrants are carriers of ideas and knowledge, and therefore immigration increases the transfer of technology between countries. Second, some immigrants have talents and personalities that are especially appropriate for innovation, which implies that they are an especially important factor input into the process of technological progress. This potential characteristic of immigrants implies that their migration would cause innovation and technological progress to slow in their source country and accelerate in the destination country. Third, by changing the levels of population and gross domestic product in the source and destination countries, immigrants change the size of economies. There is some evidence that technological progress is related to the size of economies. We can examine these three possibilities in detail within the framework provided by a model derived from the ideas of the early twentieth-century economist Joseph Schumpeter.

### 9.3.2 Joseph Schumpeter's Theory of Creative Destruction

The most popular model of technological progress is based on the ideas of Joseph Schumpeter, who early in the twentieth century criticized his contemporary neoclassical economists for being overly concerned with resource allocation and ignoring how an economy's productive capacity grows. According to Schumpeter (1934, p. 84), "the important issue is not how capitalism administers existing structures, . . . the relevant problem is how it creates and destroys them."

Schumpeter described the capitalist economy as a "perennial gale of *creative destruction*." Every time an innovator *creates* a new business opportunity, it *destroys* the market power and profits that its competitors had gained as a result of their earlier innovations. This continual creation and destruction prevents monopolies from permanently reaping profits. More important, argued Schumpeter, the process gives society continual technological progress. Schumpeter's view of *competition* was, therefore, distinct from the price competition emphasized by mainstream economic theory. He saw ferocious competition among imperfectly competitive firms, but it was competition to develop new products and production processes and earn monopoly profits, not traditional price competition. In neoclassical economists' favorite case of perfect competition, the market price just covers the cost of the resources used in *production*, leaving nothing to cover the up-front cost of *innovation*. Schumpeter effectively clashed with mainstream economics: where standard microeconomic theory suggests that monopoly profit is a form of "market failure" that is costly to society, Schumpeter saw profits as necessary and beneficial for long-run economic growth. Actually, Schumpeter's interpretation of profit echoed Marx (1867), who incorporated the behavior of capitalists as profit-maximizing investors/innovators into his model of an evolving economy.

Schumpeter's concept of *creative destruction* also captures another important characteristic of economic growth, which is that the creation of something new usually requires that something old be eliminated. New activities require resources, which, in the absence of unemployment or excess capacity, must be transferred from existing activities. Growing economies are therefore characterized by *structural change*. Finally, Schumpeter recognized the importance of the economic and social climate for innovation within which innovators, or *entrepreneurs*, operated. Fundamentally, an economy's rate of technological progress depends on the incentives and barriers that entrepreneurs face.

Romer (1990), Grossman and Helpman (1991), Rivera-Batiz and Romer (1991), and Aghion and Howitt (1992) have built models of endogenous technological progress around the "Schumpeterian" assumption that technological progress is the result of costly innovative activities carried out by profit-seeking entrepreneurs. There are subtle differences between the many models that have been developed, but all of them incorporate the following five fundamental ideas:

1. Innovations are generated by intentionally employing costly (scarce) resources to create new products, ideas, methods, etc.

2. Profit-seeking innovators must compete with producers to employ the economy's scarce, and thus costly, resources.
3. Innovation creates new products or techniques that are better, cheaper, more attractive, or in some other way better than existing products, which gives the new activities and products an advantage over existing producers and products.
4. Just as their innovations "destroyed" earlier innovators' profits, innovators also know that further innovations by competing innovators will eventually eliminate the profits of their innovations.
5. Innovators rationally weigh the costs of innovation and the discounted expected future profits of innovation.

In this section, we elaborate a bit further on the Schumpeterian model. The [Appendix](#) to this chapter presents a mathematical version of the model that closely resembles the published Schumpeterian growth models, such as that of Romer (1990).

### 9.3.3 *The Opportunity Costs of Innovation*

The neoclassical approach to solving the Schumpeterian model of innovation is to effectively solve a maximization problem that takes into consideration both the costs and the expected gains from innovation. Innovating firms seeking to create a new product or improve a production method must purchase labor and other productive resources in competition with producers who demand resources to produce previously developed products. The opportunity cost of innovation is thus the reduction in the production of products caused by shifting scarce resources to innovative activities. The cost of resources needed for innovation will be lower, all other things equal, the more factors and resources are available in the economy. Innovation will tend to drive up the costs of resources.

In reality, the process of innovation is highly uncertain. Devoting resources to innovative activity does not guarantee that something useful will actually be created, nor does the innovator know exactly how long it will take to successfully create a better product or improve a production method. It is difficult to incorporate *uncertainty* into a maximization problem, however. Growth theorists thus substitute a risk function with a well-defined distribution of possible outcomes for uncertainty. To make the mathematics workable, they also often also assume that decision makers are *rational* and they have full information about their options. In this (completely unrealistic) case, decision makers can be assumed to, *on average*, correctly predict the future, so that it becomes possible to substitute well-defined *expected values* for unknown future values in the maximization problem.

In reality, of course, uncertainty means that the future is entirely unpredictable because not even the distribution of possible outcomes is known. That is, decision makers face "unknown unknowns." Schumpeter recognized as much when he

described entrepreneurs as those people willing to face an uncertain future, but the recent Schumpeterian growth models opt for more practical and completely unrealistic assumptions.

### **9.3.4 The Gains from Innovation**

The gains from innovation depend on future profits in Schumpeter's model, or, according to Marx (1867), the future surplus value accruing to the capitalists. Future profit or surplus depends on how much time passes before another innovator comes up with the next innovation. Hence, profit from current research and development depends in how successful future R&D activity will be. On the one hand, the more difficult it is to innovate, the greater the gains from any one innovation are. On the other hand, the more resources are devoted to R&D in general, the more quickly further innovations will creatively destroy the surplus. Finally, because innovations require *current* expenditures on research and development (R&D) that must be paid for from *future* profits, expected future profits must be discounted. Hence, the higher the discount (interest) rate, that is, the more people value the present over the future, the less is the present value of an expected innovation.

## **9.4 Immigration in the Schumpeterian Model: A More General Discussion**

Recall from the previous section there are several likely channels through which immigration may influence technological progress. This section discuss further how immigrants (1) directly innovate as entrepreneurs and workers in innovative activities, (2) change the size of economies, and (3) facilitate the transfer of technology.

### **9.4.1 Immigrants as an Innovative Resource**

The most obvious change introduced by immigration is a change in a country's labor force. The Schumpeterian model very clearly depicts the potential dual roles of immigrants as both workers and innovators, discussed above, by splitting resources into productive resources and innovative resources.

The literature on immigration has often suggested that immigrants may represent human resources that are especially appropriate for innovation and entrepreneurship (Chiswick, 1978; Constant & Zimmermann, 2006; Todaro, 1980; Zimmermann, 1995). There are numerous anecdotes and statistical facts that support this story. For example, Peri (2007) notes that 26 % of US-based Nobel

Prize recipients were immigrants even though immigrants make up 10–12 % of the population. Wadhwa, Saxonian, Rissing, and Gereffi (2007) estimated that non-US citizens account for 24 % of international patent applications. Chiswick (2000) found that the self-selection of immigrants in terms of personal characteristics favorable to economic growth is more pronounced “the greater the out of pocket (direct) costs of migration and return migration, the greater the effect of ability on lowering the costs of migration, and the smaller are the wage differences by skill in the lower income origin than in the higher income destination.” Findings such as these can be interpreted in many different ways, however.

Take, for example, the hypothesis that international migration provides a natural selection process that distinguishes exceptionally adventuresome and enterprising people. Economic theory does not provide a clear prediction on the immigrants’ risk attitudes. Even if migrants are more risk loving, mobile, talented and entrepreneurial than the population in the home country, under equal distributions of risk preferences in the source and destination countries, the average migrant may be more or less risk loving than the average native in the destination country. The risk attitudes of immigrants and natives in the destination country may also differ due to different distributions of risk preferences in the source and destination country. In such a case, even if migrants are drawn from the upper part of the distribution of risk tolerance in their home country, they may still be more risk averse than the natives in the destination country. Heitmueller (2005) and Hartog, Ferrer-i-Carbonell, and Jonker (2002) find that migrants may actually be less risk averse than the population in the source country of out-migration. Also, Chiswick (1978) and Borjas (1987) use neoclassical labor market models of migration to generate the result that high-skilled migrants will be less risk averse while the low-skilled will be more risk loving.

Many studies have explicitly examined whether immigrants are more likely than natives to be entrepreneurial, but this evidence, too, has proven to be ambiguous. For example, Hart and Acs (2011) found that 16 % of new high-tech companies had at least one immigrant among their founders. But among these immigrants, at least 77 % were American citizens, implying that these immigrants were already “deeply-rooted in the U.S.” They were also well educated and had substantial professional experience. Hart and Acs’ research did not permit them to assess to what extent these immigrants crowded out comparable natives. Hunt (2011) used patents, published scientific papers, and published books to measure technology, and she finds no evidence that immigrants are any more innovative or entrepreneurial than natives in destination countries.

#### ***9.4.2 Immigrants, Population Size, and the Returns to Innovation***

Rosenberg (1994, p. 113), an economic historian noted for studying the growth of technology over the ages, attributes the rapid rise in per capita income in the USA in the 1800s to “rapid growth in demand and circumstances conducive to a high

degree of product standardization.” That is, the USA was able to exploit economies of scale because its market grew rapidly and, because of the country’s large middle class, the market was very uniform. What caused this growth of the market? Rosenberg (p. 113) answers, “Probably the most pervasive force of all was the extremely rapid rate of population growth... with immigration assuming a role of some significance in the 1840s.” Also relevant is the observation that despite protectionist US trade policy, the country was able to grow rapidly in the 1800s without taking advantage of international trade because immigration made the domestic economy sufficiently large so that its national border did not constrain the division of labor. By 1870 the USA overtook England as the world’s biggest economy, and by 1900 its average per capita income was the highest in the world. Irwin (2000), Hill (1971), and Crafts and Venables (2001) suggest that the USA used immigration rather than international trade to achieve economies of scale. Immigration enabled US industry to exploit increasing returns to scale despite the strong protectionist bias of US trade policy throughout the nineteenth century.

#### ***9.4.3 Immigrants and Technology Transfers***

The movement of people may also cause a change in the resource cost of generating innovations. Immigrants inevitably carry ideas with them, and the arrival of ideas from abroad through immigration is likely to be much less costly than arriving at those ideas from scratch through original research. For example, the economic historian Carlo Cipolla (1978) describes the clock and watch industry from several hundred years ago, in which immigration greatly affected technological development and subsequent economic growth. The clock and watch industry played a particularly important leadership role in developing the technology of precision engineering. Even though many early clock makers were French, the clock industry ended up centered in Switzerland. Actually, a large percentage of the early French clock makers were highly literate and highly interested in various aspects of science, and they were also active in the Reformation movement. When France expelled the Huguenots, as the early French Protestants were called, a number of French clock makers went to Geneva, Switzerland at the invitation of John Calvin, the Calvinist leader of that Swiss city. According to Cipolla (p. 64), at its infancy in 1600, “to destroy or to build up the [clock] industry it was enough to dismiss or attract a few dozen craftsmen.” The future Swiss watch industry was founded by “the inflow of a handful of refugees-to the injection of a small but precious amount of human skills.”

Immigrants can also create channels through which knowledge and technology flow between countries, even if they do not actually carry such knowledge themselves. Immigrants maintain contact with their countries of birth, they speak the language, and they share certain types of cultural capital that facilitates communications and cooperation. A few studies have tried to measure knowledge

and technology flows and then to test whether immigrants have any influence on those flows. It is, of course, very difficult to identify knowledge and technology flows.

Economists have used measures of R&D resources devoted to creating new technology and knowledge to estimate innovation. The classic example of this method is the article by Coe and Helpman (1995). Coe and Helpman estimated the following regression,

$$\text{Productivity}_j = f(X_j, \text{R\&D}_j, \text{Foreign R\&D}), \quad (9.9)$$

in which the variable  $\text{Productivity}_j$  represents some measure of the productivity of country  $j$ , the vector  $X_j$  consists of those factors considered crucial to a country or industry's level of productivity,  $\text{R\&D}_j$  is an estimate or proxy of research and development activity performed in country  $j$ , and  $\text{ForeignR\&D}$  is a vector of R&D activity in other countries.

Where Coe and Helpman were interested in how international investment affects knowledge flows, other researchers have sought to quantify the effect of immigration on technology flows by testing the correlation between the estimated coefficients of the  $\text{ForeignR\&D}$  variables and immigration between the two countries. The limit of this type of approach is that the identification of technology flows is based entirely on correlation, and equating correlation with causation constitutes what some call the *cum hoc ergo propter hoc* logical fallacy. There are so many causes and consequences of both knowledge flows and migratory flows that it is impossible to place much faith in correlation analysis.

Some studies have used actual proxies for technology or knowledge rather than inputs into the R&D process. While such "output" measures may be preferable to "input" measures such as R&D expenditures, the *cum hoc ergo propter hoc* fallacy remains. Jaffe and Trajtenberg (2002) follow an often-used method to deal with the correlation fallacy, and they link current knowledge flows to past immigration flows. But it is not clear that "precedence" captures causal relationships more accurately than coincidental events. Given the econometric difficulties, it is not surprising that the results across the various studies are ambiguous.

In summary, the Schumpeterian R&D model of endogenous technological progress developed here suggests that, all other things equal, the number of innovations in an economy is greater (1) the larger is the profit markup at which the successful innovator can sell her innovative new product, (2) the greater is the supply of resources available to innovators and producers, (3) the more highly innovators value future gains relative to current costs, and (4) the more efficient are innovators in employing the economy's scarce resources toward generating new innovations.

Immigration is likely to increase profits, expand the amount of productive and innovative resources, and to reduce the costs of innovation. An [Appendix](#) to this chapter supplements this section by showing how immigration influences the rate of innovation in a mathematical version of the Schumpeterian model.

This mathematical model gives you an idea of how Romer (1990) and other growth theorists have incorporated Schumpeter's ideas into what are known as *endogenous growth models*, so named because, unlike the Solow model, they *endogenize* technological change.

## 9.5 Growth Effects of Immigration in the Source Country

The models in the previous sections explain how immigration affects economic growth in the destination country. In this section, we briefly examine the growth effects of immigration in the source country.

### 9.5.1 *The Overall Growth Effect of Out-Migration*

The R&D model suggests that countries losing migrants grow less rapidly because its stock of innovative people declines, immigrants take knowledge and ideas with them, and the size of the economy is reduced and thus there are diseconomies of scale. Recent models by Miyagiwa (1991), Haque and Kim (1995), and Wong and Yip (1999) conclude that the *source* countries of immigration suffer a decline in the rate of economic growth.

Growth declines can be avoided, however, if (1) immigrants eventually return to their homelands and (2) immigrant remittances enable greater levels of investment than otherwise would occur in source countries. For example, Mountford (1997), Stark, Helmenstein, and Prskawetz (1998), Vidal (1998), and Beine, Docquier, and Rapoport (2003), among others, have suggested that the prospects for high overseas earnings may actually increase source country human capital formation. Their reasoning is straightforward: the possibility of immigrating to a high-income country raises the return to education in the source country, which increases the demand for education.

A slowdown in economic growth in the source country can also be avoided if immigration opens channels for technology transfers from countries that are technological leaders. The conventional wisdom that talented, entrepreneurial, and educated people are needed to adapt and apply foreign technologies is strongly supported by the evidence, which means that a country's capacity to absorb foreign technology will diminish if talented and entrepreneurial people immigrate elsewhere. However, Dustmann and Kirchkamp (2002) and Mesnard and Ravallion (2002) show that immigrants often maintain ties with their native countries, and these ties can serve to create channels through which technology can be transferred. Agrawal, Cockburn, and McHale (2003) find that social capital, the complex relationships among people that have been shown to facilitate the sharing of knowledge and technology, endures even after out-migration. Specifically, their analysis of patent citations shows that former colleagues and associates separated

by immigration continue to influence each others' research disproportionately. This effect is especially important for countries such as India, China, Taiwan, and others that have many university graduates living overseas.

Lundborg and Segerstrom (2002) use a typical Schumpeterian growth model and computer simulations to find how welfare changes for immigrants, natives in the destination country, and natives in the source country. Under all reasonable parameter values, they find that the spread of technological progress definitely improves the welfare of natives in the source country, but not necessarily in the destination country. They conclude that the expansion of the European Union to include Eastern European economies will likely expand economic growth more in the new members than in the original 15 EU member countries, largely because of the expected large flows of immigrants from the new members to the old members.

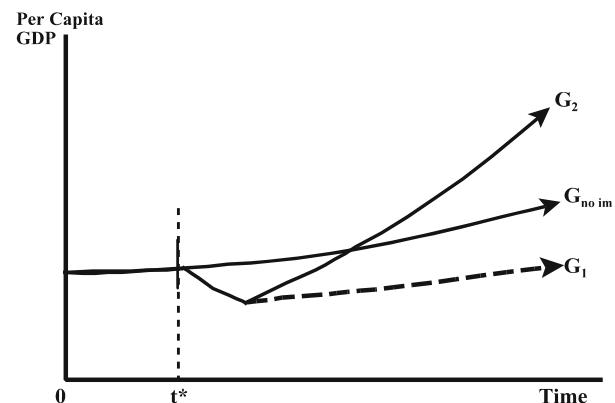
### **9.5.2 *How Remittances Are Used in Source Countries***

As discussed in the previous chapter, the analysis of remittances in the static model suggests that, all other things equal, remittances improve welfare in the immigrant source country. From the growth perspective of this chapter, a more important question is how remittances affect the long-run growth rate of the source economy. The evidence on the growth effects of remittances is, unfortunately, not very clear.

Most studies of the use of remittances find that remittances are used mostly for consumption, not investment. But, remittance studies do not capture the multiplier effects. Taylor's (1999) summary of village studies in Kenya, West Java, Senegal, and Mexico concludes that multiplier effects are often small in local communities, with the countries' urban areas receiving the greatest secondary boosts. However, such secondary effects can still have a very positive effect on the country's economic growth, even if that growth does not occur in the local communities where the recipients of the remittances reside.

A comparison of Mexican families that receive, or do not receive, remittances by Germán Zárate-Hoyos (2001) shows that, all other things equal, "households receiving remittances devote a higher proportion of current expenditures to investment and savings than those households that do not receive remittances." Combined with the finding that conspicuous consumption is usually higher in villages that receive large remittances from relatives abroad, this finding suggests that it is the lack of local investment opportunities rather than the direct effect of remittances that causes the high propensity to consume remittance income. Economic growth depends on the many variables that influence capital investment, innovation, entrepreneurship, and the willingness to do things differently. Therefore, remittances by themselves are not likely to play the decisive role in a nation's economic development.

**Fig. 9.5** Alternative long-run growth paths with a brain drain



### 9.5.3 The Brain Drain Again

Now that we have introduced growth models and how immigration fits into these models, it is useful to return to the long-run consequences of the brain drain. We noted in the previous chapter that economists often conclude that there is little that can be done about the brain drain short of increasing wages and improving working conditions in poor countries. The dynamic analysis of this chapter suggests, however, that the brain drain itself has growth effects, which suggests that the brain drain may involve both vicious cycles and virtuous cycles.

In the long run, the brain drain could raise or lower growth rates in the source country. The growth effects on the source country of the emigration of educated people can be summarized using a diagram such as Fig. 9.5. Source country per capita income is shown on the vertical axis, and time is on the horizontal axis. Suppose that at time  $t^*$  the brain drain begins. Whether the brain drain has a beneficial effect on the source country depends on whether per capita income grows faster after the brain drain than it would in the absence of the brain drain. Suppose that the growth path of the economy without a brain drain is given by the curve  $G_{\text{no im}}$ . Figure 9.5 then shows two hypothetical alternative growth paths with a brain drain, labeled  $G_1$  and  $G_2$ .

The path  $G_1$  represents the case often suggested by traditional development economists who fear that the brain drain will cause output and income to fall in the source country in the short run, and the rate of growth will fall in the long run. Clearly, in this case, the source country would have been better off if its educated natives had not left the country. On the other hand, the growth path  $G_2$  suggests that, despite the initial depressing effect on per capita income when the brain drain began, eventually there are increased technology flows back to the source country and growth actually rises above the rate at which the country would have grown in the absence of sending its most educated natives overseas. This increased growth could be the result of communications channels or business networks built by the immigrants between their destination and source countries. Perhaps, the knowledge

returning emigrants bring back with them ends up being less costly and more useful than the knowledge and technology these same people could have developed within the source country if they had stayed. Or, there may be more trade and investment flows encouraged by immigrant networks. Finally, remittances of a substantial portion of the high incomes educated migrants earn overseas can help to finance new businesses and raise the education of remaining family members, which increases economic growth beyond what could have been accomplished in the absence of the remittances.

Which of these two scenarios,  $G_1$  or  $G_2$ , is more realistic is not clear. There are many other possible growth paths depending on exactly who migrates, how many educated people migrate, how long the migrants remain overseas, and what level of contact they maintain with the source country. Of course, the source country's other economic and social policies play the dominant role in determining the answers to each of these questions. While the popular press has written frequently about remittances and the brain drain, much more serious research is needed.

## 9.6 Summary and Tentative Observations

The Solow model clearly shows that growth through factor accumulation cannot cause permanent improvements in living standards. Continuous improvements in per capita income requires continuous technological progress. The Schumpeterian model and some of the peculiar characteristics of technology suggest that immigration might be able to stimulate technological progress in destination countries. Because they come from other societies and cultures, immigrants usually bring new ideas to their new countries of residence. And because immigration is costly and risky, immigrants are self-selected into a group that is likely to be more entrepreneurial and risk-taking than the average members of their original societies. Immigration also increases the size of the destination country's economy, stimulating more specialization and exchange, economies of scale, and profit from innovation.

Immigration's effect on economic growth in the source country has been studied less frequently than immigration's growth effects in destination countries. There are obvious negative effects in the source country; all one needs to do is reverse the conclusions about how immigration influences growth by shifting labor and entrepreneurial talent. However, a source country's former residents living abroad can send back new information and knowledge, thus expanding economic growth in the native countries they no longer reside in. Also, immigrants can remit money back home, and they often return home with a greater amount of human capital than they left with. In some cases, immigration may produce growth in both the source and destination countries. However, much research remains to be done before hypotheses such as these can be judged with any degree of confidence.

The complex characteristics of human technology and its role in the process of economic growth and change imply that it is difficult to understand how immigration is related to economic growth. Clearly, it is not difficult to hypothesize some ways in which immigration may be related to economic growth. But it is difficult to justify a single model of economic growth with which to analyze the long-run causes and consequences of immigration for a destination or source economy. Technological change is a complex and diverse process, and modeling technological progress is difficult. Can we use the same model to explain the discovery of the Pythagorean theorem, the development of modern commercial banking, the application of the “just-in-time” parts supply system, and the formulation of quantum physics? Each of these improvements in knowledge had its own motivation. Aggregate models such as the Solow and Schumpeter growth models are thus unlikely to provide much practical guidance for understanding the full consequences of complex phenomena like immigration. The next chapter examines technology and some alternative models that may be useful for analyzing the dynamics of immigration.

The overall effects of immigration on individual countries and the world as a whole depend critically on the long-run growth effects. The power of compounding implies that any change in the rate of growth will eventually overwhelm the static effects that models of immigration usually focus on. Hopefully, this chapter has helped to shift the perspective of immigration economics towards a more dynamic framework. There are actually further dynamic processes to take into consideration. The next chapter examines additional research on the dynamic relationship between immigration and economic development.

## Appendix: An Alternative Mathematical Schumpeterian Model

Growth models are normally presented in mathematical form, not the graphic form embraced in this chapter. Here we present a simple mathematical growth model that follows logic similar to that of the “Schumpeterian” model described in the main text of this chapter, albeit with one important difference. Rather than making the assumption that each successive innovation (new product) replaces earlier innovations (products), the model in this section assumes that innovation consists of new products that are added to the existing stock of products. In the growth literature, these two types of models are referred to as “quality ladder” models and “expanding variety” models, respectively. For example, in their advanced graduate level textbook on economic growth, Robert Barro and Xavier Sala-i-Martin (2004) devote separate chapters to these two groups of models of endogenous technological progress. The dichotomy between the two types of models is not as great as it seems, however. As shown below, the conclusions of the two versions of Schumpeterian models are nearly identical.

## ***Innovation and Profit***

Suppose that each act of innovation consists of creating a new firm that produces a new product. We start with  $n$  firms in the economy, each producing one of  $n$  different products. Suppose also that one unit of labor is required to produce a product; this implies that the marginal (and average) cost of producing each good is equal to the wage rate,  $w$ . Because each product is different, each producer enjoys some degree of market power so that each firm faces a downward-sloping demand curve. For simplicity, suppose that each profit maximizing firm faces an identical demand curve and, therefore, sets the same price equal to

$$p = w(1/\gamma), \quad (9.10)$$

where  $0 < \gamma < 1$  and the price markup  $p - w = \mu = [(1 - \gamma)/\gamma]w$ . Since  $w = p\gamma$ , profit per unit is  $p(1 - \gamma)$ . Because entrepreneurs face downward-sloping demand curves, they can set a price above the marginal cost of production  $w$  and, potentially, recover the cost of innovation.

The total value of output is GDP, and therefore total profits in the economy are equal to

$$\Pi = \text{GDP}(1 - \gamma). \quad (9.11)$$

The profit of any one of the  $n$  identical firms is

$$\pi = \frac{\text{GDP}(1 - \gamma)}{n}. \quad (9.12)$$

The present value of the earnings of a successful innovation is equal to the discounted stream of future profits, or

$$PV = \sum_{j=0}^{\infty} \rho^j \pi_{t=j}, \quad (9.13)$$

where  $\rho$  is the discount factor  $1/(1 + r)$ ,  $r$  is the interest rate, and the  $\pi_{t=i}$  are the profits in each future time period  $i$ . The present value of all future profits can be thought of as the equity value of the firm.

## ***The Equilibrium Level of Entrepreneurial Activity***

Entrepreneurs will innovate and enter the market so long as the present value of future profits,  $PV$ , exceeds the current cost of product development. Suppose that  $\beta$  is equal to the units of labor required to develop each new product. The cost of

developing a new product is thus  $w\beta$ . Assuming that there is a fixed number of workers in the economy, the more workers are hired by firms to develop new products, the higher will be  $w$ , the opportunity cost of those workers' marginal product in producing goods. Innovation will stop expanding when the discounted future earnings from producing the  $n$ th good are exactly equal to the cost of creating the  $n$ th good. Putting together the costs and profits from innovation, the *innovation profit*, defined as  $\theta$ , is

$$\theta = PV - w\beta. \quad (9.14)$$

If there is competitive innovation, meaning that all prospective entrepreneurs can demand resources for innovation and, if successful, market their new products, then  $\theta = 0$  and

$$PV = \beta w. \quad (9.15)$$

Equation 9.15 represents the equilibrium condition for innovation profits.

### ***The Equilibrium Rate of Technological Progress***

We assume that firms live forever, even though their profits are gradually eroded by the entry of new firms with new products. In the case of an endless flow of future profits, the discounted value of future profits can be approximated by  $\pi/r$ , where  $\pi$  is the average future profit and  $r$  is the interest rate. If the growth of products is zero, or  $g = 0$ , the total stock market valuation of a firm is

$$(PV) = \frac{GDP(1 - \gamma)}{nr}, \quad (9.16)$$

where  $r$  is the rate of interest and  $n$  is the total number of firms and products. The total capitalization of the economy's stock market is thus

$$n(PV) = \frac{GDP(1 - \gamma)}{r} \quad (9.17)$$

If innovation is profitable, the number of products increases, however. For simplicity, suppose that (1) total output, or GDP, stays the same when new firms develop new products and (2) each new firm has to share a fixed amount of labor in the economy. Thus, the profit of any single firm  $[GDP(1 - \mu)]/n$  will decrease if the number of firms increases. Specifically, profit will continually decline by the growth rate of new products/firms  $g = \Delta n/n$ . If  $g > 0$ , then the market valuation of *existing* firms is

$$n(PV) = \frac{GDP(1 - \gamma)}{r + g} \quad (9.18)$$

The equilibrium rate of innovation,  $g$ , can be found manipulating the above results. First, combining (9.10) and (9.15) gives us

$$p = \frac{w}{\gamma} = \frac{PV}{\gamma\beta}. \quad (9.19)$$

With the above result, Eq. 9.19 can be rewritten as

$$p = \frac{PV}{\gamma\beta} = \frac{GDP(1 - \gamma)}{\gamma\beta n(r + g)}. \quad (9.20)$$

Since it takes one unit of labor to produce each unit of output of old and new products, the total amount of labor devoted to production is exactly equal to the total quantity of output of products, which is equal to  $GDP/p$ . The amount of labor devoted to research and development is equal to the number of new products,  $ng$ , times the amount of labor required to create a new product, or  $\beta ng$ . If the quantity of labor available in the economy is  $R$ , then the growth rate of new products must be compatible with

$$\beta ng + \frac{GDP}{p} = R. \quad (9.21)$$

Using Eq. 9.20 to substitute for  $p$  in Eq. 9.21 yields

$$\beta ng + \left[ \frac{\gamma\beta n(r + g)}{1 - \gamma} \right] = R. \quad (9.22)$$

Multiplying all terms in (Eq. 35) by  $(1 - \gamma)$  and dividing everything by  $\beta n$ :

$$g(1 - \gamma) + \gamma r + \gamma g = \frac{R(1 - \gamma)}{\beta n}. \quad (9.23)$$

Equation 9.23 can be further simplified to:

$$g + \gamma r = \frac{R(1 - \gamma)}{\beta n}. \quad (9.24)$$

Isolating  $g$ , the growth of new products, on the right-hand side of the equation gives us a result that is very similar to the graphic Schumpeterian model of the previous section:

$$g = \left[ \frac{R(1-\gamma)}{\beta n} \right] - \gamma r. \quad (9.25)$$

That is, the growth rate of new products, which is really intended as a proxy for the creation of new ideas and technology, depends directly on  $R$  and inversely on  $\gamma$ ,  $\beta$ ,  $n$ , and  $r$ .

The partial derivatives of  $g$  with respect to  $R$ ,  $\gamma$ ,  $\beta$ ,  $n$ , and  $r$  are:  $\partial g/\partial R = (1-\gamma)/\beta n > 0$ ,  $\partial g/\partial \gamma = -R/\beta n - r < 0$ ,  $\partial g/\partial r = -\gamma < 0$ ,  $\partial g/\partial \beta = -[R(1-\gamma)]/(\beta)^2 n < 0$ , and  $\partial g/\partial n = -[R(1-\gamma)\beta]/(\beta n)^2 < 0$ . The signs of the derivatives suggest that the rate of technological progress depends directly on the amount of productive resources  $R$  and inversely on  $\gamma$ ,  $\beta$ ,  $n$ , and  $r$ . Note that  $\gamma$  is inversely related to  $\mu = [(1-\gamma)/\gamma]w$ , or  $\partial \mu/\partial \gamma = [-w(1-\gamma)/\gamma^2 - w/\gamma] < 0$ . Given the result above that  $\partial g/\partial \gamma < 0$  and the chain rule  $\partial g/\partial \gamma = (\partial g/\partial \mu) \times (\partial \mu/\partial \gamma)$ , it follows that  $\partial g/\partial \mu > 0$ . Hence, the results here are compatible with the Schumpeterian model presented in this chapter.

To find the relationship between immigration and economic growth according to the mathematical model of this section, we need to specify how immigration affects the variables in the model, such as  $R$ ,  $\beta$ ,  $r$ , and  $\mu$ . For it to be true that  $\partial \gamma/\partial \text{im} < 0$ , then  $(\partial g/\partial \gamma) \times (\partial \gamma/\partial \text{im}) > 0$ . Similarly, if the evidence suggests that  $\partial R/\partial \text{im} > 0$ , then  $\partial g/\partial \text{im} = (\partial g/\partial R) \times (\partial R/\partial \text{im}) > 0$  because  $\partial g/\partial R > 0$ . Finally, immigration increases growth by improving the efficiency of innovation, that is, by reducing  $\beta$ , provided  $(\partial g/\partial \beta) \times (\partial \beta/\partial \text{im}) > 0$ . This will be the case if  $(\partial \beta/\partial \text{im}) < 0$ . It remains to be proven empirically what the signs of the relevant partial derivatives are. Our reasoning suggests the relationships are as we hypothesize here, but much empirical research remains to be done.

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# Chapter 10

## Immigration and Economic Growth: More Fundamental Issues

**Abstract** Simply inserting immigration into existing models of economic growth, as was suggested in the previous chapter, cannot reveal immigration's full long-run dynamic effects. In search of a more holistic approach to studying the economics of immigration, this chapter examines the meanings of technology and technological change more thoroughly. The complexity of knowledge means that immigration's influence on technological change is very difficult to discern, statistically or hypothetically. Also, the dynamic processes that link immigration and economic change are unlikely to mimic the simple models of exponential growth. For example, because the growth of many economic activities tends to agglomerate geographically, immigration must also be analyzed within such agglomerative processes. This type of dynamic analysis leads to conclusions about the causes and effects of immigration that differ substantially from those generated by the classic labor market model of immigration.

*[T]o destroy or to build up the industry it was enough to dismiss or attract a few dozen craftsmen.*

Carlo Cipolla (p. 64)

Solow's neoclassical model of economic growth shows that when some inputs into the economy's productive processes are fixed or not easily expanded, then long-run economic growth is impossible. Only if technological progress overcomes diminishing returns to capital and the other variable factors of production can total output in the economy continue growing indefinitely. In light of the importance of technology, economists have developed models to explain technological change. The most popular of these models of technological change is the Schumpeter model, also discussed in the previous chapter. The previous chapter extended the theory of immigration by inserting the phenomenon of immigration into the Solow and Schumpeter growth models. There are advantages and disadvantages to building a dynamic theory of immigration in this manner.

Among the advantages is the ease with which immigration can be grafted onto existing growth models. The insights gained seem plausible and really extend immigration theory quite substantially. However, the Solow and Schumpeter

models are themselves rather simplistic models of economic growth. Their biggest shortcoming is that they represent the economy with a single function. Real economies are more complex than that. Since the dynamic analysis of immigration is only as good as the underlying growth models, we must examine more complex dynamic models of economic growth that better trace differences across sectors of the economy and across countries. There are also, potentially, shifts in the distribution of economic gains and losses across groups of people and countries. This chapter focuses on an alternative growth model that describes economic growth as a process of agglomeration, which is the geographic concentration of economic activity. This alternative perspective of growth is soundly based on the finding of economies of scale in many forms of human economic activity. Geographically, economies of scale result in economic growth that concentrates geographically and, in general, does not result in an “equalizing” process that leaves everyone better off. Agglomeration seems to explain recent immigration flows quite well, yet economists have not pursued research in this direction at all. Hopefully, this chapter stimulates more research on the relationship between the economic process of agglomeration and the immigration flows that we observe in the real world.

A more fundamental problem with using the Schumpeter and Solow models is their assumption of technology as a simple rise in the economy’s aggregate production function. But what, exactly, constitutes such liberating technological change and how does one achieve it? It is not at all obvious that technology is the homogeneous concept that the Solow and Schumpeter models assume. It is impossible to accurately capture the relationship between immigration and technological change, theoretically or empirically, without first defining technology. This chapter thus investigates what we mean by technology and technological change.

## 10.1 Technology

*Technology* is most often defined as the state of knowledge that defines how a producer can use inputs, such as labor, machines, and natural resources, to produce some output. Orthodox neoclassical economics usually represents technology with a *production function*. A typical production function relates output,  $Y$ , to a set of inputs, say capital  $K$  and labor  $L$ :

$$Y = f(K, L). \quad (10.1)$$

The function  $f(\cdot)$  actually does not represent technology very well. First of all, there are many more factors of production than capital and labor. For example, the services of nature are also in the economy’s aggregate production function. There are also human capital and exhaustible natural resources. And, the stock of physical capital should really be divided into many very different categories, such as tools, machines, communications equipment, transportation equipment, buildings, infrastructure, and so forth.

It is not obvious that we can interpret  $Y$ , the output of goods and services, is a proxy for human well-being, which makes a production function like Eq. 10.1 problematic for the study of economic growth and development. There is much more to human well-being than the personal consumption of material goods. For example, changes in human knowledge affect individuals' productivity and how groups of people work together. Also complicating matters is the fact that technology affects the structure of the economy, and the structure determines the distribution of income. Aggregate welfare, in general, depends on the distribution of income as well as the sum total of goods and services produced. In sum, the concept of technology cannot be accurately represented by a simple production function. It is necessary to define exactly what we mean by *technology* before we examine how immigration affects the creation of technology.

### 10.1.1 A Broader Definition of Human Technology

Technology is a very broad concept that covers everything from how a particular machine works to how the entire economy functions. This is why Romer (1993) argues for using the term *ideas* in place of the more traditional *technology*. But, even Romer's ideas may still not be a broad enough concept to capture all aspects of human technology.

To better grasp the scope of *human technology*, note first that humans stand out from most other animal species not only because of the extraordinary amount of knowledge and specialized techniques that they apply to their daily routine of going about life but also how much of their knowledge and techniques developed separately from the evolution of their physical being. That is, humans draw on ideas, knowledge, techniques, methods, procedures, and other types activity that are passed from person to person through culture, language, and various codified means rather than genetically or from parental nurturing. Nonhuman animals accumulate a much greater portion of their knowledge, technology, and ideas through the biological process of evolution that "hard-wires" the instinctive and automatic processes of the brain. Changes in the way most animals live, how they interact with each other, and how they deal with their natural environment occur very slowly. Yes, some animals do pass knowledge through emulation and observation, but such tacit transfers of knowledge are largely restricted to biological relationships. The biologist Edward O. Wilson (1975) describes the techniques and practices that nonhuman animals pass on through genes and tacit human interactions as "bound by a tight biological leash."

Humans change their technologies more rapidly. The basic scientific advances, the design of new tools and machines, entire new products and entire new industries to produce them, new economic and political systems, and new institutions to intentionally guide human behavior over the past 200 years were clearly not the direct result of the transfer of genes and tacit interactions with close associates.

Nelson and Nelson (2002, p. 720) describe the accumulation of technology outside the process of evolution as a uniquely human characteristic:

Humans today cannot run much faster or shout much louder than humans of a century—or fifty centuries—ago, nor are our eyes any better. But we can get where we are going far faster by bike, by car, or by airplane. We can communicate over long distances by flags, telegraph, wireless, and now e-mail. We can see the galaxies an incredible distance away, and also the smallest molecules, through the technologies we have progressively developed over time. The biological leash has become longer and longer, so that today our species knowledge capabilities in many arenas appear very loosely attached to our biological makeup.

In effect, human technology has gotten a life of its own, able to survive separately from individual humans. Nelson and Nelson (p. 721) explain why what happens outside the human brain defines a very important component of human technology:

...the minds of individual human actors are extended through the collective memories of the community as well as through the artifacts and symbols—especially spoken and written language—of their social worlds.

Especially important, but very difficult to quantify, is the fact that humans hold many of their ideas and technologies in the form of social culture that is passed from generation to generation by communicating through spoken language, passing along written instructions, reading textbooks, participating in formal learning processes, and, of course, linking to Internet servers.

This is not to diminish the role of the human brain as an important determinant of human technology. It was, in fact, the evolutionary process that has given humans large brains for storing and processing knowledge, and this capability has certainly been a major factor in enabling humans to expand their stock of socially maintained technology.

In sum, *human technology* can thus be defined as this entire set of techniques, knowledge, methods, procedures, and culture that exist outside and separately from the human body and brain. Human technology includes the techniques and processes that humans use to produce specific products. It also includes the social culture that influences how humans interact within their societies, the communications systems humans created to pass techniques, methods, and social rules of behavior along to others, and the techniques and systems that permit the external storage and accumulation of technologies.

### 10.1.2 *The Diversity of Technological Change*

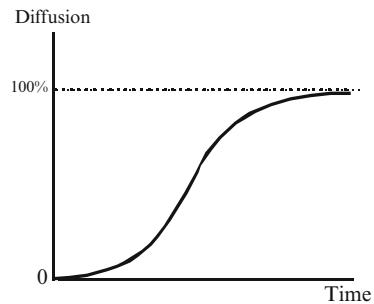
It should be clear that new ideas that expand general knowledge, such as the wheel and electricity, are very different from the innovative applications of that general knowledge, such as the automobile or the light bulb. Different again are the efforts by one firm to produce a new type of automobile or light bulb, or the development

of new techniques that reduce the costs of producing automobiles and light bulbs. Efforts to improve how the economic system allocates resources, encourages productive activity, stimulates entrepreneurs, and directs savings to the most profitable investment projects are again very different. Perhaps most important, but also most difficult to develop, are the new abstract ideas and complex technologies we need to organize our societies and make economic development sustainable across the economic, social, and natural environments.

Research to generate new technology is often divided into *basic research* and *applied research*. The common belief is that basic scientific research precedes the use of that knowledge in practical applications, and many justifications for government funding of scientific research and universities are based on this perception. Basic knowledge serves as a foundation for successful practical projects throughout the economy and society. Technological change may also come from experimentation and tinkering by engineers employed to keep the factory working, amateur inventors motivated by personal curiosity, entrepreneurs seeking to make a fortune with some new product or managers seeking to save costs. Applied innovation seems to have often occurred before basic research found an explanation for what was discovered. For example, Rosenberg (1994, p. 20) explains that, “even well into the twentieth century, metallurgy can be characterized as a sector in which the technologist ‘got there first,’ that is, developed powerful technologies, or alloys, in advance of systematized guidance by science.” Just as the chicken and the egg are part of the same process of life, so the different types of discovery and applied research are all part of the overall process of *technological change*.

The implementation of new ideas has been investigated by economic historians. For example, Cipolla (1978) traces the development and applications of the time clock over the centuries, and he makes it clear that the practical growth effects of new technologies often lagged behind the initial discoveries by centuries. Similarly, Macfarlane and Martin (2002) document how the discovery, development, and applications of glass actually spanned millennia. Teresi (2002) describes many other new ideas and inventions that were not put to practical use for centuries. In short, there is often a long lag between the discovery of a new idea and when that idea is actually applied. Technological change must, therefore, be studied as a dynamic process in which time is a major variable.

Technology can also be classified as *codified* and *non-codified*. The former is knowledge written down in a recipe, a blueprint, or a textbook. But according to Polanyi (1958, p. 53), a lot of knowledge is *tacit knowledge* that is passed on “by example from master to apprentice.” Such *diffusion* of knowledge is very important for spreading technology across countries, and because tacit knowledge is more difficult to pass along than codified technologies, these differences are important for understanding how immigration is related to economic growth. What types of technology and technological change are immigrants most likely to contribute to, and how do those forms of technological change affect economic growth?

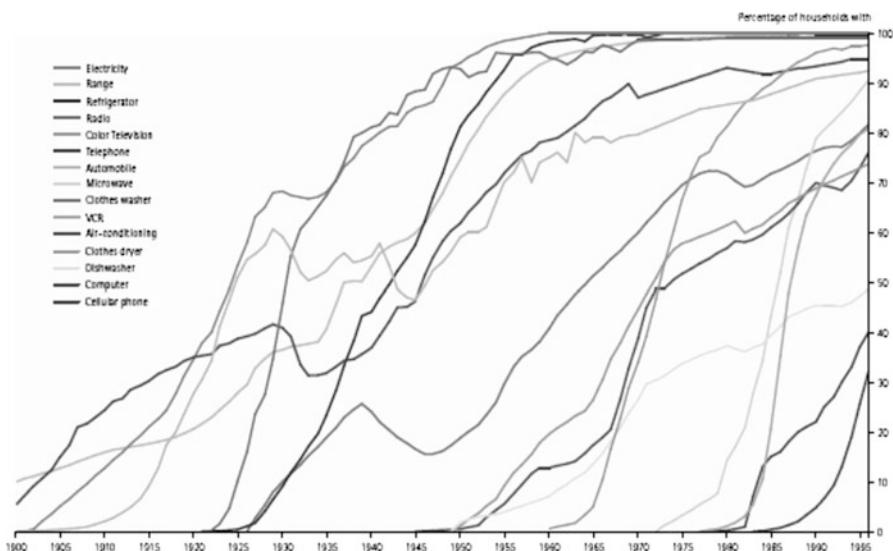
**Fig. 10.1** The S-curve

### **10.1.3 The S-Curve of Technology Diffusion**

Technological change tends to occur continuously in a long series of small steps. The gradual introduction of new technologies seems to often follow an *S-curve*, illustrated in Fig. 10.1. New ideas spread slowly at first, then are applied more quickly, but it takes a long time for a new technology to win over the last potential users and reach full 100 % acceptance. The S-curve became popular in the early 1950s after Ryan and Gross (1943), sociologists working at an Iowa agricultural experiment station, observed an S-pattern in the adoption of new hybrid corn by farmers. Griliches (1957, 1958) later confirmed the S-curve pattern for the adoption of hybrid seed corn, and Mansfield (1961) found S-curves for the diffusion of new technologies across individual firms as well as across industries.

Explanations for the observed S-curve pattern have been offered. There is wide agreement that before any choices about acquiring new technology can be made, resources must be expended to understand and evaluate the technologies available. The introduction of new technologies also requires the acquisition of new plants and equipment, and firms are often reluctant to abandon still serviceable manufacturing plants and machines using older technologies. The uncertainty of technological change also may lead potential users of technology to wait and see others' experiences before they make the costly jump to a new path of technology. Psychological and cultural resistance to change no doubt also plays a role.

While these examples all suggest that the spread of technology is far from quick, there is evidence suggesting that the process has gradually accelerated over time. Comin and Hobijn (2003) studied the diffusion of 20 different technologies across 23 countries over the period 1788–2001, and they estimate that the speed of diffusion has accelerated sharply since World War II. They also find that, statistically, human capital and a country's social and economic institutions significantly influence the rate of diffusion. Their findings also confirm that it still takes a considerable amount of time for technology to shift geographically or from one industry to another. Figure 10.2 shows S-curve-like patterns of adoption for a variety of new products in the USA over the past century.



**Fig. 10.2** Further examples of the S-curve. *Source:* Federal Reserve Bank of Dallas (1998). *Annual Report*

### 10.1.4 Technological Change Is Not Always Technological Progress

The spread of electric power was a slow, incremental process that seems to also have followed an S-curve pattern. One of the S-curves in Fig. 10.2 represents the spread of electric power in general, and a number of the other S-curves in Fig. 10.2 represent the adoption of home appliances that run on electricity, such as the radio, refrigerator, electric washer, and other home appliances. All of these technological changes are widely accepted as improvements in human well-being. But what about the power plants that produce the electricity that runs all the machines and home appliances?

Coal, oil, natural gas, nuclear, and hydro power are the most frequently used sources of power for electricity generation. Of these four sources, three emit carbon into the atmosphere. Nuclear power can contaminate wide areas, as the meltdowns in Chernobyl and Fukushima have demonstrated, and the problem of storage of spent nuclear fuel represents a huge and extremely dangerous problem that has not yet been solved. And, hydroelectric power requires the construction of dams and other systems to divert water from its natural rivers to large lakes that flood large areas and destroy biological diversity. The damage such power plants do to the environment must be seen as part of the broad range of technological changes brought about by the development of electricity and the application of electric power in factories, homes, and throughout human society.

We can state these points in terms of a general production function  $Y = f(L \times E_L, K \times E_K, S \times E_S)$ , in which  $L$ ,  $K$ , and  $S$  stand for labor, physical capital, and nature's

**Table 10.1** A combinatorial growth process<sup>a</sup> (new idea = a combination of two old ideas)

New ideas			Accumulated ideas	Percentage growth	
Period 1	Begin with	4	4		
Period 2	$4!/(2! \times 2!) =$	6	10	150 %	
Period 3	$6!/(4! \times 2!) =$	15	25	150 %	
Period 4	$15!/(13! \times 2!) =$	105	130	420 %	
Period 5	$105!/(103! \times 2!) =$	5,460	5,590	4,200 %	
Combinations					
Period 1	Period 2	Period 3			
1	1,2 = A	2,3 = D	A,B	B,C	C,E
2	1,3 = B	2,4 = E	A,C	B,D	C,F
3	1,4 = C	3,4 = F	A,D	B,E	D,E
4			A,E	B,F	D,F
			A,F	C,D	E,F

<sup>a</sup>The number of combinations for  $n$  ideas taken  $r$  at a time is  $n!/[(n - r)! \times r!]$ ; we take  $n$  as the number of ideas generated in the previous period and combine them 2 at a time, so  $r = 2$ . The symbol “!” represents a product of descending integers beginning with the number preceding the !, e.g.,  $5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$

services, respectively, and  $E_L$ ,  $E_K$ , and  $E_S$  represent the levels of technology that augment each of those three factors. Over the past 200 years, we have seen major “improvements” in  $E_L$  and  $E_K$ , but the services of nature have not been augmented. As Earth’s natural resources continue to decline and greenhouse gasses continue to cause climate change,  $E_S$  will continue to deteriorate. Such an effective decline in the technology-augmented supply of nature’s services would lower the marginal products of the effective stocks of labor and capital and, possibly, more than offset the gains that the technological change of electric power provided by augmenting labor and capital. In short, not all technological change is technological progress.

### 10.1.5 Technological Change Is a Combinatorial Process

According to Weitzman (1996, p. 12), “An abstract case could be made that *all* innovations, being expressions of human imagination, are in a sense combinatoric.” The fact that each addition to human technology is derived from earlier technologies means the dynamic process of technological change follows certain patterns in which various existing ideas are combined to create a new idea. Table 10.1 shows a simple example of a combinatorial process of technological change. The example assumes that in each successive period of time, the number of new ideas created is equal to the number of all possible combinations of pairs of ideas created in the previous period. Under these assumptions, when the initial stock of knowledge in an economy consists of, say, four ideas, numbered 1 through 4 in Table 10.1, all the possible combinations of the initial four ideas result in six new ideas. Thus, after one period of innovation, this combinatorial process has

expanded four ideas into six new ideas, which implies a total stock of knowledge equal to ten ideas, an increase of 150 % over the previous stock of four ideas. In the third round of innovation, the combinatorial process will increase the six new ideas A through F into 15 even newer ideas and an accumulation of 25 ideas in total. In the fourth round, the previous period's 15 new ideas are combined into 105 new ideas. In the fifth period, there are 5,460 combinations of the previous period's 105 new ideas. Note that if combinations between old ideas and new ideas are also possible in each period, then the number of ideas would have grown even faster. The explosive nature of a combinatorial process suggests that technological change is likely to accelerate over time.

History suggests that, despite its potentially explosive nature, technological change often slows down or stops altogether. Knowledge can be forgotten or lost if resources are not explicitly employed to teach each successive generation the knowledge accumulated by earlier generations. Also, not all combinations of previous ideas produce useful new ideas that can be expanded upon. Finally, societies must maintain appropriate conditions that permit the combinatorial process to work. For example, vested interests must not be allowed to prevent new ideas from being applied, or people with different ideas must be encouraged, not socially and politically intimidated as different people often are.

The combinatorial nature of knowledge helps to explain why technological change often seems to be a *path-dependent* process in which each new step builds on previous steps. One indication of the path-dependent, step-by-step nature of knowledge is the common occurrence of simultaneous discoveries. For example, Alexander Graham Bell only beat out Elisha Gray by a matter of days to apply for a patent on the telephone Richtel (2008).

It may occur to you that immigration could make technology less path dependent. People from different countries may not be as bound to certain ways of thinking, and they may be more prone to take different paths.

### 10.1.6 *Technology Is a Nonrival Good*

Technology and knowledge, separated as they are from individuals, have another interesting characteristic: technology is a *nonrival* product. In the case of a rival good such as, say, a new coat, only one person at a time can wear it. If another person also wants a new coat, she is going to have to purchase one, borrow one from someone who has an extra one, or make a new one herself. Ideas, technology, and knowledge, on the other hand, are at least partially nonrival. If one person comes up with an idea, develops a better procedure, designs a new method, or discovers some new bit of knowledge, another person can make use of the idea, procedure, method or knowledge without eliminating the innovator's or discoverer's use of their finding. Put more simply, we do not have to "reinvent the wheel" every time we need another wheel. The nonrival nature of knowledge and technology means that the marginal cost of using a new idea or applying a particular new technology is

very low or, sometimes, close to zero. There is still the cost of carrying ideas from one place to another, introducing potential users to the new ideas, and helping apply the new ideas to productive processes. Again, it is not difficult to imagine a possible role for immigrants to play here.

### 10.1.7 *Paradigm Shifts*

The finding of an S-curve in the application of new technology suggests that technological change does not occur at a constant pace, and path dependence suggests that knowledge can be restricted to a narrow path on which many potential combinations of existing ideas are not encountered. At the same time, evidence from science and industry shows that the growth of human knowledge and technology tends to follow well-defined paths. And yet, history books also tend to point to sudden breakthroughs and sharp shifts in the way humans do things and organize their societies. The shift from farms and artisan shops to large factories is referred to as the *Industrial Revolution*. Kuhn (1962) explains the historical occurrence of both path-dependent incremental innovation and revolutionary innovations.

Kuhn argued that science did not progress according to a uniform process that generated a continuous stream of new ideas. Rather, Kuhn described science as an episodic process consisting of periods of *normal science* interrupted by occasional spurts of *revolutionary science*. Normal science consists of relatively routine activities that are closely controlled by a reigning paradigm that tells scientists how they should conduct their research and how they should frame their conclusions. The word *paradigm* is derived from the Greek word *paradeigma*, which means “pattern” or “example.” In his 1962 book *The Structure of Scientific Revolutions*, Thomas Kuhn defined a paradigm as a set of practices that define a scientific discipline.

As a practical example of how a paradigm influences research, most economics graduate programs are run by professors who instill in their students a specific culture that points them to what questions to ask, the methods with which to answer those questions, and how to present their answers. Graduate programs often explicitly state their mission as teaching their students “to think like economists.” This phrase has become a code word for the willingness to adhere to the currently dominant neoclassical paradigm.

In the many historical cases that Kuhn studied, he noticed that the practitioners in a particular scientific field eventually begin to note *anomalies*, which are findings that do not conform to the paradigm’s accepted conclusions. In economics, for example, the statistical finding that some of the countries that opened their borders to free trade did not grow faster than closed economies, as neoclassical models of international trade suggest, is such an clear anomaly. Of course, such anomalies, and the people who point them out, are often marginalized and ignored, and most practitioners in the field continue to ask and answer the questions that fall within the parameters of the dominant paradigm.

Revolutionary science occurs when a critical mass of practitioners in a discipline begins to embrace an alternative paradigm that explains the anomalies. And if this new paradigm becomes the accepted culture in the discipline, then Kuhn defines this as a *paradigm shift* is said to have occurred. At that point, textbooks are rewritten and the history of thought is revised to position the new paradigm as the logical result of objective researchers following the scientific method. Kuhn claimed, however, that the sharp discontinuous break between paradigms often results in a new paradigm being no more accurate or fruitful for the scientific advancement of knowledge than the older paradigm. In this sense, Kuhn's ideas clash with Schumpeter's model of technological change in that the latter assumes technology is a process of progress, with better products and methods replacing lesser products and methods. Kuhn's historical perspective suggests that a paradigm shift may put society on a better or worse long-run path of technological change. Is it possible that immigrants, with diverse experiences living within other paradigms and alternative paths of technological change, may lead societies to shift to more productive new paradigms?

Overall, the many complex characteristics of human technology discussed in this section imply that it is difficult to model how immigration is related to economic growth. It is certainly difficult to justify a single model of economic growth with which to analyze the long-run causes and consequences of immigration for a destination or source economy. Before you get discouraged by the state of economic knowledge, note that there are some potentially fruitful directions for economic research. The following section introduces a very different model that captures some important aspects of modern economic change as well as some of the complex patterns of immigration we observe in the world today.

## 10.2 Immigration and the Agglomeration of Economic Activity

As economies grow richer, agricultural output shrinks as a percentage of the value of total output. The industrial sector tends to grow rapidly during the early phases of economic growth, but when economies reach higher levels of development, industrial activity again shrinks as a proportion of total output, and the services and innovative sectors grow relatively larger. As a result of these structural changes in the economy, people living in the rich economies generally work at different jobs and consume different baskets of goods and services in comparison to people living in economies that generate only low per capita levels of output.

Structural shifts not only shift resources between sectors of the economy, but they also shift resources from one location to another because the various economic sectors have different geographic characteristics. Specifically, economic development tends causes a movement of productive resources, including people, toward cities and countries where most of the manufacturing and innovative activities occur. Economic development is closely related to the rise of urban settlements,

a process that has now reached the point where over half the world's population lives in cities rather than in the countryside. In this section, we discuss why economic development has resulted in a greater geographic concentration of economic activity and the migration of people towards those concentrations. Economists have referred to this process as *agglomeration*.

### 10.2.1 The Causes of Agglomeration

A century ago, Marshall (1959[1920]) devoted a chapter of his popular economics textbook to the “Concentration of Specialized Industries in Particular Localities.” Marshall attributed the observed concentration to three factors: (1) the availability of specialized labor, (2) the development of specialized suppliers of intermediate goods and services, and (3) the flows of technology between the industries. More recently, regional economists have offered models to explain the development of cities, urban concentration, and the differences in the economic development across regions of a country. According to the regional economist Florida (2005, p. 50):

Ideas flow more freely, are honed more sharply, and can be put into practice more quickly when large numbers of innovators, implementers, and financial backers are in constant contact with one another, both in and out of the office. Creative people cluster not simply because they like to be around one another or they prefer cosmopolitan centers with lots of amenities, though both those things count. They and their companies also cluster because of the powerful productivity advantages, economies of scale, and knowledge spillovers such density brings.

Economists have designated economies of scale as the fundamental driving force of agglomeration, but some industries are more subject to economies of scale than others.

Agriculture is, by nature, linked to the land. Agriculture, therefore, tends to disperse throughout the world in accordance with the natural conditions of the land and the availability of other factors that complement the land in producing agricultural products. Agriculture requires more than land, however. As technology improves and incomes rise, agriculture requires various services and needs resources such as fertilizers, tools, equipment, and transport facilities. Thus, towns and cities have spread out wherever agricultural activity flourished in the past. Today, however, agriculture is much less labor-intensive and much more capital-intensive, and with capital supplied from global markets, regional cities and towns created to serve agriculture have declined. “Industrial agriculture” is increasingly subject to economies of scale and less likely to require local services.

The Industrial Revolution caused a rapid growth of towns and cities: urban agglomerations were the most appropriate location for factories that needed large numbers of workers and outside suppliers of a greater variety of other inputs and support services.

Paul Krugman (1991) and Fujita and Thisse (2002) modeled the regional agglomeration of industrial activity as a process driven by *increasing returns to scale*.

Krugman specifically models the process as a balance between the cost of transportation and the scope of increasing returns to scale. When transport costs are high, economies of scale cannot be exploited and industry remains scattered. Technological change and economic development increase the efficiency of large-scale factory production and reduce transport costs, and thus industrial activity increasingly agglomerates. As an example of the contemporary importance of economies of scale and geographic agglomeration, Davis and Weinstein (2001) analyzed detailed cost data on Japanese firms, and they conclude that Japan's real GDP would be 20 % lower if production were evenly distributed throughout the country rather than concentrated as it now is.

Purely industrial activity is not the only economic activity that agglomerates, however. Because industrial firms require more outside support services as their output grows, firms that service those industrial firms also settle in the same cities and towns where industry agglomerates. And because factory workers spend a large portion of their income where they live, consumer services also agglomerate in the same locations.

### 10.2.2 *The Agglomeration of Innovative Activity*

Krugman's story of agglomeration is incomplete because economies of scale differ across agriculture, industry, services, *and* innovative activity, not just the first three of these economic categories. According to Florida (2005), data on copyrights, patents, and scientific citations show that creative and innovative activity is much more concentrated than even industrial activity. In fact, innovative activity is extremely concentrated in just a few geographic regions. Concludes Florida (2005, p. 50), "As far as global innovation is concerned, perhaps a few dozen places worldwide really compete at the cutting edge." China and India, countries that are often described as *emerging economies*, barely register on the global map of innovation.<sup>1</sup>

The geographic concentration of innovative activity is partially driven by the geographic concentration of the resources most important for innovative activities. As pointed out many years ago by Jaffe, Trajtenberg, and Henderson (1993) and, more recently, Kerr (2011), countries with large numbers of highly educated people tend to have a comparative advantage in generating new ideas and technologies. Since innovation consists of building new knowledge on top of existing knowledge, those people most likely to combine existing ideas into new ideas are those who have a good understanding of existing knowledge. There is, therefore, a "virtuous cycle" at work here: The regions that have the resources most important for

<sup>1</sup> See, for example, the data on R&D expenditures as a percentage of GDP given in UNESCO. (2011). *Statistical yearbook*. Geneva: UNESCO, or in World Bank. (2012). *World development indicators*. Washington, DC: World Bank.

innovative activity accumulate more knowledge, which in turn makes further agglomeration of innovative activity more likely.

The explanation of the geographic concentration of innovation still requires another condition to be satisfied, however. Recall the nonrival nature of technology; once an idea is conceived, it becomes available to everyone else. This nonrival nature of knowledge suggests that knowledge should be nearly free and, therefore, will be passed from one economy to another so that, in the end, it will not matter for subsequent technological change where any one innovation takes place. However, when Jaffe, Trajtenberg, and Henderson compared the locations of the owners of patents with citations of those patents in later patent applications, and they found that “[I]localization fades over time, but only very slowly.”

This is not to say that Chinese and Indians are not creative. Saxenian (2002) notes that Chinese and Indian-born entrepreneurs started over one-third of new firms in Silicon Valley, the U.S. center of the information technology revolution. But, combined with Florida’s finding, it is clear that creative and innovative people tend to migrate to where innovative activity agglomerates. That is, innovation and the general process of agglomeration causes immigration, and, at the same time, immigration enables the inherently agglomerative innovation and growth.

### ***10.2.3 The Changing Patterns of Economic Activity***

Agglomeration is unlikely to result in all economic activity concentrated into a single small region, however. Agglomeration is limited by the resources available in any given geographic location. For example, space is a resource that is obviously limited in any single location. Also limited is the ecosystem’s capacity to maintain clear air and water in densely populated areas with intensive economic activity. More generally, if there are not unlimited amounts of labor, capital, and infrastructure in a region, the agglomeration of innovative activity takes resources away from other economic activities, such as production and investment. As a result, the cost of manufacturing in an innovative region will rise relative to the costs of manufacturing elsewhere. On the other hand, as workers’ wages rise, new migrants will be attracted, and the population will grow to meet the increased demand for labor. But because space is a fixed resource, land prices will rise and land-intensive activities become more costly. Also, increased congestion will require people to spend more scarce time getting around the crowded region, the existing capital infrastructure will be strained, and the local ecosystem may not support more concentrated economic activity. The rising costs of agglomeration will then drive away and disperse those activities least subject to increasing returns to scale as well as those least constrained by transport costs. Urban areas will therefore tend to become either industrial centers or innovative centers, not both. Limited resources thus imply that the world will experience *specialized agglomeration*.

Casual observation suggests this indeed is happening. Some regions have become known as *high tech* centers, such as San Francisco, Boston, Austin, and

San Diego in the USA, while others have become industrial centers, such as the state of São Paulo in Brazil and the coastal region of China. Communications and computer technologies developed in California's Silicon Valley enabled customer services to concentrate in Bangalore, India. Centuries of experience still gives London an advantage in financial services and banking. The above examples suggest the process of agglomeration crosses national boundaries.

The economies of scale in industrial production and innovative activities, and the greater economies of scale in the latter compared to the former, are fundamental to the process of international economic integration. Agglomeration increases regional and national specialization, which means agglomeration leads to more regional and international trade. Agglomeration, of course, also tends to bring about a concentration physical investment. And, because investment is increasingly in the form of private foreign direct investment, the integrated global economy is increasingly dominated by transnational business organizations that concentrate their manufacturing, marketing, management, and R&D activities in different countries.

Finally, and most important for our discussion of immigration, the geographic agglomeration of economic activity can only occur if workers move out of the dispersed agricultural sector to the industrial and services activities that agglomerate in urban areas. The gradual movement of people from rural communities to towns and cities to seek work in industry and services is a well-known characteristic of economic development in most countries of the world, especially over the past 200 years. The global agglomeration of innovative activities now drives immigration, as large flows of people move towards the world's innovative centers.

According to standard neoclassical labor market analysis, even if immigrants do not directly enhance innovative activity, there would still be migration from regions and nations where diminishing returns tends to reduce the rewards for labor and towards those regions and nations where increasing returns boost wages. The apparent fact that immigrants actually enhance the increasing returns to scale in innovative centers thus ends up strengthening the migratory flows of people.

Thissen and Frank (2001), Commander et al. (2004), Crozet (2004), and Durand, Massey, and Capoferro (2005) were among the first to explicitly link immigration to the process of agglomeration. More recently, Van den Berg (2006), Russek (2009), and Mendoza Gonzalez et al. (2011) pointed out that agglomeration explains the simultaneous migration of both high-skilled workers and low-skilled workers to the world's most developed countries. We should also note that the relationship between increasing returns and migration was noted by Alfred Marshall (1959[1920]) over a century ago. In his popular *Principles of Economics* textbook, Marshall clearly described the interactions between increasing returns and their role in shifting population from rural to urban areas.

In general, the agglomeration of high-paying jobs in innovative centers causes a brain drain that slows economic growth elsewhere. Immigration, therefore, is an integral part of the agglomerative process of economic development. Before the twentieth century, immigration largely reflected a reallocation of labor from land-scarce countries to land-abundant and resource-abundant countries. In the eighteenth and nineteenth centuries, colonialism was driven by Europe's search for raw

materials for its growing industries. European immigrants moved to the colonies and land-abundant countries like the USA. In other cases, European colonists exploited labor in the colonies to produce raw materials on plantations and in mines, sometimes moving labor from one colony to another if labor and resources were not both equally abundant. The initial rebellion against colonialism was driven by the desire to gain more from trade in primary products. By the twentieth century, however, trade in primary commodities was not as lucrative, as commodity prices began to fall relative to the prices of manufactures. Economic activity began to agglomerate and industrial economies grew much richer than traditional agricultural economies. Today, the demand for labor in the primary sectors is declining rapidly. Modern mining technologies are highly capital-intensive, and agriculture has been industrialized as well. For example, Vandana Shiva (2007) describes how large-scale monoculture is rapidly replacing traditional small-scale agriculture in labor-abundant countries like India. The growing numbers of unemployed people in raw material supplying economies now creates migratory flows to the centers of agglomeration as people see immigration as their only route to employment.

### 10.3 Immigration and the Social and Natural Environments

The previous chapter and the previous sections of this chapter detailed a number of models of economic growth and discussed how immigration can be interpreted within those models. These models all show that, in some way, immigration is likely to accompany economic growth as both a consequence of growth and a contributor to economic growth. You may have noted that our discussion implicitly assumed that economic growth, and thus immigration, would continue in the future. Indeed, it is probably safe to say that most economists, social scientists, political leaders, and almost everyone else living in the developed world today views growing incomes and rising consumption levels to be a normal characteristic of an economy. Even a brief decline of output is ominously defined as an *economic recession*, which often results in the fall of government in democratic societies.

Mainstream economists seem to share in the general optimism about economic growth. When questioned as to why growth should be expected to continue indefinitely, economists are likely to argue that long-run economic growth is a function of technological progress, and there is no obvious limit to the human mind's ability to think, learn, and expand knowledge. Such a framing of economic growth by mainstream economists leads to the conclusion that, as long as the incentives are "right," economies will tend to grow in the future.

It is worth thinking about why economists have popularized an economic growth model one that effectively *assumes* the existence of the principal driving force of growth. Perhaps economists have been influenced by the past 200 years' economic history, when new industrial technologies indeed appeared with some regularity. The recent development of endogenous models of economic growth, such as Romer (1990), gave us models in which innovation and technological progress are

driven by profit-motivated *creative destruction*, a process in which entrepreneurs continually replace old products and processes with more profitable products. Romer's "Schumpeterian" model is widely interpreted as suggesting that as long as governments support capitalist institutions that favor finance, entrepreneurship, and economic freedom, then technological progress will continue in the future.

Not everyone is as optimistic, however. The *Financial Times* commentator Tomkins (2003) raises an important point:

In the industrialized west, we assume that the "normal" rate of economic growth is 2–3 % a year because it is what we have experienced in our lifetimes. For most of human history, however, "normal"—in terms of per capita growth—has meant more or less zero.

A careful look at economic history reveals that, indeed, the past two centuries' surge in economic growth is a very new and very brief episode of overall human history.

In fact, environmental economists have for many years been critical of mainstream economics for its pro-growth bias. For example, Victor (2008), Fournier (2008), Brown (2009), and Daly (1998), and research groups such as the *New Economics Foundation*, have even suggested that the continued growth of resource-using material production will cause economic, social, or environmental collapses.

Mainstream economists have also discovered that detailed empirical studies of economic growth uncover more complex explanations of economic growth. For example, Sala-i-Martin's (1997) survey of the empirical growth literature concludes that the variables that "robustly" determine economic growth include mostly social variables, such as culture, systems of law, and political stability. Certain social conditions are shown to slow economic growth. In short, there are very good reasons why future economic growth should not be taken for granted.

### 10.3.1 *Nature as a Source of Diminishing Returns*

Economics has traditionally recognized that in an economy "everything depends on everything else," although such patronizing statements in favor of holistic analysis have seldom stopped economists from limiting the scope of their analysis and their published studies to narrow economic relationships. A few economists have pointed out the complex relationships between nature and the economic system.

Daly (1998) writes that "the macroeconomy is not the relevant whole, but is itself a subsystem, a part of the ecosystem, the larger economy of nature." Daly argues that the strategy of focusing on economic variables and conveniently assuming that everything else remains the same implies that orthodox economics generates inherently biased conclusions about economic phenomena. The economy is also linked to human society in many complex ways. And, human society, in turn, interacts with the natural environment. The holistic nature of human existence explains why economists have so many problems explaining economic phenomena

or predicting economic outcomes accurately. Statistical analysis based on neoclassical relationships is similarly hampered; a statistical model that does not include all the explanatory variables is said to suffer from *omitted variable bias* and *specification error*. Once we recognize that economic activity does not occur in an isolated bubble free from social and natural constraints and influences and, at the same time, that economic activity has very substantial social and natural consequences, it becomes clear that we have to approach the study of immigration, and its relationship to economic growth, from a much broader perspective.

### 10.3.2 *The Natural Environment*

It is well understood that humanity is using up exhaustible natural resources, such as oil, minerals, and coal, at a pace that cannot be sustained. There is also vast evidence that humanity's exploitation of the earth's renewable natural services—oxygen, clean water, wind power, soil nutrients, rainfall, climate, pollination, and many other natural products that human life depends on—now exceeds the earth's capacity to sustain those natural services in the long run. Wackernagel et al. (2002) estimate that humanity's exploitation of the earth's renewable resources was equal to 120 % of the sustainable capacity. The World Wildlife Fund (2008, p. 2) estimated in 2005 that “humanity's demand on the planet's living resources... exceeds the planet's regenerative capacity by about 30 percent.”

Of special interest in relation to our discussion of technology, it has become apparent that sometimes humanity's efforts to compensate for the stress on nature's renewable resources as well as the depletion of nonrenewable (exhaustible) resources have made things worse. For example, the well-known Green Revolution that greatly increased the amount of food produced per acre during the latter half of the twentieth century had many side effects that seriously stressed in the social and natural environments. The introduction of machines, chemicals, and industrial agricultural practices destroyed many traditional rural communities and displaced hundreds of millions of people. The consequences of this disruption show up in the form of growing urban slums, poverty, broken family structures, greater income inequality, and mass illegal immigration. Modern agriculture, among all sectors of the economy, is the single largest contributor to global warming, even larger than transportation and power generation. The growth of *monoculture*, which is the large-scale, capital-intensive production of single crops covering vast territories formerly devoted to much more varied agricultural production, is the main contributor to the loss of biodiversity. In light of the discussion in the previous section, monoculture is motivated by economies of scale. In short, from a holistic perspective, it is no longer so clear that technological change is sufficient for sustaining economic growth.

There is broad consensus among scientists that *greenhouse gas (GHG) emissions* come from human economic activity in industry, transport, power generation, and agricultural production is causing the earth's atmosphere to warm.

There is some uncertainty over what the consequences of global warming will be for humanity, although scientists do agree that there is a very real possibility that a continuation of current trends in the growth of GHG emissions will, over the next century, jeopardize human life and many other forms of life on earth. There is considerable uncertainty as to exactly how much warming will occur as a result of past and current human activity. This uncertainty is due to the likelihood of delayed *feedback effects* from the initial increase in temperatures. Scientists are gathering evidence of the release of methane gases from increased melting of the Arctic tundra. There is the fear that there will be less reflection of the sun's heat with the melting of polar ice. Any of these feedback effects could cause a sudden, steep upward spiral of atmospheric temperatures, which could then reach a *tipping point* beyond which stopping global warming will be nearly impossible. The complexity of global warming is described in many reports by, among others, the OECD (2002), the European Union (2008), and the Intergovernmental Panel on Climate Change (IPPC; 2007). Stern (2008), who was commissioned by the British government to report on global warming, describes the process as follows:

Greenhouse gas emissions are externalities and represent the biggest market failure the world has seen. We all produce emissions, people around the world are already suffering from past emissions, and current emissions will have potentially catastrophic impacts in the future. Thus, these emissions are not ordinary, localized externalities. Risk on a global scale is at the core of the issue.

Secondary effects from the warming of the atmosphere include rising ocean levels from melting of ice in Greenland, and entire countries such as Bangladesh and the Netherlands could be submerged. The tropical regions of the earth will become uninhabitable, and droughts and massive flooding will further push millions of people to relocate to other countries and continents. Such large migratory shifts are likely considerable conflict and human suffering.

### 10.3.3 An Ecological Solow Model

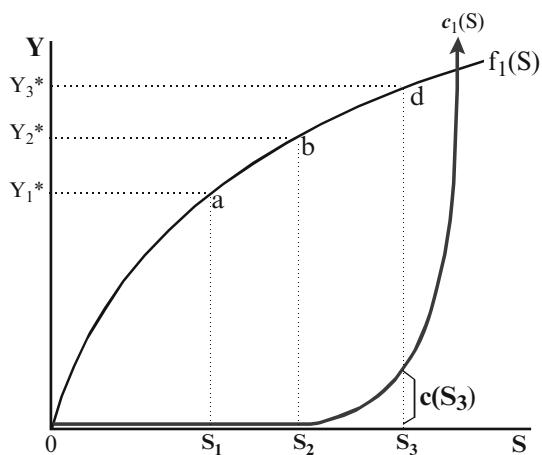
Van den Berg (2012) details how the Solow model can be disaggregated into separate economic and natural sectors. In this article, the economic sector is modeled by the familiar Solow model of the previous chapter, and the natural sector is modeled with a slightly different depreciation function under the assumption that total economic output also depends on the renewable resources provided by the ecosystem according to the function,

$$Y = f(L, S), \quad (10.2)$$

which specifies output as a function of labor,  $L$ , and renewable resources,  $S$ . Both physical capital and the ecosystem are subject to depreciation, but the depreciation function in the ecosystem is not linear.

**Fig. 10.3** The natural sector of the economy

### Economic Growth in the Natural Sector

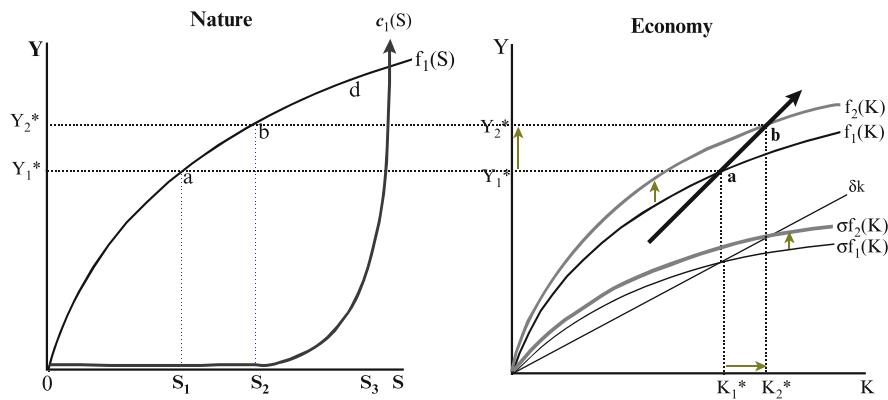


The economic sector of the economy depends on the natural system's capacity to provide its services. For example, if emissions exceed the natural system's capacity to dissipate it, then the atmospheric temperatures rise and the services provided by the earth's climate no longer conform as closely to the needs of Earth's living organisms that are also important for human existence and production. Hence, overall costs in the economic sphere go up. Similarly, if human production uses water faster than natural processes can replenish the supply of fresh water, then the ecosystem undergoes changes that reduce its capacity to provide fresh water in the future. In general, the more intensively humans use renewable resources, the more likely that nature will not be able to keep up. The production function in the natural sector is assumed to be subject to diminishing returns to inputs of nature's products and services. There is a "depreciation" function, or perhaps better put, a *conservation function* in recognition of the need to engage in explicit conservation activities when nature is stressed.

The conservation function is unlikely to be a linear function, as Solow assumed for physical capital. Nature's capacity to provide its services is not stressed at low levels of use. In Fig. 10.3, nature provides additional resources, from  $S_1$  to  $S_2$ , at virtually zero marginal cost, and humanity can thus increase its output from  $Y_1$  to  $Y_2$  without having to incur any noticeable cost of nature's services. But when human society increases its economic output to  $Y_3$ , conservation activities with an economic cost of  $c(S_3) > 0$  are required to sustain such resource use. The steep slope of the conservation function after  $S_3$  reflects the likelihood that once nature is stressed, its services cannot be expanded for human use very much before running into absolute limits.

A two-sector version of the Solow model could be shown in a three dimensional diagram, but it is actually easier to break it into two parts, each consisting of two dimensions. In Fig. 10.4, suppose that technological progress in the economic

### Economic Growth in the Natural and Economic Sectors



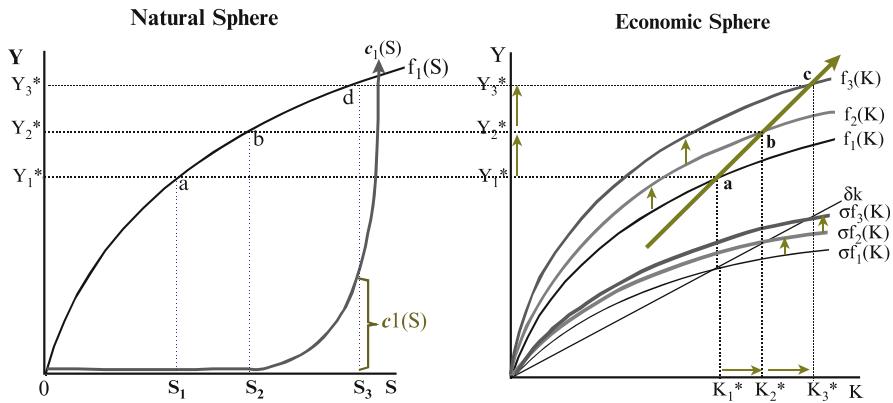
**Fig. 10.4** A Two-Sector Solow Model

sphere increases output from  $Y_1$  to  $Y_2$  by moving the economy to a new steady state that requires an increase in the capital stock from  $K_1$  to  $K_2$ . Such an increase in economic output also requires increased inputs of natural services such as rainfall, oxygen, dissipation of air pollutants, and absorption of water runoff. But we see that in the left-hand diagram, the rise in output requires no additional conservation costs because the ecosystem's capacity has not been reached, and ample services of nature are forthcoming for economic output to rise to  $Y_2$ .

Now, suppose that innovation in the economic sphere continues and the production function shifts to  $f_3(K)$ , which then could be expected to increase steady state output from  $Y_2$  to  $Y_3$  in the economic sector. Figure 10.5 shows that economic output  $Y_3$  requires products and services from nature equal to  $S_3$ , but to maintain this level of nature's services, costly conservation efforts costing  $c_1(S_3)$  are necessary. Otherwise the higher use of resources will destroy some of nature's capacity to provide its products and services and the conservation curve shifts to the left. Figure 10.6 then shows that the decline in nature's capacity to provide its renewable resources causes the production function in the economic sphere to decline because the reduction in one of the inputs in the production function shifts the economic production function downward.

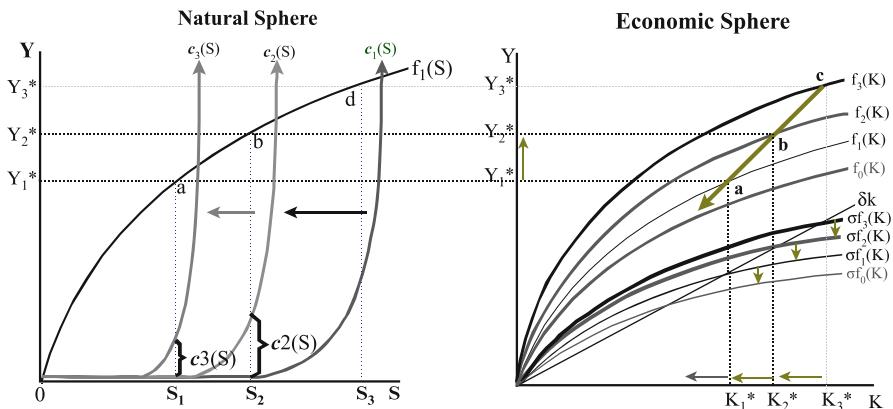
Figure 10.6 shows that the decline in production in the economic sphere will not be a one-time occurrence if decisions in the economic sphere continue to ignore the consequences of economic production on the natural sphere. The leftward shift of the conservation curve means that costly conservation activities are now required at levels of exploitation of nature's services below  $S_2$ , the level of exploitation at which nature used to be able to replenish itself without human help. And, unless human society engages in real conservation activities in period 2 costing  $c_2(S_2)$ , there will be even further deterioration of nature's capacity to provide water, air, warmth, carbon sinks, flood control, etc. The natural sphere has entered a downward spiral of environmental deterioration. A very disturbing implication of the

### Economic Growth when the Natural Sector Comes under Stress



**Fig. 10.5** The two-sector Solow model with continued economic growth

### From Economic Growth to Economic Decline



**Fig. 10.6** Continued growth can cause an economic collapse

model is that the continued destruction of the ecosystem is irreversible; with the conservation curve at  $c_3(S)$ , no amount of conservation can restore the ecosystem back to its initial capacity.

Figure 10.6 also shows that the environmental devastation in the natural sphere causes the production function in the economic sphere to fall back to  $f_2(K)$ , and output falls back to  $Y_2$ . And, if the downward spiral described above is permitted to continue because society continues to ignore, or is incapable of responding to, the decline in nature's production, output in the economic sphere will also continue to

fall further, perhaps all the way back to  $Y_1$  or below. The lesson here is that the decline in nature's capacity to produce its products and services diminishes the production function in the economic sphere. In neoclassical terms, the marginal product of one input depends on the supply of other inputs, and thus the marginal contribution of an additional unit of economic capital declines when fewer products are supplied by nature. Hence, investment in the economic sphere falls. Note also that the limit to resource exploitation in the natural sector acts as a source of diminishing returns to capital in the economic sector.

Human history provides many examples of such combinations of environmental and economic collapses. See, for example, Diamond (2005), who looks at various human civilizations over the past 2000 years. When the Solow model is disaggregated into more than one sector, it can explain such economic collapses. This outcome contrasts sharply with the single-sector aggregate Solow model, which generates only incremental (marginal) upwards adjustments towards a stable higher income equilibrium because, by design, it ignores the major sources of economic instability.

Within this expanded framework, the potential influence of immigration in long-run economic growth is also expanded. Immigrants can now contribute to technological change in either the economic or natural sectors of the economy. But, the sheer movement of people can speed up the diminishing returns to investment in the economic sector because the population growth, by itself, increases the demand for nature's services. For example, if the model in Fig. 10.4 is in per capita terms, the mere growth of population causes the conservation curve to shift to the left.

#### 10.3.4 Adding a Third Sector: Human Society

In addition to the interaction between the economy and nature, there is the interaction between the economy and human society in general. In order to arrive at a Solow-like model of the social sector of human existence, one could draw on the literature on *social capital* in the hope of finding a relationship between capital and output similar to what the Solow model assumes for the economic sector. There are, however, alternative definitions of social capital.

In their survey article for the Handbook of Economic Growth, Durlauf and Fafchamps (2006, p. 1) describe the concept as follows:

Social capital represents one of the most powerful and popular metaphors in current social science research. Broadly understood as referring to the community relations that affect personal interactions, social capital has been used to explain an immense range of phenomena, ranging from voting patterns to health to the economic success of countries.

On the other hand, Coleman (1990, p. 304) defines *social capital* as the “social organization” that enables the society, as a group, to achieve “goals that could not be achieved in its absence or could be achieved only at a higher cost.” Putnam (2000) defines social capital as “social networks and the norms of reciprocity and

trustworthiness that arise from them.” Ostrom (2000) and Bowles and Gintis (2002) similarly equate social capital with “trust” and “norms of behavior” that enable a community to function. In a most general sense, social capital refers to the institutional framework that enables human beings to function more efficiently in groups than they could as individuals.

Glaeser, Laibson and Sacerdote (2002) assume that individuals invest in social skills the same way they invest in human capital. Like all capitals, social capital can depreciate. Putnam (2000), for example, uses this insight to argue that social capital, as quantified by memberships in clubs and social organizations, has in fact declined in the USA since 1950. Antoci, Sacco, and Vanin (2008), model the situation described by Putnam: they assume individuals have a need for (1) material goods and (2) relational goods. Examples of relational goods include friendship and enjoyment of shared leisure. Antoci et al. assume that relational goods are time-intensive; the benefits of relational goods are reaped in the form of time-consuming social activities. Thus, as the subjective cost of time rises with economic growth, fewer relational goods are produced/consumed, and affluence increasingly takes the form of material consumption (privatized affluence). Finally, they define social capital as an externality to the production/consumption of relational goods. They then reason that, because individuals do not fully internalize the all the benefits of their social activities, they opt for too many private material goods and society ends up with too little social capital.

Siisiäinen (2000) and O’Brien and Ó Fathaigh (2005) point out that Coleman’s definition of social capital does not elicit attention to the struggle between individual and small group interests that ultimately shape the overall levels and access to social capital. And Siisiainen (p. 3) also points out that Putnam’s concept of social capital does not capture those characteristics of social institutions, networks, relationships, etc., that cause or reflect conflicting interests:

Putnam’s ideas about the relationship between voluntary associations continue the long line of studies from de Tocqueville’s ‘Democracy in America’ to Bentley...and Truman, D. B. In this tradition social interests were identified with organized interests in the form of voluntary associations. A plurality of crosscutting voluntary associations was understood as the main precondition for a stable democracy. Conflicting interests and the problem of nonorganized interests were not included in the approach.

Putnam therefore concluded that if more people “bowled together,” society would be more stable and cohesive.

Siisiainen favors the approach to social capital pioneered by the French sociologist, Pierre Bourdieu (1986). According to Siisiainen (2000, p. 3), “Bourdieu’s concept is connected with his theoretical ideas on class... Bourdieu’s concept of social capital puts the emphasis on conflicts and the power function.” Bourdieu describes social capital as an unequally distributed but very productive contributor to individual income and wealth. For our purpose here, which is to describe how the social sector functions and interacts with the economic sector of the economy, it is important to model the sources of conflict because the stability of the expanded Solow model depends on how human society deals with its conflicting interests.

When the social sector is combined with the economic and natural sectors of human existence, the stability of each sector becomes a critical issue. Instability in one sector of human existence, as we saw in the discussion of the relationship between the natural and economics sectors, can trigger instability in other sectors. Because the state of one sector affects the productivity of productive resources in the other sectors, a collapse of one sector can cause the other sector to collapse too. In short, some forms of social capital increase conflict rather than diminish it.

### ***10.3.5 Bourdieu's Forms of Capital***

Bourdieu (1986) defines social capital as something that individuals intentionally accumulate, and which they can then transform into conventional economic benefits. This definition clearly links the social sphere to the economic sphere. Bourdieu (1986, p. 46) describes social capital as something that is accumulated gradually over time:

The social world is accumulated history, and if it is not to be reduced to a discontinuous series of instantaneous mechanical equilibria between agents who are treated as interchangeable particles, one must reintroduce into it the notion of capital and with it, accumulation and all its effects. Capital is accumulated labor...which, when appropriated on a private, i.e., exclusive, basis by agents or groups of agents, enables them to appropriate social energy in the form of reified or living labor.

The gradual accumulation of social capital can be influenced by a variety of factors, including “investment strategies, individual or collective.” Furthermore, Bourdieu (p. 47) recognized the costly and time-consuming process of maintaining social capital: “The reproduction of social capital presupposes an unceasing effort of sociability, a continuous series of exchanges in which recognition is endlessly affirmed and reaffirmed.”

The volume of the social capital possessed by a given agent thus depends on the size of the network connections he can effectively mobilize and on the volume of the capital (economic, cultural or symbolic) possessed.

According to Bourdieu (1977, 1986), social capital is accumulated along with *economic capital* and *cultural capital*. The first is closely identified with the physical capital in the economic sector. The latter two types must be incorporated into the social sector of the Solow model. Cultural capital shapes many aspects of human society, including the economy, because it determines the distribution of social capital. Because social capital must be accumulated gradually over time, it normally ends up being unequally distributed across the population. Bourdieu (1989, 2005) further explained that access to social capital is also unequally distributed among the population because such access depends on both economic capital and cultural capital, which are also the result of long-running processes of accumulation and maintenance that breed inequality.

Bourdieu's concepts help to explain the performance of immigrants in their destination countries. Since it takes time to accumulate social capital, and

immigrants often have less cultural and economic capital compared to natives in the destination countries, average earnings of immigrants will lower than natives' earnings. However, immigrants can catch up as they work to accumulate economic, cultural, and thus social capital. The production function in the economic sector rises as the immigrants catch up to the natives. Note that this analysis suggests that the growing practice of issuing temporary work visas to immigrants may not be the best long-run policy. Temporary immigrants are unlikely to invest in cultural and social capital, and their contributions to the destination economy are thus more likely to remain stagnant.

### 10.3.6 Modeling the Social Sector

Some interesting points from the discussion above can be used to model the social sector of the economy in an expanded Solow model: (1) social capital can improve or deteriorate, (2) it takes time and effort for individuals to acquire social capital, which suggests the overall level of social capital also takes time to grow, (3) some social capital consists of public goods that must be collectively supplied and consumed, and (4) the overall structure of social capital needs to change over the course of economic development. Thus, there must be investment, both individual and collective. Social capital may depreciate, although in many cases a more intensive use can actually enhance it. And, changing economic, social, and natural circumstances require changes in social capital.

It is not obvious that social capital is subject to diminishing returns. To the contrary, it is easy to envision sudden breakthroughs and collapses in production as the various forms of social capital are added to the stock. It is also not clear that depreciation is proportional to the accumulated stock of social capital. The well-known *Cambridge critique* of the neoclassical practice of modeling capital as an uniform good that can be aggregated into a production function is relevant here; see, for example, Kaldor (1956), Robinson (1956), or Kalecki (1971). Just like in the case of physical capital (Bourdieu's economic capital), we are not sure what social capital is. We do suspect that much of it is collectively consumed or shared. Moreover, the quantification of social capital is complicated by the fact that social capital, which includes what Bourdieu calls cultural capital, is itself a product of the cultural and social capital in possession of the collective society. The social capital production function thus depends on overall social stability, the willingness of individual members of society to participate in production, the willingness of society to let individuals participate, the economic efficiency of the social relationships and networks, and the distribution of income and cultural capital.

It may be reasonable to hypothesize a positively sloped function that relates the hypothetical aggregate measure of social capital to the economy's capacity to provide for its population. That is, a growing economic complexity that accompanies economic development requires increasing stocks of social capital

to deal with the increased complexity, specialization, stress, and economic interactions necessary to produce the greater economic output.

We gain further insight into the role of social capital in the productive process of the economic sector from studies that have looked into what determines people's satisfaction with life. Often referred to as *happiness studies*, researchers have examined surveys for a large sample of different countries at different points in time. These studies suggest that life satisfaction or happiness is positively related to income, but the relationship is not linear. For example, studies such as Veenhoven (1988, 1996), Easterlin (1974), Frey and Stutzer (2000), Di Tella and MacCulloch (2008), and Dolan, Peasgood, and White (2008) reveal that (1) at a given point in time within the same country, people with higher incomes are happier, on average, than people with lower incomes, (2) in high-income developed countries average human happiness does not change much as real average per capita income grows over time, and (3) cross-section studies that compare average national levels of happiness for low-income developing and high-income developed countries show that overall happiness rises with average per capita income only until real per capita income reaches about \$10,000. Note that this effectively means that in wealthy societies, where basic economic needs are usually satisfied, relative social status is the predominant cause of variations in happiness and life satisfaction. Social status thus affects productivity, willingness to work, and human initiative in the economic sector.

Fundamentally, technological change can only be viewed as technological progress if it leads to greater human happiness. Human happiness remains an elusive goal, of course. But it is almost certain that true technological progress that enhances human well-being involves changes in social institutions, governance structures, the distribution of opportunities and wealth, and the organization of our daily lives. Narrowly focused technological change in the economic sphere that ultimately causes a sharp decline in living standards or, worse, a collapse of human society does not constitute technological progress or economic development.

An interesting aspect to all of these findings is that the social sector of human existence is characterized by a *social circular flow*. Economic output and money income does influence people's satisfaction with life and, hence, social stability and society's capacity to deal with the complexity of a modern industrial society, but in a nonlinear fashion. Above a certain level of average national income in money terms may not matter much at all. On the other hand, the economic sector depends on social stability and people's willingness to engage in work, innovation, learning, and consumption. Thus, when the social sector has a substantial stock of social capital that is also relatively equally distributed, it can sustain a highly developed and complex economic system. At the same time, a developed economic sector provides the means to maintain social capital. There are social collapses just as there are economic collapses. In fact, one can trigger the other, which is why social and economic collapses so often occur in tandem. For example, the economic collapse of the Soviet Union resulted in a breakdown of the social fabric. Life expectancy fell drastically from 68 to 56 years as unemployment, alcoholism, and the deterioration of medical services took their toll.

Note also that the social circular flow puts immigration in a different light. If immigration causes an overall decline in social capital, economic production could decline as well.

## 10.4 Institutions and Social Capital

There is also a need to study the relationship between immigration and institutions because development economics has increasingly concluded that institutions are critical for economic development. There have also been suggestions that institutions such as laws, regulations, law enforcement, and public education are social capital. Some types of social capital, such as culture, is very similar to what economists commonly refer to as *informal institutions*.<sup>2</sup>

### 10.4.1 The Study of Institutions

The field of economics has begun to incorporate analyses of economic institutions. But, because orthodox neoclassical economists generally model the economic system as a system of markets, they tended to retain their neoclassical market-based decision models whenever they ventured into issues that clearly involved human interactions among family or friends rather than impersonal markets. For example, Becker (1976, 1981) framed marriage, household activities, and other social interactions in terms of market exchanges under the assumption that some form of exchange, or *reciprocity*, underlies all human interaction. And the so-called *new institutional* economists, such as North (1987), explained the widely observed alternative economic interactions among family, friends, organizations, and even total strangers by focusing on the costs of gathering information, the time it takes to engage in market activity, and transporting goods to and from markets. But as they sought to explain nonmarket activities, the new institutionalists were prone to view nonmarket interactions as “market failure,” that is, as an inferior alternative to “normal” market activity.

Heterodox economists and feminist economists, for example, have explicitly recognized a vast set of evidence from psychology, neuroscience, and behavioral economics showing that humans often prefer to interact with each other in ways that do not reflect exchanges, markets, or any immediate sense of reciprocity. This interdisciplinary and historical evidence suggests that such alternative economic interactions are not necessarily inferior alternatives to what mainstream economists describe as “missing markets.” See, for example, Barker and Feiner (2004), Folbre (2006), or Nelson (2006, 2009).

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<sup>2</sup> See any textbook on economic development for a discussion of institutions; for example, Van den Berg (2012).

Nonmarket interactions are shaped by social and cultural structures. Nelson (1995, p 143) argues that when economists reject the limited definition of economics as the study of markets and, instead, accept the broader definition of “economics as concerned with the realm of ‘provisioning,’” it becomes clear that there are three very different categories of human economic interactions: market interactions, traditional nonmarket interactions, and coerced interactions. Graeber (2011) similarly classifies human economic interactions into three broad categories, only the first of which includes exchanges based on reciprocity that could be represented by market models. Graeber (p. 95) notes that a great many human interactions reflect the principle of “from each according to abilities and to each according to need.” That is, humans “act like communists a good deal of the time” by doing what they know how to do while also accepting assistance from others when they need it without any calculated sense of reciprocity. *Communistic interactions* are common in families, in the workplace, in various organizations, and labor unions, but they also routinely occur in public areas among random strangers. Lastly, Greaber points out that a substantial portion of human economic interactions follow norms, traditions, and other cultural institutions that reflect social and economic hierarchies. Such *hierarchical interactions* are common in business, the military, most social organizations, and government. Human interaction with nature is also hierarchical; humans simply take what their economic power and technology let them take without any obligation to give something in return. Van den Berg and Van den Berg (2012) estimate that, when all human interactions are taken into consideration, economic output is produced largely by means of nonmarket human interactions. In sum, human society effectively operates on the basis of institutions.

### 10.4.2 Conflicts Between Formal and Informal Institutions

Institutions are necessary to guide all of these types of human economic interactions. But, because institutions are human-made, they are subject to revision and change. They never change in unison, however. Lal (1998) argues that culture inevitably lags behind the ever-changing realities of our natural and social environments. The fact that knowledge precedes, and often greatly outpaces, cultural change helps to explain the common clash between intellectuals and social conservatives and between universities and their surrounding communities. Culture also often lags behind formal laws, regulations, and procedures, which is why people often complain about their government’s regulations and workers often resist new work procedures.

The differences in the rates of economic change, technology, knowledge, formal institutions, informal institutions like culture, and evolved human instinctive and automatic behaviors almost guarantee that when economic development accelerates or when outside forces impact some a society’s institutions, incompatibilities develop across the whole set of formal and informal institutions.

Immigration can clearly have such an effect. Formal institutions can change more rapidly than informal institutions. The former can be decreed, the latter are normally passed on from generation to generation in a slow-moving socialization process.

Institutional incompatibilities could cause social capital to deteriorate, as Putnam (2000) suggested. In Bourdieu's (1989, 2005) sociological framework, discussed in the previous section of the chapter, a growing incompatibility among institutions constitutes a social decline. There is clearly something of a dynamic social/economic circular flow at work here, and we can use it to define a sustainable rate of economic development as the rate of economic change that is compatible with both the natural and social sectors of human existence. Increase output too fast, and social conflict and deteriorating social capital ultimately undermine economic growth. We need research that can shed some light on how immigration affects institutions. Also, economists need to examine how these institutional considerations actually help to explain some of the debates on immigration policy.

## 10.5 Chapter Conclusions and Some Further Thoughts on the Solow Model

Simply inserting immigration into existing models of economic growth, as was suggested in the previous chapter, will not accurately reveal immigration's full long-run dynamic effects. A holistic approach to the economics of immigration suggests that the relationship between immigration and human well-being is complex. This chapter, therefore, examines some additional systemic, dynamic, and interdisciplinary approaches. Specifically, this chapter has examined the meanings of technology and technological change more thoroughly. The obvious complexity of technology, knowledge, ideas, and other forms of technology means that immigration's influence on technological change is very difficult to discern, statistically or hypothetically.

More important, the dynamic processes that link immigration and economic change are unlikely to mimic the simple models of exponential growth suggested by the Solow and Schumpeterian modeling frameworks discussed in the previous chapter. For one thing, the growth of many economic activities tends to agglomerate geographically, and this "concentrating" phenomenon clearly has an effect on immigration. But, this type of dynamic analysis leads to conclusions about the causes and effects of immigration that differ substantially from those generated by the classic labor market model of immigration. For one thing, there are clearly many more positive and negative economic consequences of immigration that policymakers must take into consideration. In fact, it is probably safe to say that immigration policy must be examined as part of the evolving process of economic development. Since all the causes and consequences of immigration cannot be

predicted with any degree of certainty, the understanding of immigration is inevitably a process of learning, revision, and policy adjustments.

A more holistic multi-sector Solow model provides some potentially useful insight into the long-run effects of immigration. On the one hand, immigration affects population growth, and this implies changes an economy's environmental footprint. At the same time, the close relationship between the economy and the natural environment means that permanent economic growth requires technological change in both the economic and natural sectors. The contribution of immigrants to long-run growth must be evaluated from this perspective. And, when social capital and institutions are added to the mix, the potential role of immigrants becomes even more complex.

In sum, the Holistic view suggests that economic growth requires maintaining compatibility between the economic, natural, and social sectors of human existence. There must be technological changes not only in the economic sector of human society, but technological changes must (1) keep humanity's use of nature's services within levels that permit nature to maintain those services and (2) maintain enough social cohesiveness and participation to enable the complex economic interactions necessary for a modern economy to function. It is within this complex dynamic ever-changing set of economic, social, and natural environments that immigration must be analyzed. Immigration's effects on a country's culture, its natural resources, and its institutions can no longer be kept out of the analysis by designating them as "non-economic" issues. Also, the scope of what we call technology also means that continued economic growth may also not be possible unless a very diverse set of new technologies are developed across the economic, social, and natural environments.

As an example of how difficult a more holistic approach to studying immigration is, one need only note that a continuation of the energy-intensive economic growth humanity has pursued over the past 200-plus years will trigger environmental destruction in the natural sector that will feedback into the economic (and social) sectors in the form of stronger diminishing returns and downward shifts in economic production functions. The natural, social, and economic systems are so intertwined that it will be very difficult to separately address the problems in each sector. Studies that have analyzed what must be done to stop global warming and the loss of bio-diversity, such as the Intergovernmental Panel on Climate Change (2007), Stern (2007), Spratt, Simms, Neitzel, and Ryan-Collins (2011), and Jackson (2012), call for substantial changes to the way humanity has become accustomed to living, producing and consuming. That is, in order to use fewer of nature's resources, we must alter how and what we produce in the economic sector, which in turn requires that we change how we live in the social sector. Substantial economic and social changes solicit strong resistance not only by vested economic interests whose wealth depends directly on the continued exploitation of nature's dwindling resources but also by many others who prefer the status quo over unfamiliar new lifestyles. Nor is it at all clear that human institutions and culture have developed enough to maintain free and open societies that can eliminate the threat of conflict in a global economy. Economists have added little to this

discussion, only pointing out that technology could provide solutions. So we read about many suggested technical solutions to global warming, such as substituting shale gas for coal or more speculative approaches such as spreading chemicals in the atmosphere. Technologies such as reorganizing human society or rebalancing humanity's relationship with nature are not on mainstream economists' list of possible solutions. And we certainly do not link immigration to any of these systemic issues. The partial equilibrium labor market model of immigration continues to shape economic research on immigration.

We should remember that the narrow perspective is a choice, not a logical necessity, as our simple expansion of the Solow model shows. The field of immigration economics is in need of a paradigm shift, not just a more diverse set of models. But it will, most likely, take much research and time before we settle on a better paradigm. Given how little holistic research has been conducted, this chapter can only offer some suggestions for future research. On the other hand, the nature of some of the issues covered in this chapter suggests that we move with urgency.

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## Part II

# Immigration Issues and Cases

Immigration affects human welfare in many ways, as the many different models, ideas, and the supporting evidence in Chaps. 2 through 10 have suggested. The models and empirical studies have pointed out the likely costs and benefits for natives in destination countries, for the people remaining in the source countries, and for the immigrants themselves. We have discussed more complex models that included immigration's long-run growth effects, externalities, and demand effects. We are not yet done, however. There is much more to learn about immigration.

In this section of the book, we apply the economic theory of immigration to the practical issues and cases that concern economists, policymakers, and the public at large. In the process, we accumulate more evidence of the causes and consequences of immigration. Many policymakers have, in fact, focused more on these special issues than they have on the wage and employment effects described in many economic models. This focus on narrow issues and cases creates a problem for political leaders and social scientists interested in the overall welfare of humanity. For example, policies that restrict one category of immigrants over another, limit immigration to certain source countries, or favor immigrants employed in one specific industry at the behest of specific lobby groups, are unlikely to maximize national welfare. The focus on specific and isolated cases and issues inevitably misses many of the widespread effects of immigration. Each particular issue and case evolved within the complex interplay of the many natural and social forces that shape the human environment.

It is the purpose of this section of the book, therefore, to examine some of the specific issues of immigration that concern special interests within the broader framework built with the theory and evidence presented in the previous section. As before, we will present models where they are helpful, and we will describe the evidence that social scientists have pieced together to support or refute specific hypotheses.

The first chapter of this section covers the case of temporary immigration. Chapter 11 dispels the myth that most immigrants are permanent settlers. The fact is that immigrants often view their stay in the destination country as temporary. Even when the intent is to move permanently, people often reconsider and reverse

their decision to immigrate. There have almost always been large return flows of people who immigrated earlier, even during the nineteenth century immigration flows to the USA, Canada, Australia, New Zealand, and Argentina that commentators and politicians now use as examples of “permanent” immigration experiences.

The second part of Chap. 11 also examines involuntary immigration. In the past, the slave trade forced 10 million Africans to migrate to the Western Hemisphere. It is a sober fact that even today not all immigration is entirely voluntary. There is ample evidence that many immigrants are bought and sold worldwide each year as indentured workers, bonded laborers, mail-order brides, or sex workers. There is evidence that the international trafficking in people may be as important a source of revenue for international organized crime groups as drugs and guns. A detailed description of slavery and other forms of involuntary immigration must be part of any full story of immigration, past and present.

Chapter 12 discusses the widespread phenomenon of unauthorized immigration. The incentives for people to migrate from low-income countries to high-income countries have grown over the past 200 years as incomes across countries diverged and travel costs have declined. In response to the growing incentives for people to move, high- and middle-income countries have imposed a wide range of restrictions on immigration. Would-be immigrants, therefore, often opt to immigrate without formal permission to live and work in the destination country. Chapter 12 explains that the determinants and consequences of *unauthorized* (illegal) immigration are not the same as those of legal and fully documented immigrants.

Finally, Chap. 13 looks at the special, and very interesting, case of Hispanic immigration to the USA. The sheer size of Hispanic immigration to the USA makes it an important case to examine. There are some unique problems when so many people from a single foreign culture enter a single destination country. This case, therefore, is of interest to policymakers facing potential surges in immigration from a single source country or culture.

# **Chapter 11**

## **Temporary Immigration, Involuntary Immigration, and Other Variations on the Standard Model**

**Abstract** This chapter relaxes the implicit assumptions made in most immigration models, namely that people immigrate permanently and according to their own free will. Many immigrants end up returning to their native countries, either because they had explicitly decided earlier to be abroad only temporarily, or because changing circumstances led them to reverse an earlier decision to be abroad permanently. The second major issue covered in this chapter is forced, involuntary immigration. Finally, this chapter analyzes refugees, who are people seeking to escape especially threatening conditions in their native countries.

### **Chapter Overview**

The models of immigration that we have detailed in earlier chapters almost all assume, implicitly if not explicitly, that immigration is a decision that, once taken, is irreversible and permanent. Another fundamental assumption underlying our models of immigration is that people make a conscious choice about moving from one country to another. These assumptions are not appropriate in all cases, however. Many immigrants end up returning to their native countries, either because they had explicitly decided earlier to remain abroad only temporarily, or because changing circumstances led them to reverse an earlier decision to remain abroad permanently. Also, many people leave their native countries not by choice, but because circumstances force them to emigrate. Some immigrants are refugees from persecution and violence, *pushed* out of their countries by unbearable conditions rather than *pulled* abroad by superior conditions elsewhere. Finally, throughout history, people have been transported against their will to other countries.

Temporary immigration is usually followed by *return immigration*, although sometimes temporary immigration is followed by immigration to yet another destination. Strictly speaking, temporary immigration refers to immigrants who do not intend to remain in another country permanently, but rather view their move

overseas as a temporary move in order to take advantage of foreign opportunities. Or they are escaping what they believe to be temporary problems in their native country, in which case they are often referred to as *refugees*. The return is often part of the overall decision to immigrate temporarily, and many countries have explicit policies that permit temporary immigration, even when they tightly restrict permanent immigration. Policymakers in many countries are currently proposing measures that permit larger amounts of temporary immigration for work or study. Also, many source country governments have in recent years taken measures to encourage immigrants to return after spending years abroad.

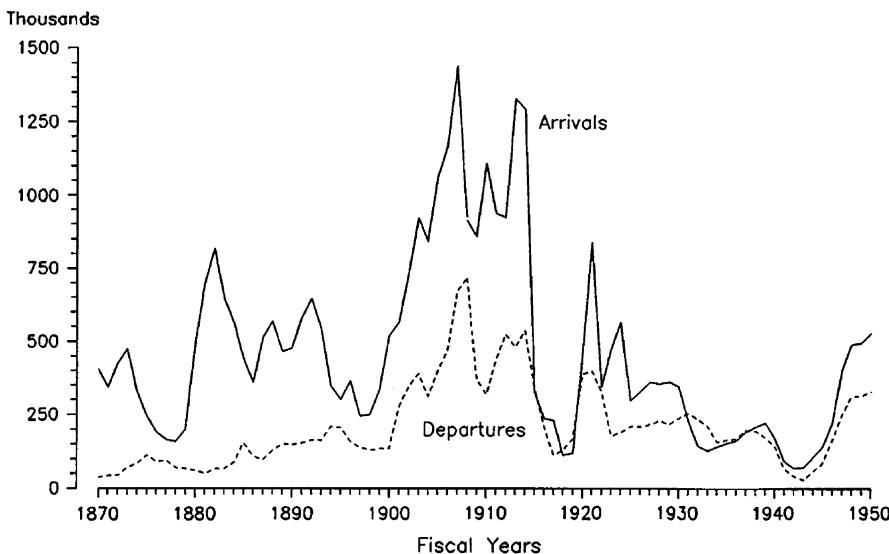
The second major issue covered in this chapter is *involuntary immigration*. Not all immigrants actively decide to leave their native countries to seek better lives elsewhere. Some people are forced to migrate *against* their own choice. An example of involuntary immigration is the enslavement and forced transport to the Western Hemisphere of over 10 million Africans during the 400 years of the Atlantic slave trade. While slavery is explicitly prohibited everywhere today, it effectively still exists in various forms. Involuntary migration is often referred to today as *human trafficking*. Standard economic analysis cannot explain refugees or coerced migration very well. Clearly, we need alternative models to address these common forms of immigration.

This chapter presents what we know about temporary immigration and involuntary immigration. It compares these types of immigration to the more traditional one-time movement of people from one country to another as described in the models presented in earlier chapters.

## 11.1 Return Immigration

Despite the focus of our models on permanent immigration, the fact is that throughout history immigrants have often returned to their native lands after spending some number of years in their destination countries. Figure 11.1 shows that in the USA between 1870 and 1950, a period of immigration that is today glorified as one when Europeans arrived to begin permanent new lives in the USA, many of those European immigrants in fact later again returned to their native lands. Not everyone found work or land in America, and repeated financial crises and high levels of unemployment often drove immigrants to return to their native countries.

In some years, there were actually large *net outflows* of immigrants from the USA. Note from Fig. 11.1, for example, that immediately after World War I and during the Great Depression, more people returned to their native countries than arrived in the USA. The former period no doubt reflects a surge of people who had for several years wanted to return to their native countries but had been prevented from doing so by the hostilities of the war. Some of the returning immigrants were refugees who sought to escape the violence of the war and had never intended to stay in the USA permanently. The net outflows during the Depression were a direct



**Fig. 11.1** Alien passenger arrivals and departures

result of high unemployment in the USA. The Great Depression in the USA during the 1930s radically changed the pull factors that had attracted immigrants to the USA during the “roaring 20s” and earlier periods of rapid economic growth. Many European economies from which the immigrants came did not suffer nearly as acute a decline in output and employment as the USA did during the 1930s. Without any social safety net, unemployed immigrants sometimes had to return to their native countries in order to draw on family assistance.

### 11.1.1 *Return Immigration as a Response to Changing Circumstances*

There are many reasons why immigrants reconsider their decisions to immigrate to another country and return to the countries that they left earlier. The push and pull factors that led people to immigrate often change. For example, if people left their native countries because of war, famine, or political persecution, they might decide to return after there is a change in government or once animosities settle down in their native country. On the other hand, conditions in the destination country may change, as in the example of the Great Depression above. The fact is, unlike the picture presented by our standard immigration model, immigrants do often reconsider their initial decision to immigrate when circumstances change.

### ***11.1.2 Correcting Mistakes in Judgement***

Immigrants may return to their native countries not because circumstances change, but because they realize they misjudged conditions in the destination country relative to those of their native country. Sometimes enthusiastic immigrants find that, contrary to their inaccurate expectations, the streets are not paved with gold in the destination country. Immigrants may also encounter difficulties in the destination country that they did not anticipate. Jobs may not pay as much as expected. Life may not be as nice as expected. Sometimes homesickness sets when immigrants reevaluate their native cultures relative to their adopted destination country cultures; immigrants often underestimate the difficulty in building new social relationships in the destination country. Sometimes immigrants encounter open discrimination, injustice, and harassment in the destination country, as was indeed the case for nontraditional immigrants from Southern and Eastern Europe to the USA around the turn of the twentieth century.

### ***11.1.3 Source Country Policies to Encourage Immigrants to Return***

Another factor in making immigration a temporary rather than a permanent phenomenon are the growing efforts of source countries to “pull” ex-patriots back home. Recall from Chap. 8 that one of the proposed solutions to the brain drain is to induce migrants to return after they accumulate wealth and work experience overseas. The World Bank (2003, p. 159) describes a variety of ways in which source country governments have encouraged skilled people to return after having worked and lived in high-income countries.

South Korea has intentionally upgraded research institutions, such as the Korea Institute of Science and Technology, in order to attract returnees. Taiwan has indirectly encouraged ex-patriots to return and become entrepreneurs in Taiwan by providing incentives for investment in new upstart firms. Taiwan also offers airfare and assistance in finding employment in Taiwan for returning professionals. China has launched a program to develop 100 universities into world-class institutions that provide employment for researchers as well as teachers; the expectation is that many positions at these institutions will be taken by Chinese currently working overseas. Even the governments and groups in developed countries have taken measures to attract native scholars and researchers back. Switzerland promotes networking across borders for overseas Swiss with its Swiss-List.com online network designed to help ex-patriots stay connected to events and job opportunities in Switzerland. In 2003, the World Bank (2003) reported that it found 41 such ex-patriot knowledge networks on the Internet.

## 11.2 Temporary Immigration

Return migration often occurs as part of an initial decision to immigrate temporarily rather than permanently. That is, many immigrants never intend to remain permanently in a destination country. These *temporary immigrants* interpret the push, pull, stay, and stay away factors as suggesting they would be best off taking advantage of higher wages or better opportunities in the destination country only for some specified length of time. They, more than other immigrants, tend to maintain ties to the source country in order to facilitate the planned return to their native societies. In many cases, it is useful to view temporary immigration as the outcome of a rational maximization problem that weighs the economic and social benefits of immigrating against the explicit economic and social costs of leaving one's native society. The decision to immigrate temporarily may be seen as the effective *customization* of the immigration experience in order to maintain social relationships in the source country while taking advantage of the short-term economic opportunities in the destination country. At the same time, destination countries may design policies that encourage immigrants to only come temporarily to work but to avoid putting down roots; such policies may reflect destination country preferences for workers but not families, or they may reflect destination country fears that permanent immigrants are more likely to cause cultural clashes.

### 11.2.1 *The Multinational Corporation and Temporary Immigration*

The growth of multinational corporations caused a sharp increase in temporary immigration. As business organizations spread across borders, the need to move personnel throughout the organization necessarily creates the need to move people across borders. Multinational firms continually move management and technical staff between units. For example, the building of a new plant in a foreign country inevitably requires the movement of engineers and project managers. The advancement of employees' careers, especially at the higher levels of management, usually requires them to shift from one unit to another. A foreign assignment has become a normal step in a career within many multinational firms.

Countries usually treat management and technical staff of multinational firms differently from other immigrants. Special visas for personnel of multinational firms are often available without quantitative limits in most countries. For example, the USA reserves about 20 % of permanent immigrant visas for immigrants with desirable skills and their family members. These are the so-called employment-based, or EB-1 through EB-5, visas. The first of these, EB-1, covers foreigners who are managers for multinational firms. The EB-2 visa covers workers with advanced degrees or exceptional ability, and often includes employees of foreign firms with operations in the USA. The EB-5 "Employment Creation" visa covers foreigners

who will live in the USA for the purpose of establishing a new business and who will employ US workers. Employees of multinational firms often fall into this latter category. The USA also offers an unlimited number of L1 visas for “intracompany transfers.” In 2001 328,500 L1 Visas were issued, about double the number from 5 years earlier. In 2002, new US legislation reduced the former requirement that recipients of L1 visas be employed by the multinational company for a full year to just 6 months.

The large rise in L1 visas has stimulated some debate, with some critics of the program suggesting that both US multinational firms and foreign multinational firms operating in the USA are abusing the category in order to bring less-expensive workers from foreign operations to take jobs in the USA. That is no doubt the case. But the extraordinary growth in foreign direct investment in the USA over the past ten years suggests that the increase in the number of L1 visa requests is also to a considerable degree the result of the normal cross-border shuffling of employees and expertise by foreign multinational firms.

### ***11.2.2 Temporary Immigration as a Destination Country Policy***

Temporary immigration is also the result of specific immigration policies in destination countries. Many high-income countries make it easier to acquire temporary residence or work visas than permanent residence visas. Such policies may reflect destination country governments’ desire to satisfy the labor needs of specific industries. The native population of a destination country may be willing to let employers hire temporary foreign workers who will leave before they establish long-term social relationships or acquire long-term public benefits such as health insurance or pensions. Just as individual immigrants may prefer to maintain their cultural links to their native countries, destination countries may want to minimize the influence of foreigners on their cultures.

Many countries permit foreigners to live and work for some specified period of time. For example, in response to wartime shortages of labor, the USA instituted the *Bracero program*, which gave temporary work visas to Mexicans when Americans were drafted into military service during World War II. The program involved mostly farm labor. When the war ended, most returning soldiers went to work in the growing industrial and service sectors of the US economy, and farm labor remained in short supply, at least at the wages the farmers wanted to pay. Therefore, the Bracero program remained in effect. The program ended only in the early 1960s, when US labor organizations were finally able to pressure the US Congress to discontinue the program.

Other examples of temporary immigration programs include the various programs in Western Europe during the 1960s to bring *guest workers* from Southern Europe, North Africa, and the Eastern Mediterranean to work in countries with labor shortages such as West Germany, the Netherlands, Switzerland, and France. These guest workers often ended up bringing family and staying permanently in the

destination countries. Today, Germany, Holland, Belgium, Switzerland, and many other Western European countries have substantial numbers of foreign-born citizens and large second generation foreign ethnic groups. When only temporary work visas are offered, even foreigners interested in immigrating permanently will use them to enter the destination country. The liberal political regimes in Western Europe, with their emphasis on human rights, had in place many legal channels that enabled temporary immigrants to stretch their stays, bring spouses, and, eventually, convert their temporary resident status to permanent residence status. Once permanently established, the former guest workers were often able to bring other family members to the destination countries as well.

More recently, the rapidly-growing Persian Gulf states, including Dubai, Qatar, and Kuwait, have attracted large numbers of temporary workers from labor-abundant countries like Pakistan, India, Bangladesh, and Indonesia to work in construction, domestic service, and other personal services. However, the Persian Gulf states have carefully controlled and monitored their temporary foreign workers in order to prevent foreigners from putting down permanent roots.

### ***11.2.3 The Diversity of Temporary Immigration***

Data on temporary migration is incomplete and inaccurate, which makes analysis of temporary migration difficult. Every country has different immigration categories, and over time visas are often issued inconsistently by category. Temporary unskilled workers often enter countries unauthorized, or by using tourist or student visas, which makes their detection difficult. Also, temporary workers related to the international trade in services, such as consultants, bankers, entertainers, teachers, and athletes, often use tourist and other visas rather than specific work visas when they enter other countries to provide their services in another country on a temporary basis. The best data are for highly skilled temporary workers because most countries issue temporary visas for highly skilled workers working for multinational firms with few restrictions.

The OECD provides estimates of temporary immigration. Table 11.1 presents available data for the period 1992–2000 for a number of OECD countries. It appears that the number of temporary workers increased during the 1990s, except in Switzerland, a country that has long awarded temporary visas for foreign workers in its seasonal tourist industry. Also, Germany's admittance of temporary workers seems to have fluctuated over the decade, more in line with political developments in neighboring eastern European countries than German immigration policy or economic trends. Australia, South Korea, the United Kingdom, and the USA admitted steadily increasing numbers of temporary immigrants during the 1990s. Australia established a number of temporary entrance programs for highly skilled workers during the 1990s, and the USA increased the number of temporary H-1B visas for highly skilled workers during that decade.

**Table 11.1** Entries of temporary workers 1992–2010 (millions of workers)

	1992	2000	2004	2007	2010
Australia	40.5	115.7	136.1 <sup>a</sup>	258	277
Canada	70.4	93.7	74.8	157	173
France	18.1	15.4	25.7	26	14
Germany	332.6	331.6	358.2	347	341
Japan	—	183.9	225.6	165	103
Korea	8.3	122.5	29.0 <sup>b</sup>	62	39
Switzerland	127.8	50.3	102.0 <sup>b</sup>	103	92
United Kingdom	57.6	134.1	106.4	226	88
USA	143.0	505.1	321.0	562	468

Source: OECD (2002), *Trends in International Migration 2002*, Paris; OECD, Table 1.1, p. 24; OECD (2007), *International Migration Outlook, SOPEMI 2006*, Paris; OECD, Table I.5, p. 40; and OECD (2012), *International Migration Outlook, 2012*, Paris; OECD, Table I.2, p. 35

<sup>a</sup>2003

<sup>b</sup>2005

There are some shortcomings in the OECD data, and temporary immigration is defined differently across countries. Because of the large changes in the flows of temporary immigrants, the variations across countries make it difficult to reach clear conclusions.

## 11.3 Analyzing Temporary Migration

The temporary movement of highly skilled workers cannot be analyzed with the traditional model of immigration in which wage differences are the main driving force of immigration. Such models suggest that immigration is a one-way process based on a one-time decision that depends on observed income differences. The traditional model of immigration cannot explain why immigrants would immigrate only temporarily. Only in the case of return immigration driven by changes in relative incomes across countries does the traditional immigration model make sense. Obviously, income differences play an important role, especially in the case of unskilled workers. However, for highly skilled temporary immigrants, more complex career and lifestyle issues are likely to also matter. And, for both skilled and unskilled labor, there are social issues, cultural differences, and political factors as well.

### 11.3.1 A Simple Model: Culture Clash Versus Higher Income

Dustmann (2001) builds a simple model of temporary immigration by explicitly including a second variable to the model to supplement the role of the wage differential in the traditional model. Specifically, Dustmann assumes not only that wages are higher overseas, as the conventional model of immigration does, but he

also assumes that the immigrant has a preference for consumption at home. The latter assumption can be interpreted as a preference for one's native culture, an unwillingness to adapt to a foreign culture, or the discomfort from overt antagonism toward immigrants in the destination country.

In Dustmann's model, the migrant is offered the option to immigrate at time  $t = 0$ , and the remainder of the potential migrant's life is a continuum from  $t = 0$  to  $t = 1$ , the time at which (s)he expects to die. Wages in the source and destination countries are  $w_s$  and  $w_d$ , respectively. Following standard immigration models, we assume  $w_s < w_d$ . The flows of consumption goods in the source and destination countries are  $c_s$  and  $c_d$ . Consumption is determined jointly with the decision on how much of one's life to spend in the source and destination countries,  $t_s = 1 - t_d$  and  $t_d$ , respectively, in accordance with the migrant's lifetime utility function

$$J = t_d v(\zeta_d, c_d) + (1 - t_d) v(\zeta_s, c_s) \quad (11.1)$$

in which  $v(\zeta_d, c_d)$  and  $v(\zeta_s, c_s)$  are the utility functions when the immigrant is in the destination and source country, respectively, and  $\zeta_d$  and  $\zeta_s$  are preference parameters that reflect living conditions in the destination and source countries and whose partial derivatives are positive. The assumption  $\zeta_d < \zeta_s$  means that immigrants prefer life in the source country to life in the destination country. We could call this the *homesickness assumption*. This assumption is supported by the earlier findings of Hill (1987), Djajic and Milbourne (1988), and Raffelhüschen (1992), who incorporated geographic preferences into their immigration models.

The immigrant is assumed to effectively maximize (11.1) with respect to  $c_s$ ,  $c_d$ , and  $t_d$ , subject to the budget constraint

$$t_d w_d + (1 - t_d) w_s - t_d c_d - (1 - t_d) p c_s = 0 \quad (11.2)$$

The parameter  $p$  denotes the relative price of consumption goods in the source country versus the destination country. In general,  $p < 1$ , which implies destination country earnings provide higher real income back in the source country than they do in the destination country. This is not an unrealistic assumption when comparing low-income and high-income countries. Dustmann has shown elsewhere (Dustmann, 1995, 1997) that this price differential can have a positive effect on temporary immigration. For simplicity, Dustmann assumes a time discount rate of one which, given the purpose of the model, causes no loss of generality.

Dustmann then differentiates the associated Lagrange equation with respect to the optimal time of return  $t_d$ . Then, after combining terms, he arrives at

$$\Gamma = \lambda[(w_d - w_s) - (c_d - p c_s)] - [v(\zeta_s, c_s) - v(\zeta_d, c_d)] = 0 \quad (11.3)$$

The first term in (11.3) represents the marginal benefit of staying in the destination country, and the second term represents the cost of staying overseas. The two bracketed terms are both positive if we assume normal preferences and that either

$p < 1$  and/or  $\zeta_d < \zeta_s$ . Suppose, also, that the first bracketed term decreases with  $t_d$  and the second increases with  $t_d$ . Hence, the difference between benefits and costs decreases over time, or  $d \Gamma(t_d)/d t_d < 0$ . Equations (11.2) and (11.3) determine  $\lambda$ , the marginal utility of wealth, and the optimal time to return  $t_d$ . If the difference between benefits and costs is always positive, then immigration will be permanent. If the difference is always negative, there is no migration. The interior solutions are more interesting because they show how the length of the immigrant's overseas stay varies with changes in source country and destination country wages. Changes in wages turn out to have both income and substitution effects, and the net result depends on the specific form and parameters of the model.

Dustmann's model leads to the conclusion that an increase in the source country wage leads to a shorter migration duration because the wage differential decreases and the income effect provides a greater welfare gain when consumption occurs in the source country. Hence, Dustmann's simple model suggests that immigrants from very poor countries will remain in the destination country longer than immigrants from middle-income countries. On the other hand, a rise in the destination country's wage increases the wage differential, which would increase immigration and the length of stay abroad, all other things equal. However, the model predicts a U-shaped relationship between destination country wages and migration duration because there is also an income effect that favors consumption in the source country and makes a return to the source country more attractive.

The theoretical ambiguity means that the matter has to be examined empirically. To test the model, Dustmann thus compiled actual data on migration duration in Germany and immigrant survey responses giving the intended migration duration. He found that the actual duration data confirmed a U-shaped relationship between German wages and how long immigrants remained in the destination country. Therefore, Dustmann's model and empirical results suggest that the standard model of immigration, which links the amount of immigration directly to wage differentials, is misleading as an indicator of the total stock of immigrants because the differential also affects the *duration* of immigration.

### 11.3.2 Other Determinants of Temporary Immigration

Dustmann's conclusion is suggestive, at best. He does not have data to test the relationship between duration and source country wages; he only tests the differential under the assumption that changes in the differential are the result of destination country wages alone. This distinction could be important, especially since a number of major sources of immigration, notably China and India, are growing much faster than the destination countries favored by Chinese and Indian migrants. A much more daunting problem for Dustmann's model is that it is probably still much too simplistic to accurately capture the decisions on whether to immigrate and how long to remain in the destination country. There are, no doubt, many specific events and sudden changes in circumstances that drive people's decisions to first

immigrate and then return. The model does not directly include discrete variables such as the loss of a job, the gain of a better job, changes in immigration policies, shifts in destination country attitudes towards immigrants, and family events such as marriage, divorce, the birth of children, or the death of a spouse. Recall Fig. 11.1 and the sharp rise in return immigration from the USA during the Great Depression. This sudden rise was not driven by cultural preferences and long-run trends in relative earnings; the dominant cause of the return migration was the loss of jobs and the poor economic prospects for the immediate future.

Card and Lewis (2007) find that Mexican immigration to the USA is driven mostly by population growth, falling real wages, and persistently weak economic conditions in Mexico. Richter, Taylor, and Yunez-Naude (2005) find that network effects dominate other determinants of Mexican immigration to the USA. Hence, even though a large percentage of Mexican immigrants fit Dustmann's model in that they do not necessarily intend to remain in the USA indefinitely, relative incomes and price levels are not the most important determinants.

### ***11.3.3 The Role of International Trade***

There are other reasons why immigration may be temporary. Immigration's close relationship with other international economic activities, such as international trade and investment, explains some temporary immigration. For example, international trade in services almost certainly implies some international migration of people. Services are not shipped in a box like goods are. The export of services may require the physical presence of company employees in the export market. For example, Madhavan (2000) reports that Indian software firms have sought to make it easier for Indian computer programmers to acquire work permits overseas. According to an Indian IT industry representative quoted by Madhavan:

An IT service contract is as much of a perishable commodity as fruit or vegetables. Delaying a visa application on an outsourcing contract is no different from Indian customs holding up a shipment of American fruit for three months to check for pesticide. It kills our advantage stone dead.

As international trade in services expands, immigration and international trade become more closely linked; if services must be personally delivered, then the temporary migration of people and trade are one and the same thing.

The Internet may reduce the need for people to physically move to another country to deliver services, however. We already witness many customer service functions being carried out on-line and by telephone. But, at the same time, the liberalization of services trade has caused an increase in temporary migration of labor. And, since services trade is still the most restricted category of international trade, further efforts to reduce services trade barriers are likely to cause substantial increases in temporary immigration in the future.

The proximity of this future scenario depends on the course of international trade negotiations. Current negotiations under the GATS (General Agreement on Trade in Services) have stalled during the World Trade Organization's Doha Round in the early 2000s. Overall, immigration related directly to the supply of services overseas is still small because personally delivered services account for only 1.4 % of all services traded. Most services are effectively supplied overseas through established commercial channels operated by nationals of the importing country, transferred abroad through the Internet, telephone, or other means of communication. Or, they are consumed overseas, as in the case of tourist services, transport services, and educational services.<sup>1</sup>

The growth of trade in goods also stimulates temporary immigration. Exports and imports require marketing activities, distribution systems, management, legal procedures, contractual arrangements, etc., all of which require people to work in other countries temporarily or for extended, but not permanent, periods of time. Most important, international trade is increasingly linked to foreign direct investment, with multinational firms operating overseas plants to produce the products, components, and other inputs into their worldwide manufacturing operations. These networks of factories, distribution systems, and marketing organizations staffed by technical and management personnel are multinational and often move throughout their firms' multinational corporate organizations. Such cross-border personnel movements constitute a major share of the temporary immigration flows we observe in the world.

### ***11.3.4 Further Issues Related to Temporary Immigration***

Future research on temporary immigration will need to address a number of other issues. Among these are the roles of remittances, technology transfers, the economic and social status of temporary guest workers, the brain drain, and the potential for labor market segmentation.

The role of remittances was discussed in detail in Chap. 8. Here we note that temporary immigrants are likely to send a higher proportion of their overseas income back to the source countries. In general, recent immigrants send more remittances than longer-term immigrants. Temporary immigrants are, on average, more recent than immigrants in general. Galor and Stark (1991) in fact found that immigrant remittances are greater for temporary immigrants than for permanent immigrants. They also found that remittances are greatest for temporary workers with a fixed date of return. This finding may reflect a natural selection process rather than a direct determinant of remittances. That is, when immigrant visas have a specific time constraint or immigrants go overseas under a specific employment contract or job assignment within a multinational firm, they obviously view the

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<sup>1</sup> See World Bank (2003, p. 168).

migration as a temporary career choice undertaken for financial reasons. Permanent immigration is more likely to involve more complex motivations, many of which are not linked to the source country or family in the source country. The relationship between temporary immigration and remittances suggests another potential binary independent variable to add to Dustmann's model in the previous section.

Another issue is how destination countries try to govern the length of stay of temporary immigrants. For example, in response to both the critics of open immigration and the US industries that employ immigrant workers, President George W. Bush repeatedly proposed new programs that provide temporary work permits. This led some opponents of immigration to argue that a temporary worker program would merely result in more unauthorized immigrants because foreign workers entering the USA legally would be tempted to outstay their temporary working permit. This has indeed been a problem in other countries that have offered temporary work permits. For example, many of the temporary workers from Southern Europe and Turkey that went to work in Northern European countries in the 1960s are still there, as are now their descendants. Supporters of a temporary worker program offer solutions to this problem. They point to Taiwan, where the companies who recruit foreign workers retain part of the workers' earnings, which are then only paid out when the workers return to their native countries after their temporary employment officially ends. Also, under the old *Bracero Program*, which allowed Mexican workers to come to the USA to work in agriculture during the 1940s and 1950s, US employers were required to withhold 10 % of Mexican workers' earnings and deposit them in a Mexican fund payable to workers on their return to Mexico.

Despite the uproar over temporary work permits in the USA recently, the USA already offers a variety of temporary work visas. In order to keep these temporary workers out of the mainstream US labor markets, these temporary work visas explicitly bind workers to specific employers. For example, procedures for acquiring 3-year H-1B visas must be initiated by employers in the USA, and the visas are jointly issued to the employer and the employee. Some economists have pointed out that by binding foreign workers to their employers, who can end the arrangement whenever they want, employers effectively have the power to exploit or otherwise mistreat the temporary foreign workers. There are some provisions that allow workers to move to other employers under the H-1B program, but that requires time and paperwork.

Employers in the USA can also hire temporary foreign workers under the H-2A and H-2B programs. These are truly temporary work visas, intended for seasonal workers in, respectively, agriculture and the industrial/service sectors of the economy where US workers are unavailable. Like the H-1B visas, these latter visas are applied for by US employers, so the workers are effectively at the mercy of employers for acquiring and maintaining their temporary work authorization. These visas are often used by businesses that have seasonal labor needs, such as agriculture, food processing, tourism, lawn care, and construction. There is a 30,000 cap on H-2B visas, but H-2A visas for agricultural jobs are technically unlimited. The requirement that employers show evidence that domestic workers are not

available is not difficult to satisfy; by offering extremely low wages for very unpleasant types of work, employers can be sure that few if any domestic workers apply. Also, these programs often involve foreign brokers who supply foreign workers, thus separating the foreign workers even further from the US labor market, not to mention leaving the workers open to exploitation by foreign contractors that operate like human traffickers.<sup>2</sup> These temporary visas have been strongly condemned by labor groups and human rights groups. US employers effectively use the temporary visas to avoid having to pay higher wages and offer better working conditions to American workers.

There are still many economists who propose further fine-tuning of temporary visa programs, however. For example, Schiff (2004) proposed three mechanisms for guaranteeing that foreign workers do not outstay their legal employment period: (1) make employers post a bond that is forfeited if the workers remain in the host country, (2) have the government withhold part of the workers' income to be paid out when workers return to their native countries, and (3) have the source country government cooperate in helping to ensure that only workers with work permits emigrate. Whether such policy mechanisms can realistically be put into place is an open question because no high-income country has effectively tried to so closely regulate and monitor immigrants. Such policies also clash head on with basic human rights and personal freedom, and in most countries court cases will most likely undermine such draconian schemes that appear to many people as subtle forms of human trafficking.

### ***11.3.5 Temporary Immigration as a Form of Labor Market Discrimination***

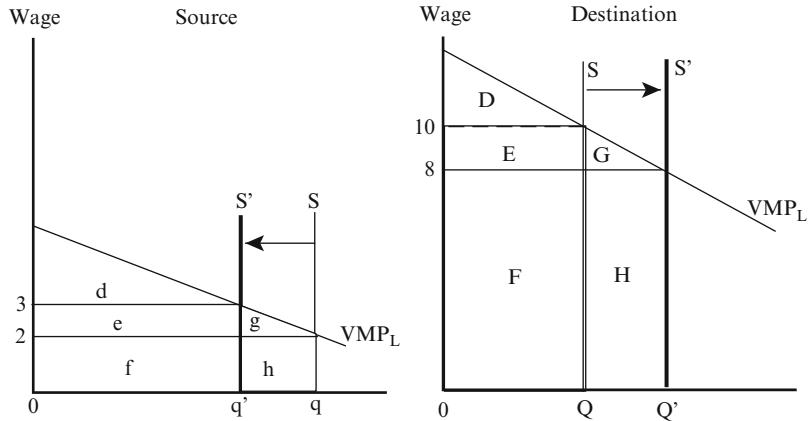
Some economic costs and benefits of temporary immigration can be illustrated using the standard labor supply and demand model first presented in the Introduction to Part I of this book. Here we use this model in its most restricted form, which assumes immigrants are exclusively suppliers of labor in order to grasp the reasoning some labor and immigration economists use to promote temporary work programs for immigrants. Keep in mind the shortcoming of this model.

As Fig. 11.2 shows, immigration shifts the labor supply curves to the left in Source, and to the right in Destination. Wages rise in Source and fall in Destination, and the remaining workers increase their share of GDP by the area e in Source, but native workers lose a share of GDP equal to the area E in destination. The immigrants gain H - h. This model, therefore, suggests that workers in Destination will seek restrictions on immigration.

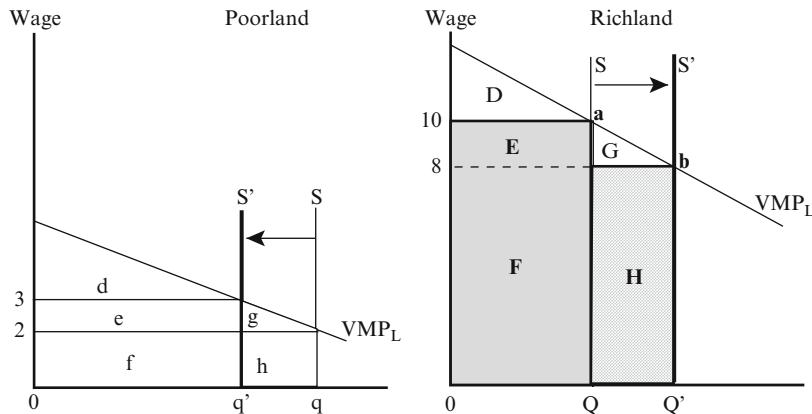
This representation of immigration may not be accurate for temporary immigration, however, because the traditional model effectively assumes temporary

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<sup>2</sup> See, for example, Hira (2010). This subject is also well covered in the press.



**Fig. 11.2** The gains and losses from immigration without discrimination



**Fig. 11.3** The gains and losses from immigration with discrimination

immigrants and domestic workers are perfect substitutes. In fact, most temporary immigration programs are designed to separate temporary workers from domestic workers, and temporary immigrants are not treated exactly the same as otherwise identical natives. Temporary workers often end up working for lower wages and benefits, and in poorer working conditions, than native workers. Also, temporary workers are often bound to their employers, and they cannot seek employment in all sectors of the economy. Temporary immigrants are often concentrated in certain industries and occupations.

Temporary immigration thus results in a segmented labor market consisting of temporary and native segments, which permits employers to pay different wages in each segment. Figure 11.3 illustrates how such a discriminatory scheme distributes economic welfare. In the case where temporary immigrants are restricted to certain

jobs that would not be performed at such a low wage in the absence of immigration (say butchering hogs or cows in unpleasant meat packing plants or picking oranges in hot fields), jobs listed along the labor demand curve from **a** to **b**, the wage for temporary immigrant workers would fall to \$8. Total immigrant wages would be equal to area H in Fig. 11.2. If the reservation wage of native workers is \$10, or if there is a minimum wage of \$10 that is only enforced for native workers, then total wage income for the OQ native workers will remain equal to the gray shaded area E + F. The reservation wage (or minimum wage) of \$10 implies that native workers will not be employed in any of the lower-paying jobs between **a** and **b**, and the labor market will be perfectly segmented into two separate markets with wages of \$10 and \$8, respectively.

Notice also that owners of other factors, such as physical and human capital, still gain from the temporary immigration. They will not capture area E, which remains with native workers, but the owners of other factors do gain area G by employing immigrant workers at the lower wage of \$8. Thus, schemes whereby temporary immigrants are allowed to work only in sectors of the economy where native workers earning pre-immigration wages would not be employed will prove beneficial to both the temporary immigrants and employers without lowering the welfare of native workers in the destination country. This model seems to explain why temporary immigration programs have often been used in high-income countries.

It must be pointed out, however, that labor market segmentation is a form of discrimination. Also, it is not ethically appropriate to look at immigrants as nothing more than suppliers of labor; they are human beings. Effectively, programs to achieve what is illustrated in Figs. 11.2 and 11.3 violate basic principles of human rights. As will be shown in later chapters on immigration policies, however, governments have not been reluctant to discriminate between natives and foreigners. There is also the issue of exploitation of workers by large employers who have the market power to pay wages below the VMP curve; temporary foreign workers can be exploited to a greater extent than domestic workers with alternative employment options.

### **11.3.6 Growth Implications of Temporary Immigration**

The discussion of the brain drain in Chap. 8 pointed out how the negative growth effects of the brain drain can be mitigated if skilled workers eventually return to their native countries. It was pointed out that returning workers have accumulated wealth and human capital that can be applied in the source country when they return. Since returning skilled workers are, by definition, temporary immigrants, the analysis from Chap. 8 on the relationship between immigration and economic growth applies to our discussion of temporary immigrants here. Temporary immigration's long-run growth consequences for the source country must include the accumulation of work experience overseas.

The discussion in Chap. 8 noted that there is little that can be done in the short run about the brain drain; only measures to increase wages and improve working

conditions in poor countries will reverse the brain drain. We also pointed out, however, that the brain drain can raise growth rates in the source country. Many development economists fear that the brain drain will cause output and income to fall in the source country because the departure of the human capital permanently reduces innovation and the capacity for a country to adopt new technologies. But, when immigration is temporary the returning immigrants bring with them a familiarity with foreign technologies, and they may increase technology flows back to the source country. Source country growth may, therefore, actually rise above the rate at which the country would have grown if it had not temporarily sent some of its most educated people overseas. Some of the knowledge and experience returning emigrants bring back with them would have been difficult to develop in the source country.

### **11.3.7 *Temporary Immigration and the Ageing Problem***

Immigration changes the population profile of the destination country, and if immigrants are, on average, younger and of working age, then indeed immigration can reduce the burden that rapidly ageing societies face. Temporary immigrants tend to be predominantly young and of working age. A major reason for the young age of immigrants is the fact that in developing countries population growth accelerated some decades ago and the working age population accounts for an increasing share of the population. In India, the population between the ages of 15 and 59 soon will account for three-fourths of the total population, which implies a very high worker–retiree ratio. Over the next two decades these countries have to provide employment for rapidly increasing working age populations, and they are thus in a position to provide labor to high-income countries in the rest of the world where marginal returns to labor are higher. Increasing the income of their populations is important for developing countries because in the latter half of the century, they will also go through the same demographic transition that today's high-income countries are going through.

Most analyses conclude that immigration cannot solve the high-income countries' ageing problem entirely. For example, the United Nations' *2004 World Economic and Social Survey* concluded that incoming migration would have to expand at virtually impossible rates to offset declining support ratios, that is, workers per retirees. For example, Crawford (2001) reports that the European Union countries as a group would have to accept between 50 and 75 million immigrants from outside the region over the next 50 years if the future burden on working people is to remain manageable. Such levels of immigration equal about 20 % of Europe's total population. According to above mentioned United Nations report, Japan's very low birth and death rates imply that it would have to receive 600,000 immigrants per year for the next half century just to keep its total working age population from shrinking. Such a high volume of immigrants implies that by

2050, one-third of the Japanese population would consist of immigrants and their children.

Calculating the precise effect of immigration on a country's ability to handle population ageing is not easy. There are a number of offsetting factors to consider. First of all, while immigrants increase the size of the labor force, they have a variety of influences on income in the country, as the previously discussed models of immigration made clear. Secondly, immigrants increase their human capital after they arrive in the country, which will increase their productivity and marginal effect on national income. Thirdly, immigrants, like natives, are eligible for a variety of government transfers, and how those transfer programs evolve over time influences the calculations. Finally, immigrants themselves eventually age and require pension payments and other assistance. After looking at many of these potential changes, Fehr, Jokisch, and Kotlikoff (2004) conclude that "high-skilled immigrants deliver a larger bang for the buck when it comes to paying net taxes," but it is less obvious exactly what is the full effect of immigrants on a country's ability to deal with population ageing. Even a large expansion of immigration, "whether across all skill groups or among particular skill groups, will do remarkably little to alter the major capital shortage, tax hikes, and reductions in real wages that can be expected along the demographic transition."

Still, temporary immigration may provide a better outcome for destination countries. Temporary immigration, assuming the temporary status can be enforced, also implies that fewer dependents may be likely to accompany temporary immigrants, thus also reducing the growth of the very young dependent population in the destination country. In short, policies that concentrate immigrants tightly in the age groups where people have very high labor force participation rates may decrease the destination country's dependency ratio.

Many writers have observed that it is difficult to imagine Europe, Japan, and other developed countries willingly opening their borders to the very large immigrant inflows necessary to prevent an increase in the dependent-worker ratios, even if these workers are advertised as temporary guest workers. On the other hand, Weil (2002) observed that the immigrant arrivals required to keep the support ratios constant as calculated by the United Nations imply annual immigrant inflows for Europe and Japan that are less than 0.5 % of their total populations, just half of what annual per capita immigrant inflows to the USA were in the first decade of the twentieth century. After analyzing the incentives to move and the increasing ease with which people can travel from one country to another, the international economist, Cooper (2002) writes in the conclusion of his article,

. . .the prospective decline of natural population growth likely to be observed in the coming decades suggests a prediction: Immigration into all rich countries will occur on a much greater scale than is currently envisioned in official population projections, illegally if not legally; on balance such immigration will be more welcome than it seems to be at present. Indeed, it will even be encouraged.

It remains to be seen whether rich country governments will respond to the demographic transition by liberalizing immigration as Cooper predicts.

The columnist Martin Wolf ([2001](#)) gives a somewhat more realistic view of how countries with ageing populations are likely to react: “Immigration could solve the west’s ageing population problem but the numbers required would be unacceptable. Free migration is economically logical but politically impossible.” We should not forget that, while current US immigration rates are lower than at the start of the twentieth century, it is also true that the high rates back then inspired the USA to enact a very restrictive immigration regime in the 1920s. And, as recently as 2007, the US Congress attempted to pass legislation calling for balanced immigration policy that would both tighten controls to reduce unauthorized immigration and expand legal immigration. The measure failed because, while there was ample support for reducing unauthorized immigration, there was not enough support for the second part of the bill, the expansion of legal immigration programs. One of the specific measures in the failed bill was a provision for a guest worker program, but both sides of the immigration issue objected to it. Pro-immigrant groups objected because they felt temporary workers would be treated as second-class citizens who could be easily exploited. Opponents of immigration doubted that guest workers would actually return to their native countries when their temporary visas expired.

In short, the demographic transitions in the high-income countries will expand the incentives for people to immigrate. However, history tells us that there will, nevertheless, be opposition to immigration, and an increase in even temporary immigration is not a foregone outcome.

## 11.4 Asylum Seekers and Refugees

A group of international migrants that do not fit the standard model of immigration very well are *asylum seekers and refugees*. These are people who have left their home countries to escape actual or feared political, religious or social persecution, or other threats to their safety and well-being. They are not so much responding to the economic pull of higher incomes overseas as they are being pushed or driven out of their native countries by war or intolerable political and social conditions. Most countries have special legal procedures to deal with people seeking entry to escape persecution and other threats. There is also a United Nations organization, the office of the United Nations High Commissioner for Refugees, that provides assistance and temporary shelter for refugees from war, persecution, and other threats.

### 11.4.1 Refugees

The 1951 United Nations Convention Relating to the Status of Refugees defines a *refugee* as a person who “owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion, is outside the country of their nationality, and is unable to or, owing to such fear, is unwilling to avail him/herself of the protection of that

**Table 11.2** Number and origin of international refugees

	End 2002	End 2006	End 2011
Africa (except North Africa)	3,088,500	2,421,300	3,332,593
Central/South Asia, N. Africa, Middle East	3,363,500	3,811,800	—
North Africa and Middle East	—	—	1,745,078
Europe	2,593,700	1,733,700	649,938
Western Hemisphere	656,000	1,035,900	487,956
East Asia/Oceania	902,900	875,100	—
Asia/Oceania	—	—	4,026,021
Total	10,604,600	9,877,800	10,404,806

Source: UNHCR (2012), *2011 Global Trends*, Geneva: United Nations High Commissioner for Refugees, Division of Operational Services, Field Information and Coordination Support Section; UNHCR (2007), *2006 Global Trends*, United Nations High Commissioner for Refugees, Division of Operational Services, Field Information and Coordination Support Section, July 16; United Nations High Commissioner for Refugees (2004), *2003 Global Refugee Trends*, Geneva: UNHCR, June 15

country.” The concept of a refugee was expanded by a 1967 United Nations Protocol and later Conventions to include persons who flee war and other violence in their home countries. In this book on immigration we describe only the *refugees* who leave their native country and flee to another country. The majority of refugees actually remain in their own countries in camps, relatives’ homes, and other temporary shelter after they are driven from their permanent homes by war, violence, persecution, and other threats.

Today, most refugees are people fleeing civil wars and ethnic strife. Many of these refugees are in Africa and the Middle East. Wars and ethnic cleansing in the Balkans created a huge refugee problem in Europe in the 1990s. Table 11.2 presents UNCHR data showing that the estimated number of refugees in the world dropped from 10.6 million at the end of 2002 to about 9.9 million at the end of 2006, only to rise again to 10.4 million by the end of 2011. One reason the number of refugees declined slightly from 2002 to 2006 is that several of the civil wars in Africa that had caused many people to flee their homes were brought to tentative settlements. Also, the situation in the former Yugoslavia seems to have stabilized and many people were able to return home. Some refugees also managed to permanently move elsewhere, which reduced the number of people with refugee status. On the other hand, the conflict in Afghanistan and the US invasion of Iraq has inflamed civil war and ethnic strife, causing a sharp rise in refugees to neighboring countries in 2006. Pakistan, Iran, Syria, and Jordan are now four of the top six recipients of foreign refugees.

### 11.4.2 The UNHCR

The United Nations High Commissioner for Refugees (UNHCR) was formally established in 1951 to oversee the world’s refugee problems. When the UNHCR was first established, the focus of the agency’s activities was on resettling refugees

in Europe, Palestine, and Korea. Today, its activities include operating refugee camps in many parts of the world. Wars and ethnic conflicts in Africa, Asia, and Europe have swelled the number of refugees over the past two decades.

At the end of 2011, the UNCHR oversaw over 10 million refugees who were living in temporary quarters, often camps set up specifically for the refugees, outside their native countries, usually in countries bordering those the refugees fled from. The UNHCR also monitored another 5 million refugees living in restricted areas within their own countries or in the process of returning home under international supervision, usually the UNHCR. In a typical year like 2003, for example, the UNHCR assisted the resettlement of 26,000 refugees from, among other countries, Sudan, Afghanistan, Somalia, Ethiopia, Iran, and Iraq. Just over half (54 %) of these were accepted by the USA, 17 % by Canada, 15 by Australia, and 5 and 4 %, respectively, by Sweden and Norway. The reluctance of countries to accept refugees for permanent settlement implies that millions of people remain in temporary camps waiting for a permanent resolution of their status. The UNHCR's greatest success has been in returning refugees to their original homes. But, the return of refugees to their homes depends on the elimination of the wars, persecution, or political strife that caused the refugees to flee their homes in the first place. Therefore, future numbers of refugees are as hard to predict as the events that trigger people's flight for safety across borders.

### **11.4.3 Asylum Seekers**

Asylum seekers are refugees waiting to be granted permission to reside permanently in a country other than their country of citizenship. Most countries have laws that permit the government to grant asylum to people who can show they are in danger or under severe persecution in their home country. The UNHCR ([2012](#)) estimated that there were nearly 1 million people seeking asylum in foreign countries in 2011. European countries received 327,200 asylum applications in 2011, the USA received about 75,000 applications for asylum.

## **11.5 Involuntary Immigration**

The above section on refugees showed that not all people move from one country to another country by their own choice. The previous section showed that refugees are more or less forced to migrate, driven from their home countries by especially dismal or dangerous conditions. However, refugees can still be modeled as improving their personal situation when they cross the border, and with a little imagination the standard model of immigration still applies because refugees do move to improve their well-being, albeit from desperate circumstances. There is another type of *involuntary immigration* that does not fit the standard immigration model in which

**Table 11.3** Estimates of the African slave arrivals in the Western Hemisphere

Period	Spanish America	Brazil	Caribbean	USA	Total	Annual arrivals
1525–1600	75,000	50,000	0	0	125,000	1,667
1600–1700	292,500	560,000	463,500	0	1,316,000	13,160
1700–1800	512,700	1,700,000	3,131,000	391,200	5,734,000	57,340
1800–1850	628,600	1,713,700	213,300	168,300	2,723,900	54,478
1851–1870	153,600	6,400	18,400	300	178,700	200

Source: Taken from Table A.2 in Herbert S. Klein (1999), *The Atlantic Slave Trade*, Cambridge, UK: Cambridge University Press, pp. 210–211, which presented data from Philip Curtin (1969), *The Atlantic Slave Trade: A Census*, Madison, WI: University of Wisconsin Press, and David Eltis (1989), *Economic Growth and the Ending of the Transatlantic Slave Trade*, New York: Oxford University Press

the migrants improve their well-being: the enslaved migrant. Slavery can occur within countries, but there has always been a strong international component to slavery because societies are more likely to enslave foreigners than people from within their own society. Slavery is an ancient institution, but the systematic enslavement of foreigners who were subsequently transported to other societies and nations reached unprecedented proportions just 200 years ago. The consequences of this slavery still affect many destination countries. Even more unfortunate is the fact that the practice of enslavement has not yet been entirely eliminated.

Slavery has been a characteristic of human societies for as long as we have records of human activity. For example, in 2000 B.C., the Hammurabi code explicitly recognized slaves as the lowest category of people. At the time of ancient Greece, Aristotle described slaves as being distinct from other people in various other states of servitude. At the height of the Roman Empire, about half the population was enslaved or in a state of long-term servitude. This is not to say that slavery was always condoned. Many ancient societies offered occasional freedom to slaves and established rules for how people were to be treated. Nevertheless, oppressive forms of slavery and indentured servitude are all too characteristic of all of human history.

Beginning about 500 years ago, slavery became an integral part of an increasingly global economy. Between 1500 and the late nineteenth century, over 10 million enslaved Africans were brought against their will to the Western Hemisphere by Dutch, English, French, Portuguese, Spanish and other European slave traders. Table 11.3 provides more detailed data on the Atlantic slave trade between 1500 and the end of the nineteenth century. The 10 million or more African slaves arrived in the Western Hemisphere over a period of about 350 years. The death rate for slaves during the two-month voyage in horrible conditions was nearly 10 %, so actually well over 11 million Africans were actually enslaved and forced aboard ships bound for the Western Hemisphere. The largest destination for African slaves was Brazil, a Portuguese colony organized around large plantations for sugar, tobacco, cotton, cacao, and during the eighteenth century, mining.

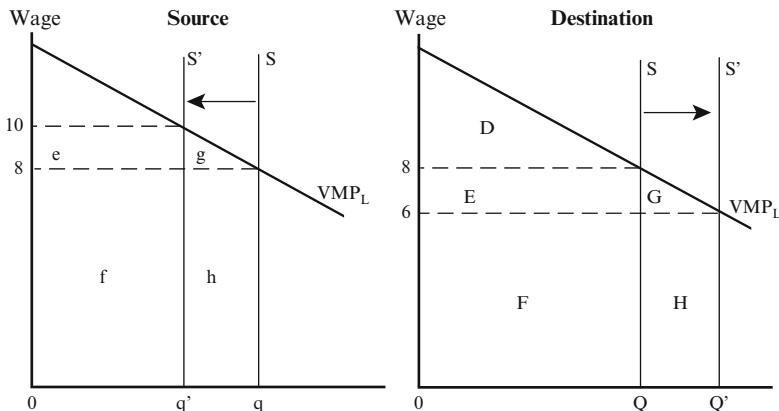
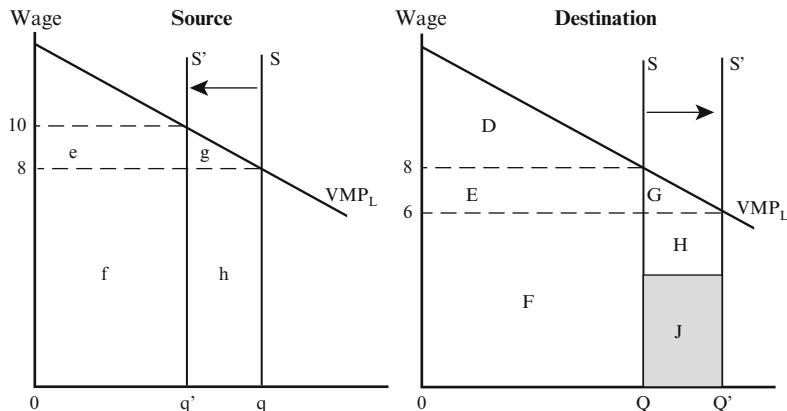


Fig. 11.4 The labor markets and forced immigration

### 11.5.1 A Model of International Slavery

Suppose that there are two countries with similar labor markets, as in the traditional labor market model of immigration. As shown in the familiar labor market model of immigration in Fig. 11.4, the consequences of moving people from a country named Source to a country named Destination results in the usual shift of the labor supply curve. Ironically, as in the case of temporary immigration, this basic model of immigration seems to be quite relevant to the analysis of slavery because the international trafficking in slaves has as its fundamental purpose the movement of labor resources from one country to another. Slavery is fundamentally inhumane, as is the basic labor market model of immigration. The fundamental cruelty of slavery is that the welfare of the enslaved migrant is not accounted for. Assuming that enslaved labor competes with native-born workers, the forced migration causes the wage to rise in Source and fall in Destination. The owners of other factors lose income in Source equal to the areas  $e + g$ , while the owners of other factors gain income equal to the areas  $E + G$  in Destination. Slaves do not own their own labor and they do not immigrate in order to gain higher wages. Therefore, the motivation for the international slave trade is not the same as for voluntary immigration. Note that, unlike the model in the case of temporary immigrants in Fig. 11.2, we show the marginal product of slaves actually declining after their migration in Fig. 11.4. This is a purely hypothetical assumption, but, it is not hard to imagine that enslavement reduces people's willingness and ability to work and produce.

The returns to the labor of slaves accrue to the slave owners. Slave owners incur costs related to acquiring ownership of the slaves; they must transport them from the source to the destination country, and they must feed, clothe, and shelter them lest their investment perish. Therefore, if we ignore the social consequences of slavery, international trafficking is economically viable as long as the gains exceed the costs.



**Fig. 11.5** The economic consequences of forced immigration

Figure 11.5 illustrates one possible case of forced migration. Suppose that the shaded area  $J$  represents the portion of slave labor's earnings that must be devoted to feeding, clothing, sheltering, and otherwise caring for the slaves so that they remain able and willing to work. In this case, forced immigration will occur if the discounted value of future earnings of the slave owners, equal to the area  $G+H+J$ , is greater than the cost of acquiring and transporting the slaves to the destination country. If the sale of the slaves provides earnings for residents in Source, then the overall loss from the enslavement and export of natives from Source will be reduced. The net loss to Source is  $g$ ; therefore, if the slaves are sold for more than the discounted value of future area  $g$ , then under the assumptions of the model, those remaining in source gains income from the inhuman transaction. In the case of the Atlantic slave trade, the traffickers from third countries like Holland, Portugal, and England captured some of the gains over and beyond the transport costs they provided. Note that this analysis ignores the social consequences of slavery, which may be highly negative for the source and destination countries.

The model suggests that international slavery is more likely to occur if, all other things equal, (1) people can be inexpensively enslaved, (2) international transport of slaves is not very costly, (3) slaves employed in their destination country generate a large surplus over and above their maintenance costs, and (4) alternative forms of labor are more expensive than slave labor. The model suggests that the Atlantic slave trade flourished because slaves could be inexpensively acquired in Africa, traffickers maximized profit by cramping large numbers of slaves into their small ships in rather uncomfortable conditions, and the employment of slaves on plantations and in mines reaped their owners large surpluses. It cost much more to entice workers from Europe to immigrate and work in the jobs slaves were forced to perform. This is not to say that employers in the Western Hemisphere did not seek other workers. Indentured workers from India and China were brought to many British colonies in the Caribbean, for example, although this occurred mostly after Britain prohibited slavery. In short, the slave trade was motivated by profit, and it

endured because it continued to be profitable. The surplus accruing to the slave owner, H, was more than large enough to pay for the slaves, their transportation, and their maintenance.

Political economy factors also influence the likelihood of slavery and forced immigration. For example, the owners of other factors of production in the source country may lobby their government to prohibit or prevent the enslavement of members of their population because the forced departure of labor from Source reduces their welfare. On the other hand, workers in Source may welcome the capture and forced departure of workers who compete with them in the local labor market, especially if the enslaved workers are in other ways deemed socially undesirable. Such an outcome becomes politically more likely if there are ethnic or racial divisions within the source country, hence it becomes easy to imagine why authorities in source countries effectively cooperated in the slave trade. For example, in Africa it was often rival tribes that delivered slaves to the European slave traders.<sup>3</sup>

### ***11.5.2 Other Oppressive Forms of Immigration***

Slavery is no longer officially sanctioned anywhere in the world. But, this certainly does not mean all migration is now entirely voluntary and free. There is disturbing evidence that some of the immigration occurring in the world today is at least partially involuntary. For example, there are estimates that as many as 1 million women and children are bought and sold worldwide each year as bonded laborers, mail-order brides, or as sex workers (Williamson, 2000). The international trafficking in people may be as important a source of revenue for international organized crime groups as drugs and guns.

One source of revenue for international traffickers of people is supplying bonded labor to sweatshops located within developed countries. Where import barriers prevent foreign products from entering an economy, as in the case of clothing in most developed economies, traffickers have huge incentives to move low-wage labor inside the protected markets. A recent report claims that there are at least 100,000 illegal immigrants working in “contract slavery,” or bonded labor, in Europe, often in small clothing industries (*Business Week*, 2000). Organized traffickers recruit workers in the poorest parts of China, India, Bangladesh, and other developing countries, offer to transport them to jobs in Europe in exchange for future payments that effectively force them to work for nearly nothing during their first few years abroad. For example, one Indian trafficker living in Britain, Jogindir Singh Kaile, smuggled thousands of fellow countrymen from India to Britain. He charged \$10,000 per person for the journey, and then forced the workers to repay him by working in sweatshops that made clothing under contract to subcontractors

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<sup>3</sup> See, for example, Gates (2010).

who in turn contracted with the large clothing firms that supplied leading retailers. Until he was arrested in 2000, Kaile reportedly earned a profit of several thousand dollars per immigrant, more than enough to make him a millionaire (*Business Week*, 2000).

The system of *sponsorship* used to grant immigrant visas in the oil-rich Persian Gulf states may lead to de facto enslavement of immigrants. In some Persian Gulf states, immigrants must be sponsored by a national citizen, who then gains exclusive rights to the labor of those immigrants as long as they remain in the country. Large employers such as construction companies routinely sponsor large numbers of workers supplied by recruitment firms operating in low-wage countries such as Pakistan, India, and Bangladesh. The International Labour Organisation (ILO) contends that local labor laws are often ignored when it comes to these foreign workers. According to Allen (2000), “Low pay, late pay, and 18-h days are often the norm. A labourer will earn an average of \$110 a month, be expected to repay the labour supply company for his visa (\$1,400) and send money back to his family. Protest means instant deportation.” Some of the worst abuses are by individuals who sponsor foreign workers to become housemaids and nannies. As reported by Allen, “They are often unpaid, work 18 h a day, and have no days off. They are unable to complain because they are prisoners to the villas and apartments they keep clean.”

The Gulf states defend the practice of sponsorship. According to one academic in the United Arab Emirates, “They want to be here. They earn good money, \$15 billion [in total] a year. In their own countries they would be out of work and living in sewers.”<sup>4</sup> Some libertarians argue that immigrants voluntarily enter into these onerous arrangements, but such a seemingly rational view of human action ignores the dire economic circumstances that are generally to blame for the decision to indenture oneself or for parents’ willingness to entrust their children to human traffickers. There is not much difference between choosing to indenture oneself under conditions of destitution and being forced into slavery. Until sound economic policies end needless starvation and destitution and the enforcement of human rights ends the despicable exploitation of desperate humans by other humans, we will no doubt continue to be shocked by trafficking in willing humans desperate to improve their dismal circumstances.

## 11.6 Summary and Conclusions

In earlier chapters we have modeled immigration as a one-directional, one-time decision motivated by the welfare gains captured by the immigrants themselves. In this chapter, we looked at some variations on that theme. First, many immigrants actually move to another country for some limited amount of time and then return to

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<sup>4</sup> As quoted in Allen (2000).

their native countries. In general, a complete study of immigration needs to recognize that there is also *return migration*, and often such return migration is part of a more complex decision to *temporarily* immigrate overseas. Often, destination country immigration policies explicitly require immigration to be temporary. Second, some immigrants are refugees escaping especially onerous economic, social, or political conditions, and their decision to immigrate has little to do with the usual assumed comparisons of destination country incomes versus source country incomes. And thirdly, some immigrants are forced to move to another country against their will. Slavery has been outlawed everywhere today, but some forms of immigration today still border on forced migration. People with few options for dealing with their dismal social and economic conditions are effectively forced into various forms of servitude.

Despite some of the differences between the one-way immigration we have described in earlier chapters and the return, temporary, and forced immigration described in this chapter, we were still able to make use of the basic labor market model of immigration. Nevertheless, there is clearly a need for economists to develop more detailed models of immigration to more accurately analyze the various different categories of immigrants. As the global economy increasingly integrates labor markets across countries we will, no doubt, see workers making more frequent and more varied locational decisions. People will more often immigrate several times, they will frequently return to their home labor markets, and they will be motivated by many more factors than simple wage and income differentials.

The Dustmann (2001) model, which makes the decision to immigrate, the length of stay overseas, and the date for returning part of a single migration decision, provides a promising direction. It would be useful to incorporate people's changing economic and social circumstances more thoroughly into immigration models in order to reflect how immigration responds to family needs, opportunities to study abroad, career choices, and, finally, retirement choices. Some locations are better for raising children, others are home to specialized universities and institutes, multinational firms employ people in multiple locations, and retirement may be more pleasant in a warm climate. We are already seeing a steady increase in the number of people who live in several countries as children, students, workers, and retirees. These choices all imply different motivations and the weighing of different factors. A richer model incorporating changing economic and social circumstances could, in theory, generate several migrations over a person's lifetime. Then, if we can also add the effects of discrete changes in personal circumstances, such as meeting a spouse, discovering special business opportunities, and other economic, social, and political factors, perhaps we will then be able to come closer to accurately modeling the complex immigration patterns we observe in the world.

Finally, this chapter's focus on discriminatory temporary immigration programs, refugees, and slavery serves to remind us that immigration is a very diverse phenomenon. The mythical image of immigrants as ambitious people who move permanently to another country to better themselves is just that, a mythical image. The truth is much more complex, and sometimes much more dismal. The extent of human trafficking and modern forms of slavery demands much more international action.

And, mainstream economics needs to stop modeling immigration as an impersonal shift of a factor of production. By effectively *commodifying* immigrants as mere labor units, the economics profession effectively enables the various forms of abuse, exploitation, and enslavement that still characterize global immigration.

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# Chapter 12

## Unauthorized Immigration

**Abstract** In nearly all high-income countries, immigration policies and economic incentives clash, and the result is *unauthorized immigration*. There is no accurate data on the scope unauthorized immigration, but estimates permit some empirical analysis. Evidence suggests that the motives for immigrants to enter the destination country without formal authorization are the same as those that lead immigrants to seek legal entry, and the static labor market model of immigration can be used to explain the flows of unauthorized immigrants. There are additional factors to consider, however, and these concerns extend beyond the dynamic effects examined in the previous chapter. Unauthorized immigrants do not normally enjoy the same civil rights as legal immigrants, so the potential rewards from immigrating are unlikely to be the same for legal and unauthorized immigrants. These complex outcomes help to explain why so many destination countries implicitly accept substantial numbers of unauthorized immigrants, even though their formal laws and regulations call for their strict punishment and expulsion.

*If the migrants run into some new... wall, they will simply go around it. Or over it. Or under it. Mexicans will show as much ingenuity in getting into the United States as Americans would in breaking into British Columbia if the Canadian minimum wage were \$70 an hour.<sup>1</sup>*

### 12.1 Introduction

The strong incentives for people to immigrate from low- to high-income countries clash with the restrictive immigration policies of high-income destination countries. One common result of this clash between policies and economic incentives is *unauthorized immigration*. We obviously do not have very accurate data on

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<sup>1</sup> Marc Cooper (2006, May). Exodus, The ominous push and pull of the U.S.–Mexico border. *The Atlantic Monthly*, p. 132.

unauthorized immigration; unauthorized immigrants seldom reveal their status for fear of being detected and deported back to their native countries. Estimates do exist, though. For example, the ILO estimated that in 1991 there were 2.6 million immigrants living illegally in Western Europe. That number was estimated to have doubled by the end of the decade.<sup>2</sup> The United States Immigration and Naturalization Service estimated that there were about five million unauthorized workers in the USA in 1996, and that the number had risen to six million by 2000.<sup>3</sup> U.S. Census Bureau data for 2000 suggest the number was closer to nine million, however.<sup>4</sup> The Pew Foundation estimated that in 2005 there were between 10.5 and 11.7 million unauthorized immigrants in the USA. The Pew Center offered a more precise estimate of 12 million for 2007, which turned out to be a peak because by 2009 the deep recession in the USA led the Pew researchers to estimate unauthorized immigrants had shrunk to 11.1 million in 2009.<sup>5</sup> Unauthorized immigrants thus account for about 25–30 % of all immigrants in the USA, as official estimates by the Census Bureau showed close to 40 million foreign-born residents in the USA in 2010.

Unauthorized immigration occurs in nearly all high-income countries. Worldwide, the International Organization for Migration (IOM) estimated that 25.5–32.1 million people (or 10–15 %) of the world's total 214 million international migrants were unauthorized in 2010. There are unauthorized immigrants in many middle-income emerging economies, resource-exporting developing economies, and even some low-income economies located near even lower-income economies. There are several million unauthorized immigrants in South Africa, which itself is not a wealthy country. But South Africa offers much higher wages than most of its neighbors. Even though wages are even higher in developed countries in Europe, another destination for African immigrants, it is usually much easier to get to South Africa. “There are no oceans to cross. From anywhere below the Sahara, anyone with a few rand for the truck-driver can hitch a ride south. South Africa’s land border is roughly 4,000 km long and extremely porous.”<sup>6</sup> Foreign workers in South Africa are important to neighboring countries; miners’ remittances account for about 10 % of Lesotho’s GDP.

The motives for immigrants to enter the destination country illegally are the same as those that lead immigrants to seek legal entry, and the static labor market model of immigration can be used to explain the flows of unauthorized immigrants.

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<sup>2</sup> The Economist (1998, April 4). Millions Want to Come.

<sup>3</sup> Data from the Immigration and Naturalization Service, Office of Policy and Planning, INS Web site, [www.ins.gov](http://www.ins.gov), January 21, 2001.

<sup>4</sup> Christopher Parks and Henry Tricks (2000, February 23). Illicit angels of America’s economic miracle. *Financial Times*, Everett Ehrlich (2001, March 7). The mystery of the missing millions. *Financial Times*, and Paul Magnisson (2001, April 9). The Border Is More Porous than You Think. *Business Week*.

<sup>5</sup> Jeffrey Passel and D’Vera Cohn (2010, September 1). U.S. unauthorized immigration flows are down sharply since mid-decade. *Pew Hispanic Center* news release.

<sup>6</sup> The Economist (2000, September 2). South Africa’s migrant workers. *A Ticket to Prosperity*.

Nevertheless, unauthorized immigrants do not normally enjoy the same civil rights as legal immigrants, so the potential rewards from immigrating are unlikely to be the same for legal and unauthorized immigrants. Also, employers face possible punishment for hiring unauthorized immigrants. Employers are likely to lower the wages paid to unauthorized immigrant workers in order to compensate for the likelihood of their being punished or having production disrupted by sudden arrests of workers. There are other interesting questions, such as why so many destination countries implicitly accept substantial numbers of unauthorized immigrants, even though their formal laws and regulations call for their strict punishment and expulsion. Unfortunately, we have few answers. There has simply been very little analysis of unauthorized immigration, in large part because undocumented immigrants are not easily counted and reliable data is simply not available.

## 12.2 Estimating Unauthorized Immigration

Unauthorized immigrants are not easily counted because they intentionally avoid detection for fear of possible deportation. In countries like the USA, Germany, or France, where the number of unauthorized immigrants is large, population censuses seriously undercount the true populations because they miss many unauthorized immigrants. Census data are not very useful for studying patterns in unauthorized immigration. Economists have revised various estimation methods that make use of partial data and various proxies.

### 12.2.1 The Residual Method

Hanson (2006) describes the most common method for estimating unauthorized immigration. He begins with the following formula:

$$U_t = F_t - L_t = F_t - \sum_{j=0}^{\infty} L_j(1 - d_j - im_j). \quad (12.1)$$

The variable  $U_t$  represents the stock of unauthorized immigrants in year  $t$ ,  $F_t$  is total foreign-born population in the country in year  $t$ ,  $L_j$  is the official count of legal documented immigration in each year from  $j = 0$  up to the year  $t$ ,  $d_j$  is the mortality rate for the group of immigrants entering each year  $j$ , and  $im_j$  is the emigration rate for each immigrant group documented as entering in each year  $j$ .

A complicating factor is the continual adjustment of an immigrant's status from unauthorized to legal, and vice versa, in many countries with complex immigration regulations. Immigrants with temporary work permits may overstay their allotted time, and unauthorized immigrants may change their status by marrying a legal

resident, paying a fine, or gaining a legal visa through separate legal channels. The 1986 Immigration Reform and Control Act (IRCA) in the USA provided for an amnesty that eventually gave several million unauthorized immigrants legal resident status. Now, in the first decade of the 2000s, there is pressure for another general amnesty for at least some of the estimated 10–12 million unauthorized immigrants residing in the USA. Ideally, we need to incorporate these flows of persons changing from legal to unauthorized, or unauthorized to legal, status to the above equation. Equation 12.1 can be amended as follows:

$$U_t = F_t - \sum_{j=0}^t L_j(1 - d_j - im_j - v_j + u_j) = F_t - L_t, \quad (12.2)$$

where all variables are the same as in Eq. 12.1 with the addition of  $v_j$  to represent unauthorized immigrants who gain legal residence visas in year  $j$  and  $u_j$  to represent formerly legal immigrants who lose their legal status in year  $j$ .

Estimates of unauthorized immigration are inherently inaccurate because it is simply impossible to come up with accurate estimates for all, if any, of the right hand side variables in Eq. 12.2. The estimate of the total unauthorized immigrant population  $U_t$  is the residual value after inserting values for all the other variables in the equation.

Note that researchers are not likely to have actual numbers for the variables in Eq. 12.2. They thus have to make various assumptions about the patently inaccurate data that is available to them. For example, the estimate  $U_t$  in Eq. 12.2 depends critically on the accuracy of the values for  $F_t$  and  $L_j$  that are inserted into the equation. Most researchers assume that both  $F_t$  and  $L_j$  are undercounted in national censuses and other population surveys, with  $F_t$  undercounted more than  $L_j$ . In the USA, for example, there is substantial evidence suggesting minority groups are undercounted, and the Census Bureau has evidence that over 2 % of Hispanics, to which the largest US immigrant group belongs, are not counted in the Census. Assumptions about the extent of undercounting must, therefore, be made. Specifically, the estimate of the total foreign-born population is

$$F_t = \mathbf{F}_t(1 - \lambda_t) + \varepsilon_t, \quad (12.3)$$

where  $\lambda_t$  is the fraction of the true total foreign population,  $\mathbf{F}_t$ , that is not counted, and  $\varepsilon_t$  represents an unbiased random error. Hence, the best estimate of the true total foreign population would be

$$\mathbf{F}_t = \frac{F_t}{1 - \lambda_t}, \quad (12.4)$$

provided the fraction of undercounting  $\lambda_t$  is correct. Similarly, the legal immigrant population is counted as

$$L_t = L_t(1 - \zeta_t) + \varepsilon_t \quad (12.5)$$

where  $\zeta_t$  is the fraction of the true total legal immigrant population,  $L_t$ , that is missed by the survey or count.

If the difference between the total and legal immigrant populations is relatively small, which will be the case in countries where unauthorized immigrants make up a small percentage of all immigrants, then different assumptions about the sizes of  $\lambda_t$  and  $\zeta_t$  result in very large differences in estimates of the total unauthorized immigrant population. Table 12.3 below presents estimates using the residual method under alternative undercount assumptions.

The most popular estimates of the USA unauthorized immigrant population, at least in terms of the frequency with which they are quoted in the press and by political leaders, are those published by the Pew Hispanic Center, as for example Passel (2006). To get their estimate of the number of foreign-born American residents, Pew researchers start with the Census Bureau's annual Current Population Survey, which is based on 80,000 interviews in which households are asked where each member of their household was born.<sup>7</sup> After adjusting the Hispanic numbers by 10 % for suspected Census Bureau underestimates, these results are then extrapolated to the estimated whole US population. In 2005, this procedure yielded an estimate of 36 million foreign-born people in the USA. Next, the Pew researchers sum the annual numbers of permanent residence visas issued, numbers that sum back for decades. Next, they assume that immigrants die at the average rates for each age group of the entire population, and they use estimates for return migration from several studies. Pew researchers admit the return migration numbers are the least reliable component in the estimation procedure. Finally, the estimated number of legal immigrants is subtracted from the estimated total foreign born population to arrive at the residual estimate of unauthorized immigrants.

### **12.2.2 Other Methods for Estimating Unauthorized Immigration**

Researchers have devised some other ways to estimate unauthorized immigration. These estimates of unauthorized immigration can be augmented with other data from assorted case studies, local government records of services provided to immigrants, and data from countries that supply most of the unauthorized immigrants. For example, the reduction in population in Mexican communities not compensated by increases in population in other Mexican communities most likely implies that the missing persons immigrated to the USA and are part of the unauthorized workforce there.

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<sup>7</sup> The Pew method is detailed in most Pew Hispanic Center reports; this and other methodologies are also discussed in Carl Bialik (2006, April 5). Fuzzy math on illegal immigration. *Wall Street Journal*.

Another, potentially more accurate, estimation method was used by Snel, de Boom, Engbersen, and Weltevrede (2005), who estimated the unauthorized immigrant population in the Netherlands using the two-step capture/recapture method from the field of animal ecology. This method has been used to estimate animal stocks. Specifically, an estimate of the number of fish in a pond can be found by, first, capturing a certain number of fish, tagging them, and releasing them back into the pond. Second, after enough time has passed for the fish to randomly disperse throughout the pond, another group of fish is captured in the pond. Some of the fish in the second capture will be recaptures, as evidenced by their tags. By noting the proportion  $\rho$  of recaptures among the 100 fish captured in the second round, the total number of fish in the pond can then be approximated as the number of fish captured in the first round divided by  $\rho$ . For example, if 100 fish are captured and tagged in the first round, another 100 fish are captured in a second round, and five of the fish captured in the second round are tagged from the first catch, then the total fish population in the pond is estimated to be  $100 / 0.05 = 2,000$ . Snel et al. (2005) estimate the number of unauthorized immigrants in the Netherlands by examining police records of random identity checks in two successive periods of time.

A study by the Swiss research group GFS (2005) used a very different method, called the Delphi method, to arrive at a consensus estimate of unauthorized immigrants residing in Switzerland. This method consists of a series of meetings, discussions, and revisions of estimates by independent researchers and panels of experts. The independent researchers must justify their estimates to the experts, who render judgments. Then, the researchers revise their estimates, followed by new judgments by the experts, new revisions by the researchers, etc., until there is a convergence of opinion. The accuracy of the Delphi approach depends critically on the quality of the initial estimates, the knowledge of the experts, and the personalities of the researchers and experts.

The US government has generated measures of unauthorized immigrants from data on the number of detainees apprehended by the US Border Patrol. These studies assume that a specific percentage of unauthorized border crossings are stopped by the Border Patrol, and thus as the actual number of detainees varies, total unauthorized crossings are assumed to vary proportionately. Of course, these numbers are then used to construct a total stock of unauthorized immigrants in the country after making further adjustments for return migration and age-specific death rates. It is pure speculation whether the two-step capture/recapture method described above can be used in these cases, or what adjustments are necessary.

Researchers in Spain, Italy, Portugal, and Greece have used the records of recent legalizations of unauthorized immigrants in those countries. When unauthorized immigrants step forward and reveal themselves during the legalization process, researchers can estimate what the unauthorized immigrant population was prior to disclosure of legal status. Of course, the method has to make assumptions about the proportion of unauthorized immigrants that volunteer to legalize their status. This proportion varies depending on the criteria that must be satisfied for legalization and the trust that immigrants have in the legalization process. For example, if there

is widespread fear that the process is a pretext for their capture and deportation, few unauthorized immigrants are likely to participate.

It should be clear from this discussion that reported data on unauthorized immigration are unreliable. However, researchers have to proceed with the data they have available to them and make the best of it. It does mean that we have to treat the results of empirical studies of unauthorized immigration with some skepticism. In a practical sense, it means that unless a statistical result “stands out like a sore thumb,” we should probably refrain from making strong claims about having discovered some truth about unauthorized immigration.

## 12.3 What Do the Estimates Tell Us?

Despite the difficulties of estimating unauthorized immigration, estimates are available. Given the difficulty of counting unauthorized immigrants and the inherent inaccuracy of indirect methods, estimates of unauthorized immigrants vary widely. Across the various estimates of unauthorized immigration, it is clear that the number of unauthorized immigrants has grown rapidly over the past several decades, and for most destination countries, unauthorized immigrants constitute a substantial portion of the overall population.

Table 12.1 presents estimates of the unauthorized immigrant populations in a variety of developed economies during the first decade of the twenty-first century. These estimates were derived using one or more of the methods described above, all of which have shortcomings. These are all estimates with wide margins of error. Nevertheless, several things stand out from the estimates in Table 12.1. First, unauthorized immigration in isolated island countries like Australia and Japan is much smaller as a proportion of total population than in the USA or Western

**Table 12.1** Estimates of the unauthorized immigrant population: selected OECD countries, 2005<sup>a</sup>

Country	Number	% of population	Year
Australia	50,000	0.2	2005
Japan	210,000	0.2	2005
The USA	10,300,000	3.6	2004
The Netherlands	125,000–230,000	0.8–1.4	2004
Switzerland	80,000–100,000	1.1–1.5	2005
Spain	690,000	1.6	2005
Italy	700,000	1.2	2002
Portugal	185,000	1.8	2001
Greece	370,000	3.4	2001

Source: Table 1.6 from OECD (2006), *International Migration Outlook 2006*, Paris: Organisation for Economic Co-operation and Development, p. 46

<sup>a</sup>The original studies from the Netherlands and Switzerland provide only ranges rather than point estimates

**Table 12.2** Pew foundation estimates of the unauthorized migrant population in the USA: 2007, 2010

	2010	2007
California	2,350,000–2,750,000	2,600,000–2,900,000
Texas	1,450,000–1,850,000	1,350,000–1,600,000
Florida	725,000–950,000	950,000–1,150,000
New York	575,000–775,000	725,000–975,000
US total	10,700,000–11,700,000	11,500,000–12,500,000

From Table A3, Jeffrey Passel and D'Vera Cohn (2011), "Unauthorized Immigrant Population: National and State Trends, 2010," Report of the Pew Hispanic Center, Pew Research Center, February

European countries. It is also clear that unauthorized immigration is more than a marginal phenomenon. With unauthorized immigrants comprising as much as three or more percent of some countries' populations, this phenomenon must have substantial economic consequences.

Out of the total estimated foreign-born population in the USA in 2005, about 30 % of all US immigrants were thought to be in the country illegally. The Pew Hispanic Center (2006) further estimated that in 2005, 56 % of the unauthorized immigrants were from Mexico, 22 % were from elsewhere in Latin America, and 13 % were from Asia. The rest were from Canada, Europe, the Caribbean, and Africa. Compared to legal immigrants, unauthorized immigrants are much more likely to be from a neighboring country like Mexico. This conclusion reflects Table 12.1, which shows that distant island countries like Australia and Japan have relatively fewer unauthorized immigrants.

With a common 3,000 km border, it is difficult for the USA to stop Mexican immigrants who can increase their incomes tenfold by crossing from one side to the other of the border. Most other unauthorized immigrants to the USA arrived through normal border crossings with tourist, student, or other temporary visas, although border apprehensions suggest that some unauthorized immigrants from other countries also cross the border from Mexico. The highest concentrations of unauthorized immigrants in the USA are in the border states of California and Texas. Table 12.2 presents estimates by the Pew Hispanic Center for the USA and several individual states in 2010.

As an illustration of the questionable accuracy of estimates of unauthorized immigration, Table 12.3 presents several alternative estimates of the unauthorized immigrant population in the USA for the period 1990–2010. The US Immigration and Naturalization Service's (INS) and Department of Homeland Security estimates are based on border apprehensions, as stated earlier. The remaining estimates are based on finding the residual between legal immigrants estimated from immigration statistics and estimates of the total foreign born population from the decennial Census and intermediate Census Bureau surveys. The variations in the estimates are due to alternative assumptions about the undercounts in Census Bureau surveys and counts. For example, in Table 12.3, Bean et al. (2001)

**Table 12.3** Alternative estimates of unauthorized immigrants in the USA (thousands)

Undercount rate	INS	Census Bureau Study			Bean et al. (2001)			Pew (2006)
		10 %	15 %	20 %	15 %	20 %	25 %	
1990	3,500	3,766	4,430	4,707	—	—	—	—
1995	5,146	—	—	—	—	—	—	—
2000	7,000	8,705	10,242	10,882	—	—	—	—
2001	—	—	—	—	5,918	7,751	9,864	—
2005	—	—	—	—	—	—	—	11,100
2010	11,600	—	—	—	—	—	—	11,200

Source: Hanson (2006), Table 1, p. 875. The studies shown are: INS (2001); Joe Costanzo, Cynthia Davis, Caribert Irazi,Daniel Goodking, and Roberto Ramirez (2001), “Evaluating Components of International Migration, The Residual Foreign Born Population,” U.S. Bureau of the Census Working Paper No. 61; Frank D. Bean, Rodolfo Corona, Rodolfo Tuirán, Karen A Woodrow-Lafield, and Jennifer Van Hook (2001), “Circular, Invisible, and Ambiguous Migrants: Components of Difference n Estimates of the Number of Unauthorized Mexican Migrants in the United States,” *Demography*, Vol. 38(3), pp. 411–422; Jeffrey S. Passel (2006), “The Size and Characteristics of the Unauthorized Migrant Population in the U.S.; Estimates Based on the March 2005 Current Population Survey,” Research Report, Pew Hispanic Center, March 7; Michael Hoeffer, Nancy Rytina, and Bryan Baker (2011), “Estimates of the Unauthorized Immigrant Population Residing in the United States: January 2011,” Washington, D.C.: U.S. Department of Homeland Security, Office of Immigration Statistics, March; and Jeffrey Passel and D’Vera Cohn (2011), “Unauthorized Immigrant Population: National and State Trends, 2010,” Report of the Pew Hispanic Center, Pew Research Center, February

generated estimates of the unauthorized immigrant population assuming the Census Bureau undercounts unauthorized immigrants by 15–25 %; these assumptions are justified by the results from Bean and Van Hook (1998).

## 12.4 Some Characteristics of Unauthorized Immigrants

It is difficult to describe the characteristics of unauthorized populations residing in the principal destination countries because they are not a homogeneous group. However, the Pew Hispanic Center has taken all available data from the Census Bureau and other government agencies to compile several studies that, for the first time, shed some light on who exactly are the unauthorized immigrants in the USA (Passel 2006).

Out of the 11 million or more unauthorized immigrants in the USA in 2005, the Pew Center estimates that two-thirds arrived in the USA after 1995, 40 % after 2000. This implies that between 2000 and 2005, close to one million immigrants entered the country illegally each year. The study estimates that during the 1980s about 200,000 immigrants entered the USA illegally, between 1990 and 1995 about 400,000 entered each year, and close to 600,000 entered each year in the latter half of the 1990s. The study finds that slightly over half of all unauthorized immigrants in the USA in 2005 were natives of Mexico, and another 20 % are from elsewhere in

Latin America. Asia was the source of 13 % of the unauthorized US population, and Europe and Canada contributed 6 %, and Africa 3 %. Overall, out of the total US foreign-born population of 36 million, unauthorized immigrants accounted for 11 million, or 30 % of the total. Also, the Pew Center's (2006) research suggests that about 60 % of unauthorized immigrants entered the USA by crossing the border clandestinely; the other 40 % entered through normal entry points and then overstayed visas, student visas, or other temporary entry permits.

The Pew Hispanic Center also estimated that, in 2005, unauthorized immigrants consisted of 5.4 million adult males (49 %), 3.9 million adult females (35 %), and 1.8 million minors (16 %). Immigrant families were not neatly divided between fully documented and unauthorized immigrants. Nearly 15 million people lived in 6.6 million families that had members who were unauthorized immigrants. Therefore, there were about four million legal immigrants, US citizens, and native-born Americans who were part of families that included unauthorized immigrants. About 3.3 million were children born in the USA who were US citizens. This finding complicates the policy debate over what to do about unauthorized immigrants already living in the USA.

Another important finding by the Pew Hispanic Center's research on unauthorized immigrants is that just short of 5 % of the US civilian labor force consists of unauthorized immigrant workers. While 83 % of all adult males in the USA are in the active labor force, 94 % of unauthorized adult male immigrants in the USA were working in 2005. Finally, unauthorized immigrant workers are highly concentrated in certain US industries, most notably in relatively low-wage jobs in the agriculture, construction, food processing, and service industries.

## 12.5 The Economic Analysis of Unauthorized Immigration

Very little of the early research on unauthorized immigration was done by economists. Sociologists led the way in analyzing why immigrants crossed borders illegally, where they came from, and how they survived in their destination countries.<sup>8</sup> Perhaps empirically-minded economists were discouraged from analyzing unauthorized immigration due to the lack of reliable data on unauthorized immigration. Whatever the reasons, economists' focus on legal immigration flows has limited their analysis of immigration in several critical ways. First of all, since nearly one-third of all immigrants in the USA are in the country illegally, any analysis focusing only on legal immigration inevitably gives an incomplete picture of immigration. Second, statistical analysis using only an arbitrary two-thirds of a total sample will almost certainly result in biased conclusions, especially because the status of being unauthorized uniquely alters an immigrant's opportunities and economic outcomes. Illegality imposes costs and reduces the potential gains from

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<sup>8</sup> See, for example, the review of the sociology literature by Espenshade (1995).

immigration. Unauthorized immigrants do not enjoy the same legal protections and privileges as legal immigrants do, and they tend to have fewer employment and living options available to them. They often face various forms of discrimination and exploitation in the labor market, housing, education, and social services. Third, the inflows and outflows of unauthorized immigrants do not react to shifts in legal barriers to immigration in the same way as legal immigrants. In most destination countries, legal barriers to immigration cause a backlog of people seeking to immigrate.

There is some evidence that flows of unauthorized immigrants more closely reflect current economic and social conditions than legal immigration flows. For example, the Pew Hispanic Center in 2010 noted that the economic recession in the USA had caused inflows of unauthorized immigrants to slow down sharply, and the total stock of unauthorized immigrants in the USA actually declined between 2007 and 2010. Given the unchanging quotas on legal immigration in many immigrant destination countries, flows of unauthorized immigrants, the residual between the quantity of legal entry visas and underlying demand, seems to over-react to changes in employment opportunities and economic conditions.

For all these reasons, it is important to explicitly analyze illegal immigration. We cannot assume that unauthorized immigration, which is such a substantial portion of all immigration, can be understood by analyzing only legal immigration. Somehow, the data problems must be overcome.

### ***12.5.1 The Supply and Demand for Unauthorized Workers***

The standard labor supply and demand model of immigration can guide our discussion of the determinants of unauthorized immigration. First, there are costs to unauthorized immigration, which may be higher or lower than legal immigration. These costs are related to time, distance, and the costs of penetrating the barriers a destination country has erected to prevent the entry of unauthorized immigrants. The bureaucratic procedures for acquiring work or residence visas in destination countries can take a long time, sometimes years. Hence, immediate illegal entry can be an attractive alternative for many immigrants who do not qualify for visa categories for which visas are quickly available, such as highly educated workers or business executives.

Legal immigration usually involves other direct costs, such as transportation and legal fees. The USA charges some immigrants up to \$5,000 for certain work visas. Unauthorized immigrants evade such legal charges, but illegal entry introduces other costs that legal immigrants do not encounter. For example, immigrants seeking illegal entry may contract the services of a trafficker, a people-smuggler, or a “coyote,” as the smugglers operating on the Mexico–USA border are called. Cornelius (2005) reports that coyotes charge between \$1,200 and \$1,700 (in 2000 dollars) for their services, more if the immigrant’s final destination is further inland from the border. In the United Kingdom, people-smugglers who bring Chinese

workers from China charge £15,000–20,000 (US\$27,500–35,000), which is ten times the cost of a standard airline ticket between China and Europe.<sup>9</sup> The role of gangs in the trafficking of unauthorized workers results from immigration restrictions. There is no legal way for the Chinese workers to even get to Europe. Airlines will not let passengers board without valid entry visas, and the embassies and European Consulates in China only give tourist or student visas to Chinese who can prove they have the high incomes to be tourists or overseas students. Hence, poor fortune seekers must rely on traffickers.

The supply of unauthorized immigrants is influenced by source country conditions and the particular characteristics of the immigrants. Orrenius and Zavodny (2005) find that unauthorized Mexican immigrants to the USA are neither uneducated nor highly educated; they have above-average education for Mexico but below-average education from a US perspective. Unauthorized Mexican immigrants in the USA also tend to be related to other unauthorized immigrants already in the country, which suggests that unauthorized immigrants follow family networks, not unlike many legal immigrants. In fact, the difficulties encountered by unauthorized immigrants may make family, ethnic, and language networks even more important for them.

Both the supply and demand sides of the labor market for unauthorized immigrants are affected by overall economic conditions. Hanson and Spilimburgo (1999) examine the causes of unauthorized immigration to the USA using data on apprehensions at the border under the assumption that unauthorized immigration is directly related to the number of apprehensions by the US Border Patrol. They find that decreases in Mexican wages sharply increase border apprehensions, and, by assumption, unauthorized immigration to the USA within months. They also find that US wages have less influence on the flows of unauthorized immigrants from Mexico to the USA. This result does not accord with the more traditional literature on immigration, which gives destination country wages a large influence. In Bodvarsson and Van den Berg (2006), on the other hand, we use annual county data derived from census studies and updates and find that Hispanic immigration to the USA is more responsive to US economic conditions than source country conditions. The differences in findings can easily be explained by the differences in data sources. Their weekly data gave Hanson and Spilimburgo the significant advantage of being able to measure short-term responses to changes in economic conditions, something annual or decennial census data cannot do. Espenshade (1995) points out the difficulties with using border apprehensions to proxy unauthorized immigration, although he admits that there are no alternatives to using border apprehension data to quantify weekly or monthly changes in unauthorized immigration.

Following his survey and analysis of the motivations for unauthorized immigrants from Mexico to the USA, Hanson (2006) reaches the more general

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<sup>9</sup> Marc Champion and Matthew Kaminski (2000, June 21). Availability of work in London Lures Chinese migrants. *The Wall Street Journal*.

conclusion that it is income differences between source and destination countries that are directly correlated with immigrant flows. He also concludes that

The perspective that emerges from the data that are available is that Mexico-to-USA illegal migration increased in the 1970s and 1980s and averaged around 200,000 to 300,000 net unauthorized entries per year in 1990s and early 2000s. The population of illegal immigrants from Mexico in the USA includes a substantial fraction of women, is predominantly employed in nonagricultural jobs, and has schooling levels that are comparable to or higher than nonmigrating individuals in Mexico. Though many migrants maintain ties with family members in their origin communities, a majority appear to have settled in the USA on a medium or long-term basis (pp. 886–87).

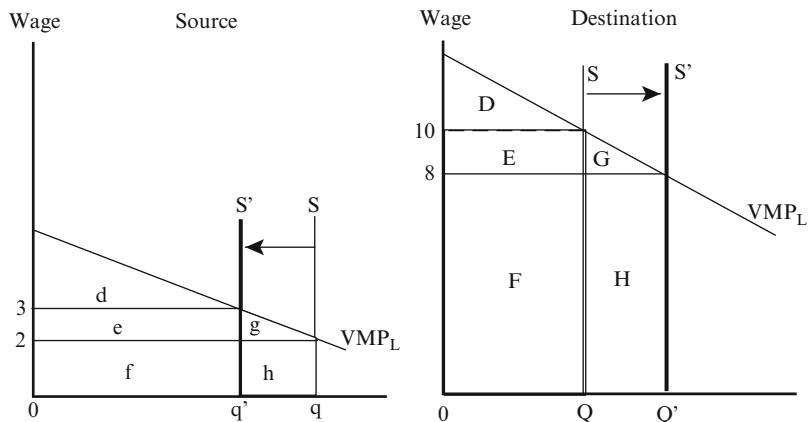
These conclusions suggest that many unauthorized immigrants in the USA are unlikely to leave the country soon. This presents a difficult situation for those who actively want to reduce the number of unauthorized immigrants by clamping down on new arrivals while letting return migration gradually reduce the total stock.

Hanson (2006) also concludes that there must be large unobserved costs to unauthorized immigration from Mexico to the USA because, given the income differences, there should be much more unauthorized immigration. Perhaps the standard model of immigration does not capture all the relevant push, pull, stay, and stay away factors. For example, poor living conditions and working conditions for unauthorized immigrants may partially offset the higher wages they earn in the destination countries. The nature of an illegal existence has been documented in the press and books, but it has not always been properly incorporated in the economics literature.

### ***12.5.2 Unauthorized Immigration as a Form of Labor Market Discrimination***

The economic costs and benefits of unauthorized immigration can be illustrated using the standard labor supply and demand model first presented in the Introduction to Part I of this book. We use this model in its most restricted form, which models immigrants exclusively as suppliers of labor. As Fig. 12.1 shows, immigration shifts the labor supply curves to the left in Source, and to the right in Destination. Wages rise in Source and fall in Destination, and the remaining workers increase their share of GDP by the area  $e$  in Source, but native workers lose a share of GDP equal to the area  $E$  in destination. The immigrants gain  $H - h$ . This model, therefore, suggests that workers in Destination will seek restrictions on immigration.

This representation of immigration may not be accurate for unauthorized immigration, however, because the model effectively assumes immigrants and domestic workers are perfect substitutes. In general, unauthorized immigrants are not treated exactly the same as otherwise identical legal immigrants and natives. Unauthorized workers often end up working for lower wages and benefits, and in poorer working conditions, than native workers. Also, unauthorized workers cannot find



**Fig. 12.1** The gains and losses from immigration without discrimination

employment in all sectors of the economy. Differences in labor union vigilance, selective government regulation, or just tradition often lead to sharp concentrations of unauthorized immigrant workers in certain industries and occupations, while virtually no unauthorized workers are found in many other industries and occupations. Table 12.4 presents some evidence of the occupational concentration of unauthorized immigrants in the USA.

Returning to the labor market model of immigration, suppose that the illegal status of immigrants results in a segmented labor market consisting of legal and illegal segments, which permits employers to pay different wages in each segment. Figure 12.2 illustrates how such a discriminatory scheme distributes economic welfare. In the case where immigrants are restricted to certain jobs that would not be performed at all in the absence of immigration (say butchering hogs or cows in unpleasant meat packing plants or picking oranges in hot fields), jobs listed along the labor demand curve from a to b, the wage for immigrant workers would fall to \$8. Total immigrant wages would be equal to area H in Fig. 12.1. If the reservation wage of native workers is \$10, or if there is a minimum wage of \$10 that is only enforced for authorized workers, then total wage income for the  $0Q$  native workers will remain equal to the gray shaded area E + F. The reservation wage (or minimum wage) of \$10 implies that native workers will not be employed in any of the lower-paying jobs between a and b, and the labor market will be perfectly segmented into two separate markets with wages of \$10 and \$8, respectively.

Notice also that owners of other factors such as capital will still gain from the immigration. They will not capture area E, which remains with native workers, but the owners of other factors do gain area G by employing immigrant workers at the lower wage of \$8. Thus, schemes whereby immigrants are allowed to work only in sectors of the economy where native workers earning pre-immigration wages would not be employed will prove beneficial to immigrants and employers without lowering the welfare of native workers.

**Table 12.4** Unauthorized immigrants in US occupations with 20 % or greater share: 2005

Occupation	Total workers	Undocumented workers number	Share (%)
Total US civilian workforce	148,615,000	7,255,000	4.9
Insulation workers	56,000	20,000	36
Agricultural workers	839,000	247,000	29
Roofers	325,000	93,000	29
Drywall installers	285,000	79,000	28
Construction helpers	145,000	40,000	27
Meat, poultry, fish processing workers	322,000	87,000	27
Textile, garment workers	83,000	21,000	26
Grounds maintenance workers	1,204,000	299,000	25
Construction laborers	1,614,000	400,000	25
Masons	198,000	49,000	25
Dishwashers	367,000	85,000	23
Production worker helpers	64,000	15,000	23
Maids, housekeepers	1,531,000	342,000	22
Graders and sorters in agriculture	74,000	16,000	22
Painters in construction industry	768,000	167,000	22
Cement masons and finishers	141,000	29,000	21
Computer hardware engineers	54,000	11,000	20
Packaging and filling machine operators	367,000	75,000	20
Packers and packagers	548,000	111,000	20
Cleaners of vehicles and equipment	427,000	85,000	20
Carpet and floor installers and finishers	330,000	66,000	20
Cooks	2,218,000	436,000	20

Source: Jeffrey S. Passel (2006), "The Size and Characteristics of the Unauthorized Migrant Population in the USA, Estimates Based on the March 2005 Current Population Survey," Pew Hispanic Center, Washington, D.C., Table 1, p. 12; downloaded from [www.pewhispanic.org](http://www.pewhispanic.org)

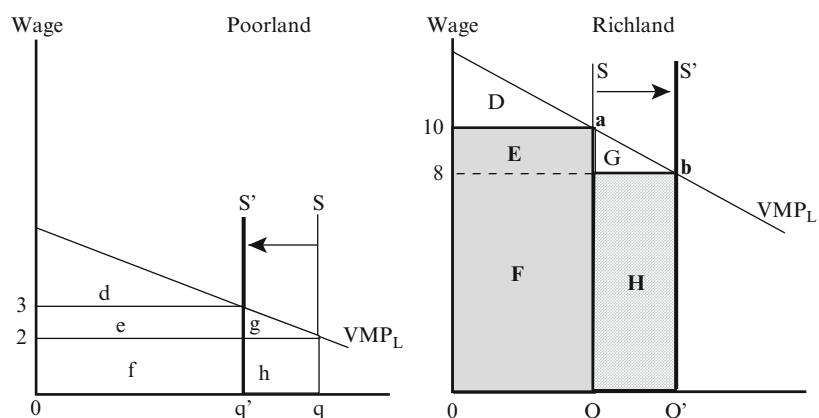
**Fig. 12.2** The gains and losses from immigration with discrimination

Figure 12.2 can be used to explain a political economy model by Hillman and Weiss (1999). This model generates an equilibrium in which both limited legal immigration and unauthorized immigration coexist. Specifically, the model assumes that the majority of voters support curbs on legal immigration because they do not want immigrants to compete in the labor markets where they work, but they do not care about labor markets in industries with less desirable work conditions. Hence, the Hillman and Weiss model results in unauthorized immigration being tolerated in sectors of the economy where domestic labor interests are not strong, while legal immigration is restricted and unauthorized immigrants are prevented by unions and police from working in the rest of the economy.

Hillman and Weiss point out that in most European countries that attract unauthorized immigrants, undocumented foreign workers usually occupy jobs that native workers are not very interested in performing. Vigilance against unauthorized immigrants is higher in the higher wage segments of the labor market for the simple reason that domestic workers are more interested in those jobs. Hence, domestic workers use their political and union powers to demand that unauthorized immigrants be barred from applying for those jobs. Thus, undocumented workers end up in certain low-paying segments of the labor market where they do not compete directly with native workers and employers actually gain surplus from employing unauthorized workers. Restrictions on unauthorized immigrants' use of public services, such as those passed by the federal and many state governments in the USA during the 1990s, also serve to keep the inflow of unauthorized foreign workers from having a negative impact on the welfare of tax-paying native workers.

### 12.5.3 *Oppression of Unauthorized Workers*

The illegal status of unauthorized immigrants gives employers in the destination country added labor market power. Unauthorized workers are in constant danger of being punished for their having entered the country illegally and deported. In the USA, for example, immigrant detention centers (essentially prisons) have grown growing from 6,300 beds in 1996 to 33,400 beds in 2011. In 2010, the Department of Homeland Security (DHS) held 363,000 immigrants in detention for some period of time in over 250 facilities across the country. This threat of imprisonment and deportation gives employers great leverage, since they can at any time dismiss an unauthorized worker by simply reporting him or her to the authorities, who will then escort the workers out of the workplace and into prison. The unauthorized workers know this, and they accordingly try hard to avoid conflict with their employers. They thus accept lower wages, poorer working conditions, longer hours, and more abuse in the workplace.

The casual evidence suggests that when employers fear punishment for hiring unauthorized immigrants they are more likely to treat unauthorized immigrants on par with legal immigrants because they have an incentive to act as though they are unaware of unauthorized immigrants' illegal status. In the USA, many employers of

unauthorized workers even contribute their share of social security payments and forward deducted taxes to the government from the immigrants' paychecks.<sup>10</sup> On the other hand, when employers do not fear punishment, they are likely to engage in mistreatment and underpayment. The *Associated Press* reported many cases of unauthorized immigrants not receiving full, or in some cases, any, payments for weeks of work for contractors hired to clean up after Hurricane Katrina damaged towns and cities along the US Gulf Coast in 2005.<sup>11</sup> A 2003 *Financial Times* story describes the plight of unauthorized Burmese workers in the border city of Mae Sot in Thailand:

Most Burmese workers receive just a fraction of Thailand's minimum wage, and risk prompt deportation by local authorities—often acting in league with enterprise owners—if they demand better conditions. Police routinely arrest, beat and threaten to deport Burmese migrants who fail to pay bribes. Deadly violence is also a growing danger. In January 2002, 17 migrants, their hands bound and throats slit, were discovered in a stream near Mea Sot. Thai police, who dubbed the murders as the "normal killing" of Burmese workers, advised villagers to float the bodies downstream, though a public outcry forced an investigation. . . In June, police in Mae Sot deported 34 Burmese workers after a labor court ordered their employer to pay them back wages.<sup>12</sup>

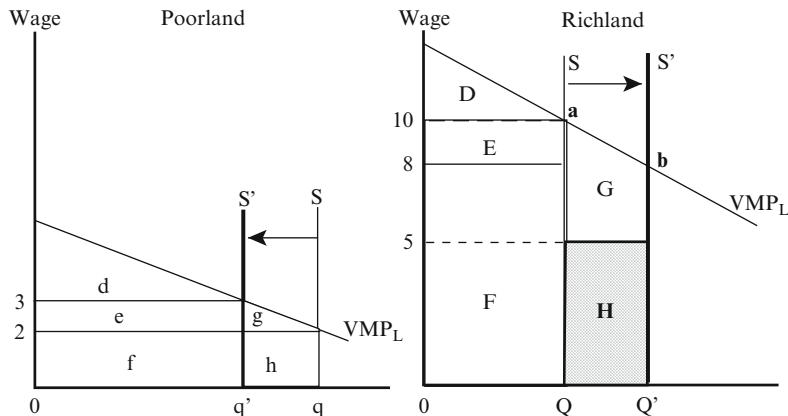
It is difficult for economists to distinguish the degree of discrimination against unauthorized immigrants, and not just because data is incomplete. For example, Massey (1987) compared a carefully assembled sample of legal and illegal immigrants, and he concluded that undocumented immigrants in the USA earned lower wages because of lower skill levels, the types of jobs that they hold, and shorter length of tenure in their jobs, not because they were undocumented per se. However, Massey's conclusions are not trustworthy because the types of jobs immigrants hold and their job tenure are influenced by their illegal status. The proper conclusion is still that the status of being an illegal worker causes wages to be lower compared to legal workers.

The models in Figs. 12.1 and 12.2 suggested that employers gain the area G from the presence of unauthorized workers willing to work at \$8. Suppose, however, that there are many foreign workers ready to work at wages below \$8, say for any wage higher than they can earn in their native countries. If employers can collude, exploit unauthorized immigrants' inability to shop around for jobs because of language barriers or threaten the workers with arrest, then employers could lower the wage for unauthorized, illegal workers to say \$5, as shown in Fig. 12.3. Now the area G is much larger. However, the immigrants still accept the work because the wage is well above the source country wage.

<sup>10</sup> Eduardo Potter (2006, June 19). Here illegally, working hard and paying taxes. *New York Times*; Miriam Jordan (2007, April 4). Even workers in U.S. illegally pay tax man. *The Economist*.

<sup>11</sup> Justin Pritchard (2005, November 5). *Immigrants often unpaid for Katrina work*. Associate Press Wire Report.

<sup>12</sup> Amy Kazmin (2003, August 4). Burmese workers find life brutal in Thailand. *Financial Times*.



**Fig. 12.3** The gains and losses from immigration with discrimination

#### 12.5.4 Discussion of the Labor Segmentation Hypothesis

To summarize the above discussion, employers gain from being able to employ less expensive unauthorized workers, and workers and employers in other segments of the economy are not too troubled by the presence in the country of unauthorized immigrants who work mostly in a few specific industries where they would not themselves care to work. Representative of this view are the comments by Rosie Olivares, a labor organizer in Fremont, Nebraska, who reacted to the presence of unauthorized workers in Nebraska's growing meat-packing industry as follows: "They're not taking jobs from anybody."<sup>13</sup> "There are only so many people who want to do that at the given pay scale," claimed a manager of the Nebraska Turkey Growers Cooperative.<sup>14</sup> In the case of unauthorized immigrants, there seem to be some implicit barriers to unauthorized immigrants competing in other labor markets, most likely by labor unions and, perhaps, by firms interested in avoiding labor conflicts. Governments may vary enforcement of immigration laws on an industry-by-industry basis in response to the different interests of firms, organized labor groups, and consumers in each industry.

There are obvious political implications of the market segmentation hypothesis discussed above. Potential employers who stand to gain G will lobby hard for legislators to close their eyes to the entry of unauthorized immigrants, and labor groups opposing the legalization of unauthorized immigrants might be willing to overlook unauthorized workers in segments of the market that would probably not exist without cheap exploited labor.

<sup>13</sup> Quoted in David Orenstein (1995, March 12). Raids won't deter illegal work force. *Lincoln Journal Star*.

<sup>14</sup> Quoted in David Orenstein (1995), op. cit.

### 12.5.5 *Temporary Work Visas: Just a Variation on Illegality?*

Various immigration policies have been devised that directly attempt to legally achieve exactly the outcome shown in Fig. 12.2. Such schemes effectively require employers to discriminate between native and immigrant workers. For example, many countries permit foreign workers to enter the country temporarily to work at specific jobs where they do not compete directly with domestic workers, and often these jobs pay substantially less than other domestic jobs. Sometimes, temporary contract workers do not have to be paid the same benefits, and certain employment taxes are waived. Seasonal jobs in agriculture and tourism often pay wages and offer work conditions that reflect effective discrimination against foreign workers.

In the 1960s, a number of Western European countries instituted temporary worker programs that brought large numbers of foreign workers from Southern European and Mediterranean countries to specific jobs in certain industries, e.g. construction. Interestingly, the strong social welfare policies and the high levels of civil and human rights in these Western European countries soon undermined the discriminatory immigration system that was intended to only temporarily bring foreign workers to perform certain jobs for which nationals were not available. Family members of the immigrants began to arrive, families formed and grew, and the temporary work permits soon began to be converted to permanent residence visas. Formerly homogeneous European societies have become much more diverse, and foreign-born residents have come to account for high proportions of the populations of most Western European countries.

The USA authorized the *Bracero Program* during World War II, which permitted Mexican workers to do seasonal work in the USA. This program was instituted because native US workers were being drafted into the armed forces for the war, and fruits and vegetables were rotting in the fields of California and Texas. Clearly, the program covered jobs that would not otherwise have been done. The program also permitted employers to pay lower wages and avoid paying other benefits. The program continued after the war, but by the early 1960s strong opposition to it had developed. Unions sought to organize native agricultural workers, and the availability of temporary workers willing to work for low wages under the special provisions of the Bracero Program undermined organized labor's ability to press for higher wages and better working conditions in the fields of California. In the early 1960s, with labor-friendly politicians leading the US Congress, the Bracero Program was ended. In 2006 and 2007, the inclusion of a temporary worker program in a comprehensive immigration bill before the US Congress undermined support and, ultimately, led to the bill's rejection. A number of industries had pressed for the temporary worker program as part of a grand bargain that also included stronger measures to curb unauthorized immigration, but organized labor groups strongly opposed the discriminatory temporary worker provision, and the bargain unraveled.

This discussion suggests that unauthorized immigration is the logical result of the destination country's political process, not an unintended or unexpected

outcome. Indeed, a number of political scientists have described immigration policy from this perspective, e.g., Andreas (2000), Massey, Durand, and Malone (2002), and Cornelius, Tsuda, Martin and Hollifield (2004). This literature recognizes that authorities have some freedom to vary the enforcement of immigration laws and regulations. Decisions on how to patrol the borders, whether to pursue employers or the immigrants themselves after they have crossed the border, and whether to punish unauthorized immigrants, their employers, or their other accomplices within the country, are all open to considerable variation. The choices made by the authorities are, therefore, political decisions that reflect the various interest groups within the destination country and how those groups are able to translate their interests into political outcomes. Employers of unauthorized immigrants seem to have been able to reduce the enforcement of immigration laws in many countries. Many articles and studies show that US immigration authorities have for many years simply not pursued unauthorized immigrants at their places of employment, although it seems to be one of the obvious places to look for unauthorized immigrants.<sup>15</sup>

### 12.5.6 Unauthorized Immigration Can Be Deadly

In June of 2000, the world was stunned by the death by suffocation of 58 Chinese migrants locked in an airtight cargo truck during a ferry crossing of the English Channel from France to the United Kingdom. Only two of the passengers survived to tell the story of their ill-fated trip from China. The 60 passengers had spent 4 months traveling from China's Fujian province via Moscow and Eastern Europe. They had paid traffickers to carry them to London, where they had been promised jobs that would pay wages well above what they could earn in their native China. European leaders replied to the tragedy by reiterating their determination to stop the trafficking of humans. But, as two reporters for the *Wall Street Journal* wrote just after the tragic event, "Despite the predictable promises of action from EU leaders, no easy solutions are on offer" (Champion and Kaminski, 2000). This tragedy reflects the strong incentives for immigration created by the large differences in wages between countries.

In Japan, companies who need low-wage workers have gotten around very firm barriers against immigration by taking advantage of a 1993 program that lets Japanese firms bring in foreign trainees for up to 3 years. Many of these trainees are in fact underpaid workers performing menial, repetitive jobs. More likely, as described in Fig. 12.2, the program was set up with the specific intention of segmenting the Japanese labor market to let foreigners perform certain jobs without impacting native workers' wages. A member of the Japanese parliament was recently caught accepting a large bribe from an organization that actively recruits

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<sup>15</sup> See, for example, the discussion in Hanson (2006), op. cit., pp. 909–910.

overseas “trainees” for Japanese companies; the parliamentarian had pushed legislation to extend the training period from 2 to 3 years. Life for these trainees is difficult, and many abandon their “training” and take unauthorized work in Japan’s underground economy.<sup>16</sup>

Increased spending on border patrols has made it more difficult for Mexicans and Central Americans to cross the Mexico–USA border at the most convenient, and safe, places. Therefore, traffickers are more frequently crossing the 2,000 mile-long border in remote areas. In 2000, 369 people died of hunger or thirst trying to cross into the USA by walking across remote deserts or riding in the backs of airtight, sealed trucks. In 2005 an estimated 472 would-be immigrants died trying to cross into the USA.<sup>17</sup> In an ironic twist, the Mexican government has launched a program to equip unauthorized immigrants with survival kits containing water, medicines, bandages, and anti-dehydration powder.<sup>18</sup> This is a case of the government of the source country spending money to help immigrants overcome border controls paid for by the taxpayers in the destination country. Even though unauthorized border crossings are down overall according to Passel, Cohn and Gonzalez-Barrera (2012), migrants are dying in the desert at the same rate that they have been for years (roughly between 150 and 250 deaths a year), according to the Web site *No More Deaths—No Más Muertos*. In the past 10 years alone, some 2,000 migrants—men, women, children and the elderly—have died in the desert clandestinely crossing from Mexico to the USA.

## 12.6 The Fiscal Costs and Benefits of Unauthorized Immigration

Unauthorized immigrants, like all immigrants, generate various externalities in the source and destination countries. The most often discussed externalities are the fiscal costs to local, state, and national governments. As discussed in Chap. 7, evidence for the USA does not support the popular belief that immigrants are a large fiscal burden, however. Except for refugees and elderly immigrants, the remaining immigrants, including unauthorized ones, use government services to a lesser degree than natives. Even when we include refugees, who are high users of government services and recipients of government transfers, immigrants as a group still use government services only slightly more often and receive only slightly more welfare payments than natives. For example, according to the 1990 census, 9 % of immigrant families received welfare payments, a percentage that was only slightly more than the 7.4 % of US-born families that received welfare

<sup>16</sup> Michiyo Nakamoto (2001, January 19). Spotlight falls on Japan’s illegal workers. *Financial Times*.

<sup>17</sup> The Economist (2007, August 24). Death in the desert.

<sup>18</sup> The Economist (2001, May 24). Sex, death and desert snafus.

**Table 12.5** Major government-sponsored programs and their availability to undocumented immigrants

Unavailable	Available
Medicare	K-12 Education, higher education in some states
Medicaid	Emergency medicaid care
Children's health Insurance (CHIP)	Substance abuse services
Food stamps	Mental health services
Supplemental security income (SSI)	Immunizations
Public housing assistance	Women and children's health services
Job opp. for low-income individuals	Public health
Child care and development	EMS

*Source:* United States Department of Health and Human Services; published as Exhibit 1 in Special Report (2006), "Undocumented Immigrants in Texas: A Financial Analysis of the Impact to the State Budget and Economy," Austin, TX: Texas Comptroller of Public Accounts, December

payments. A 1992 study for the United States Department of Health and Human Services by Kirchner and Baldwin (1992) found that pre-1982 legal immigrants to the USA living in the six states with the largest immigrant populations were found to pay more in total taxes than they received in government-provided benefits.

Also important for understanding the seemingly contradictory tolerance of unauthorized immigrants while maintaining tight restrictions on legal immigration is a study of immigration in European countries suggests that the tax-transfers ratio is not as burdensome as is often feared because governments adjust both taxes and transfer programs in order to improve the balance for native workers. Razin, Sadka, and Swagel (1998) show that for 11 European countries, taxes on workers and transfers to the poor were reduced as the percentage of immigrants in the population increased. The recent welfare reforms in the USA, which reduced benefits to noncitizens, are further evidence that the political process adjusts immigrants' access to welfare benefits as immigration rises. Hence, the fiscal burden of immigrants appears to be an endogenous variable, and politics is unlikely to let the fiscal burden become more burdensome for voting native workers. It is likely that a destination country can more easily shift government expenditures in order to minimize the overall costs of unauthorized immigrants than legal immigrants because unauthorized immigrants can more easily be excluded and discriminated against.

Unfortunately, there is almost no evidence on the fiscal effects of unauthorized immigrants. Unauthorized immigrants do not readily reveal themselves to the government authorities. Also, in many destination countries, especially those with strict civil rights laws and traditions, government service providers such as health clinics and schools do not ask immigrants to reveal their legal status. Still, given the sensitivity of state and local governments in the USA to the fiscal burden of immigration, there have been some efforts to quantify the costs and benefits to local taxpayers.

There is a Special Report (2006) by the Texas Comptroller of Public Accounts that estimates the financial impacts of unauthorized immigrants on the Texas state budget and economy. During 2004–2005, there were an estimated 1.4 million unauthorized immigrants in Texas. Table 12.5 shows which of the major government-sponsored social and educational programs that unauthorized

**Table 12.6** Costs, revenues and economic impact of undocumented immigrants in Texas, 2005 (in millions of dollars)

Costs		Revenues	
Education	\$967.8	State revenue	\$999.0
Healthcare	\$58.0	School property tax	\$582.1
Incarceration	\$130.6		
Total	1,156.4	Total	\$1,581.1
Surplus/deficit	+\$425 million		

Source: Exhibit 18 in Special Report (2006), “Undocumented Immigrants in Texas: A Financial Analysis of the Impact to the State Budget and Economy,” Austin, TX: Texas Comptroller of Public Accounts, December.

immigrants are denied access to and which ones for which they can qualify. Note that in Texas, unauthorized children can attend college at in-state tuition rates if they graduate from a Texas High School.

In its estimates, the authors of the Special Report included law enforcement and criminal justice costs generated by these immigrants. Total state expenditures for unauthorized immigrants were estimated to be \$1,156 million. Total revenue paid by unauthorized immigrants was calculated using a method that arrived at total state revenue under the assumption that immigrants suddenly disappeared. This exercise led to the conclusion that the unauthorized immigrants’ presence increased the gross state product by \$17.7 billion, which, in turn, increased property taxes, sales taxes, fees for services, etc., by \$1.581 million. Therefore, the state government enjoyed a net gain of \$425 million from the presence of 1.4 million unauthorized immigrants in Texas. Table 12.6 summarizes the study’s results.

The conclusion from the Special Report is that unauthorized immigrants are not a drain on state government coffers. Because unauthorized immigrants do not have access to as many government services and programs as legal immigrants do and they pay many state and local taxes in the form of sales taxes, property taxes, automobile registrations, deductions from paychecks, etc., unauthorized immigrants were net contributors to Texas’ fiscal budget over the period analyzed.

## 12.7 Unauthorized Immigration: Policy Options

Immigration policy has generated controversy in most of the destination countries in Europe, North America, and the Pacific region. Given the huge differences in wages across countries, the restrictions on legal immigration that most countries have instituted almost inevitably result in people crossing borders without permission. The static labor supply and demand model suggests that there will be groups who find unauthorized immigration to work in their economic favor, so there is liable to be implicit support for unauthorized immigrants in the form of jobs. The demand effects of immigration also imply that there will be landlords willing to rent housing and retailers willing to provide goods and services to the

immigrants. The opposing interests within the destination country thus place policymakers in the position of having to make difficult choices.

Unauthorized immigration can be stopped by (1) placing barriers on the border, (2) preventing unauthorized immigrants from taking the jobs that they seek once they are in the country; or (3) creating better jobs in the would-be immigrants' own country. The latter is not a short-term option, since that would require investment flows and encouragement of international trade, among other things. The first two options are the ones commonly targeted by policymakers.

### ***12.7.1 Border Controls***

Border controls are easier for immigrant destination countries far away from source countries. For example, Australia receives relatively few unauthorized immigrants because it is an island that is thousands of miles from the most common sources of immigrants. The USA, however, shares a 2,000 mile border with Mexico, the source country of over half of all US immigrants, legal and unauthorized, over the past two decades. Western Europe receives unauthorized immigrants from Eastern Europe, and it increasingly receives unauthorized immigrants from Africa, most of whom cross the Mediterranean Sea to Spain or Italy. Some African migrants climb the fence into Ceuta, the Spanish enclave in Northern Africa. Like the desert along the Mexican–USA border, the Mediterranean has caused numerous deaths when overloaded boats sank or high waves overwhelmed small boats inappropriate for sea crossings.

Europe and the USA also receive unauthorized immigrants from further away. Increasingly, Western Europe and the USA receive unauthorized immigrants from China. Also, the USA and Spain are destinations for Latin American immigrants from Central and South America. Some of these Latin American immigrants travel through numerous countries before crossing the Mexico–USA border, making Mexico now also one of the main transit countries for unauthorized immigrants. Immigrant trafficking has become a large business for Mexican “coyotes.”

Many unauthorized immigrants do not actually sneak across the borders of the destination countries. Evidence suggests that half of all unauthorized immigrants enter destination countries legally with tourist visas, student visas, or other temporary entry visas. Sometimes such visas are obtained under false information; often, tourists and students decide to remain in the destination country.

### ***12.7.2 Employer Sanctions***

Sanctioning employers is often viewed as a more effective way to stop unauthorized immigration. This will be the case only if unauthorized immigrants come for work, of course, but that does seem to be the most common reason for unauthorized

immigration. One reason employer sanctions are not used more frequently is that they directly confront an important domestic political constituency in the destination country. Furthermore, civil rights issues arise. To avoid charges of discrimination, the legality of all workers, including natives and legal immigrants, would have to be checked with equal seriousness. Hence, another important domestic political constituency is inconvenienced. If mistakes are made, natives and legal immigrants will be swept up in raids on employers. For example, if immigration authorities only check workers on a selective basis, say according to whether they fit some profile or are employed in jobs where unauthorized immigrants are most likely found, then natives and legal immigrants are likely to face occasional harassment, incarceration, and even deportation.

Ethier (1986) famously showed that successful border enforcement hurts the would-be immigrants but helps competing native and legal immigrant workers. Employer enforcement, on the other hand, is likely to hurt both unauthorized immigrants and legal immigrants when employers have trouble distinguishing between legal and illegal immigrants. If the employer sanctions are very costly, employers may refrain from hiring any immigrants for fear that they might be discovered to be unauthorized.

Some countries have used employer sanctions extensively, however. Japan has apparently been able to keep unauthorized immigrant numbers quite low (see Table 12.1) by using employer sanctions, frequent document checks in the workplace, and a strong nationalist culture that applies pressure for everyone, employers, consumers, and workers, to conform to the restrictive immigration policies. Opponents to immigration in the USA increasingly call for the US government to carry out more employee checks and, where unauthorized immigrants are found, more employer sanctions. In recent years, as unemployment rates approached 10 % in the USA, authorities have increasingly targeted industries in the USA known for hiring undocumented workers. Arrests, imprisonment, and deportations were up sharply after 2010.

## 12.8 Conclusions

The issue of unauthorized immigration is perhaps best summarized by the 2004 bill brought before the California legislature that would have allowed the estimated 2.5 million illegal immigrants to apply for a California driver's license. After proponents of the bill ran television commercials showing a fictional nanny riding the bus telling how she is welcomed into her employers' home and trusted to care for their children, but not allowed to drive their car, the bill was promptly dubbed the "let my illegal nanny drive my SUV" bill.<sup>19</sup> Note that California is the US state with the highest proportion of foreign-born and the largest number of unauthorized immigrants.

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<sup>19</sup> Edward Alden (2005, March 8). Illegal immigrants divide US as backers seek their right to drive. *Financial Times*.

To the outside observer, the question of whether to issue an official driver's license to a person not legally authorized to be in the country may seem absurd. However, the USA is a country designed around the automobile, and it is simply difficult for anyone to hold a job, shop, attend to family matters, and effectively live a normal life without being able to drive a car. In fact, in 2004, ten US states already permitted people who could not prove legal residence to acquire driver's licenses.<sup>20</sup> Critics charged that a driver's license effectively gives the holder a picture identification document that is used for many other things, such as getting on an airplane or train, cashing a check, or registering a car. A driver's license practically gives a person legal status. State driver's license agencies thus become de facto issuers of immigrant visas! In the case of the California bill to permit driver's licenses for undocumented immigrants, Governor Arnold Schwarzenegger, who is himself an immigrant, vetoed the measure.

Our models of immigration show that the benefits and costs of immigration are complex and spread in an uneven fashion across the economy and over time. Unauthorized immigration is, therefore, tolerated by some and strongly opposed by others. This chapter shows that there are some important differences between legal immigration and unauthorized immigration, which further complicates the question of who tolerates and who opposes unauthorized immigration. How the destination country should treat unauthorized immigrants when they are effectively tolerated, as is the case in many destination countries, is a difficult and uncomfortable issue. In later chapters on immigration policy, the issue will be discussed again.

There has been a very substantial shift in political debates about immigration in the USA. Discussions about whether to legalize the status of unauthorized immigrants with some form of amnesty and legalization of their status has been quite emotional, not unlike California's debate about driver's licenses for unauthorized immigrants. In 1986, the USA approved a broad amnesty. In 2007, the US Congress explicitly refused to consider an amnesty for even some of the 11 million unauthorized immigrants. It is not clear how 2007 was different from 1986, but the decisions on how to deal with unauthorized immigrants were noticeably different.

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<sup>20</sup> Kimberly Edds (2004, September 24). No driver's licenses for California illegal immigrants. *Washington Post*.

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# Chapter 13

## Hispanic Immigration to the USA

**Abstract** This chapter presents some of the exceptional characteristics of recent Hispanic immigration to the USA. In 2005, there were nearly 40 million Hispanic immigrants and descendants of Hispanic immigrants living in the USA. The assimilation experience of this large cultural group does not seem to be following the exact same path that other immigrants to the USA followed. Most third-generation Hispanics in the USA still find themselves with income and education levels below the US averages. Forecasts predict that about 60 million Hispanics and Hispanic-Americans will be living in the USA by 2030.

The persistent inflow of Hispanic immigrants threatens to divide the United States into two peoples, two cultures, and two languages.

(Samuel Huntington, 2006)<sup>1</sup>

Americans living in smaller US cities like Little Rock, Arkansas, Raleigh, North Carolina, and Omaha, Nebraska, are often surprised to learn that there is a Mexican Consulate in their city. In fact, aside from the obvious locations of consulates, such as New York City, Chicago, and Los Angeles, in 2007 there were 47 Mexican Consulates in cities throughout the USA. This proliferation of Mexican diplomatic offices across the USA reflects the extraordinary increase in Mexican immigrants living in the USA. There are nearly 12 million Mexican immigrants in the USA, and another ten million US-born Mexican Americans. Native Mexicans make up well over half of all Hispanic immigrants in the USA, and Hispanics, in turn, account for over half of all foreign-born residents in the USA.

The social group commonly referred to as Hispanics includes all immigrants from Latin American countries and their offspring. So large has been recent Hispanic immigration to the USA that, in 2002, Hispanics passed African Americans as the largest minority ethnic group in the USA. In that year, the US Census Bureau estimated that there were about 37 million Hispanics in the USA,

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<sup>1</sup> From Huntington (2004).

**Table 13.1** Estimates of Hispanic population in the USA: 2000 and 2010

	Census 2000 <sup>a</sup>	Percentage	2010 Community survey <sup>b</sup>	Percentage
Total Hispanic	35,305,818	100.0	50,729,570	100.0
Mexican	20,640,711	58.5	32,915,083	64.9
Puerto Rican	3,406,178	9.6	4,682,531	9.2
Cuban	1,241,685	3.5	1,883,599	3.7
Dominican	764,945	2.2	1,509,060	3.0
Central American	1,686,937	4.8	4,376,143	8.6
Costa Rican	68,588	0.2	127,575	0.3
Guatemalan	372,487	1.1	1,107,859	2.2
Honduran	217,569	0.6	730,954	1.4
Nicaraguan	177,684	0.5	376,747	0.7
Panamanian	91,723	0.3	174,458	0.3
Salvadoran	655,165	1.9	1,827,290	3.6
South American	1,353,562	3.8	3,002,865	5.9
Argentinean	100,864	0.3	239,509	0.5
Bolivian	42,068	0.1	112,028	0.2
Chilean	68,849	0.2	139,480	0.3
Colombian	470,684	1.3	972,334	1.9
Ecuadorian	260,559	0.7	664,781	1.3
Peruvian	233,926	0.7	609,360	1.2
Uruguayan	18,804	0.1	63,784	0.1
Venezuelan	91,507	0.3	238,779	0.5
Other	57,532	0.2	26,594	0.1
All Other <sup>c</sup>	6,211,800	17.6	2,360,289	4.6

<sup>a</sup>Table 3 from Roberto Suro (2002), “Counting the ‘Other Hispanics’: How Many Colombians, Dominicans, Ecuadorians, Guatemalans and Salvadorans Are There in the United States?,” Pew Hispanic Center, May 9

<sup>b</sup>Pew Hispanic Center tabulations of the Census Bureau’s 2010 American Community Survey, reported in Seth Motel (2012), “A Statistical Portrait of Hispanics in the United States, 2012,” released February 21

<sup>c</sup>This category includes Hispanics from other Caribbean countries and people who define themselves as Hispanics or Latinos without specifying any specific Hispanic country. Such general classifications are more common on voluntary Census returns than in the Community Survey interviews

compared to 36.1 million African Americans. As shown in Table 13.1, by 2010 the Hispanic population of the USA numbered more than 50 million.

A controversial book by Samuel Huntington (2004) entitled *Who Are We?: The Challenges to America’s Identity* reflects the sentiments of some Americans with regard to the large inflow of Spanish-speaking immigrants. As the sample quote by Huntington shown at the head of this chapter suggests, Huntington views the large inflow of Hispanic immigrants into the USA unfavorably. He draws on an assortment of data and evidence to argue that Hispanic immigrants are less likely than previous immigrants to the USA to assimilate, learn English, and reach income parity with native-born Americans. Huntington is not alone in his views.

Hispanic immigration seems to be the focus of the increasingly active opposition to immigration in the USA, not unlike the anti-immigrant movement in Germany

that focuses on the rapid growth of Turkish immigration to Germany or the French opposition to further immigration from North Africa. Sudden large inflows of immigrants from a single foreign culture, especially if that culture was noticeably different, have often led to resistance in the destination country.

There is little doubt that the current wave of Hispanic immigration to the USA has brought, and will continue to bring, major economic and social changes to both the source countries and the destination country. It will be a challenge for the US policymakers to devise a set of policies to effectively deal with this disruptive but potentially beneficial immigration episode. The political conflicts the US Congress faced when it tried to enact legislation to modify the country's immigration system in 2006 and 2007 underscore the complexity of the issue. Many conflicting interests and views must be dealt with, and there are also strong forces of racism and cultural intolerance which many politicians shamefully insist on exploiting for their electoral advantage.

From a social scientist's perspective, we can learn a lot from the US experience with Hispanic immigration. Other countries face similar large movements of people and clashes of cultures, as evidenced by the conflicts surrounding the growth of the non-Christian population in many European countries. This chapter summarizes what we know about Hispanic immigration to the USA, and it points to where we need further research and analysis.

### **13.1 A Brief Description of Recent Hispanic Immigration to the USA**

Immigration to the USA has gone through many different phases. The latest phase, which covers the years since the 1960s, is characterized by a sharp shift in immigration source countries from Europe to Latin America and Asia. Table 13.2 provides detailed figures for 2010.

Over one-third of foreign-born Americans are natives of Mexico. This is a very high share for one single country. The concentration of the sources of immigration has fueled fears that Hispanics will establish a permanent parallel culture in the USA rather than assimilate into the dominant culture. Recall, again, Huntington's words at the start of the chapter. Many of those who expect the descendants of Mexican and other Hispanic immigrants to eventually assimilate like other US immigrant groups in the past nevertheless still fear that the massive inflow of people from one single foreign country will substantially change American culture.

It is interesting to ask why recent immigration from Asia does not seem to generate the same emotional response among the native US population that Hispanic immigration does. This is surprising because Asian immigration to the USA has grown just as fast as immigration from Hispanic countries, as Table 13.2 makes clear. Perhaps Asian immigration seems less threatening because its sources are spread evenly among several distinctive cultures. For example, the Philippines,

**Table 13.2** Country of birth of foreign born living in the USA

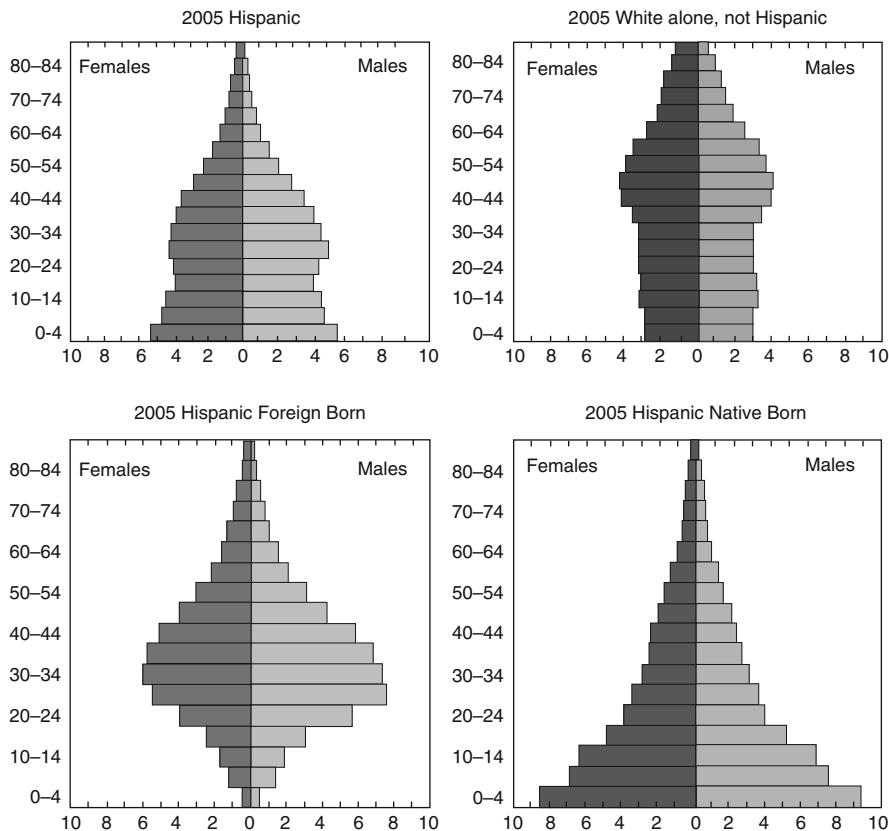
Country	Number	Percent of all foreign born
Mexico	11,746,539	29.4
India	1,796,467	4.5
The Philippines	1,766,501	4.4
China	1,604,373	4.0
Vietnam	1,243,785	3.1
El Salvador	1,207,128	3.0
Cuba	1,112,064	2.8
Korea	1,086,945	2.7
Dominican Republic	879,884	2.2
Guatemala	797,262	2.0
Canada	785,595	2.0
Jamaica	650,761	1.6
Colombia	648,348	1.6
Germany	611,813	1.5
Haiti	596,440	1.5
Honduras	518,438	1.3
Poland	470,030	1.2
Ecuador	454,921	1.1
Peru	430,665	1.1
Russia	386,539	1.0
Region	Number	Percentage
Mexico	11,746,539	29.4
South and East Asia	9,930,118	24.9
Caribbean	3,730,817	9.3
Central America	3,007,288	7.5
South America	1,920,007	6.9
Middle East	1,421,063	3.6
All Other	6,732,146	18.4
<i>Total foreign born</i>	<i>39,916,875</i>	<i>100.0</i>

The 20 largest sending countries: 2010

Eileen Patten (2012), “Statistical Portrait of the Foreign-Born Population in the United States, 2010,” Pew Research Center, Pew Hispanic Center; released February 21. The Pew report uses data from the 2010 American Community Survey, US Census Bureau

India, China, Vietnam, and South Korea each accounts for between 3 and 5 % of foreign-born Americans. Another possible factor is that a greater percentage of Asian immigrants are highly educated professionals while the vast majority of Hispanic immigrants are laborers with less than high school education.

Another reason that Hispanic immigration may generate more openly expressed concerns is that it has been highly concentrated in a few states such as California, New York, Florida, and Texas. This geographic concentration effectively amplifies the cultural influence of immigrants in those areas. But, not all Hispanic immigration to these states is from the same countries; Mexican immigrants favor California



**Fig. 13.1** Population pyramids for Hispanic and non-Hispanic populations in the USA: 2005

and Texas, while immigrants from Caribbean countries such as Cuba and the Dominican Republic most often settle in Florida and New York, respectively. Central Americans have favored California. Also, in recent years Hispanic immigrants have increasingly settled in Southern and Midwestern states, where food processing and other manufacturing industries are concentrated. It is not clear yet whether this wider dispersion of Hispanic immigrants merely makes new regions of the USA more aware of immigration or whether it reduces the fear that Hispanic immigration will establish a permanent parallel culture in the USA.

Hispanic immigrants are disproportionately young and working aged. Figure 13.1 shows the population profiles for foreign-born Hispanics in the lower left-hand diagram and non-Hispanic Americans in the upper right-hand diagram. Compared to the overall US population, very few foreign-born Hispanics are either very young or very old. The great majority of foreign-born Hispanics are of working age. This implies that, all other things equal, Hispanic immigrants are likely to be self-supporting and productive. On the other hand, the lower right-hand diagram in Fig. 13.1 makes it obvious that Hispanic families have more children than

Americans, on average. Hence, the US-born Hispanic population is relatively young. With the youth of the native-born Hispanic population, the population profile of the combined foreign-born and native-born Hispanic population in the USA is, on average, younger than the overall US population. In a sense, Hispanic immigration has mitigated, at least in part, the problems associated with the ageing of the US population. Compared to most other high-income countries, population ageing is not nearly as serious a problem in the USA.

## 13.2 Assimilation

Historical evidence suggests that immigrants to the USA have almost always assimilated within one or two generations. Even at the previous height of immigration at the start of the twentieth century, when the foreign-born population surpassed 15 % of the total population, immigrants quickly moved up to the average income and education levels of the native US population. Blau's (1980) often-referenced study used detailed data for the late nineteenth and early twentieth centuries to determine that immigrants quickly caught up to native-born Americans in terms of income. The post-World War II experience seems to have been similar. Chiswick (1978) used 1970 Census data to show that immigrants' earnings caught up to, and then exceeded, native-born Americans' average incomes after just 10 or 15 years. These average outcomes do not describe all immigrants a century ago, of course. There were high rates of return immigration after World War I and during the Great Depression, and many immigrants and their descendants remained poor. However, today even the average indicators for immigrant assimilation suggest that the traditional myth of immigrants as anxious to assimilate and become an "American" as quickly as possible may be inaccurate.

Perlmann and Waldinger's (1997) statistical analysis shows that in the 1990s the children of immigrants still lagged substantially behind the rest of the US population in education and income, and in terms of other socioeconomic indicators. Perlmann and Waldinger's data on recent immigrants in the USA suggest that the US immigration from Latin America, and from Mexico in particular, is the main cause of the change in assimilation rates. When they eliminate Mexican immigrants from their sample, they find that the socioeconomic disadvantage among children of immigrants vanishes. Hence, they conclude that Mexican immigrants are somehow different from earlier immigrants to the USA.

### 13.2.1 Hispanics' Slow Assimilation

Table 13.3 provides further insight into how Hispanic immigration has differed from the US immigration overall and from other groups of immigrants. Table 13.3 suggests that, compared to the native population or native households, immigrants

**Table 13.3** Personal earnings by region of birth: Total population and households, 2005

	Median earnings (\$)	Percentages			Total
		<\$20,000	\$20,000–49,999	<\$50,000	
<i>Total population</i>					
Native born	28,000	36.3	39.6	24.1	100.0
Foreign born	23,000	42.3	38.4	19.3	100.0
Mexico	17,000	56.7	37.3	5.9	100.0
Asia	30,000	31.3	37.0	31.7	100.0
Caribbean	24,000	39.6	43.7	16.7	100.0
Central America	19,000	52.2	40.0	7.9	100.0
South America	24,000	40.0	43.5	16.5	100.0
The Middle East	30,000	33.5	33.3	33.2	100.0
All other	30,000	31.2	37.4	31.4	100.0
<i>Households</i>					
Native born	46,000	19.6	19.9	20.0	20.3
Foreign born	42,000	21.1	22.3	20.0	18.0
Mexico	32,000	24.7	30.7	23.0	14.8
Asia	59,000	16.5	14.7	17.3	21.1
Caribbean	36,000	26.7	22.6	19.5	17.2
Central America	37,000	20.1	27.8	23.6	18.0
South America	45,000	16.9	22.5	22.7	20.3
The Middle East	49,000	21.0	16.9	17.5	17.4
All other	48,000	20.5	18.7	17.9	18.7

*Source:* Pew Hispanic Center (2006). Tabulations using data from the 2005 American Community Survey. October 2006, Tables 24, 25, 28, and 29

and immigrant households from Mexico, Central America, the Caribbean, and South America all have higher concentrations in the lower income brackets. Note also that Asian immigrants and immigrant households have higher median incomes and greater concentrations in higher income brackets compared to the native-born American population and households. Hence, the data seem to suggest that Hispanic immigrants, on average, do not raise their economic status very quickly. Of course, assimilation is never a matter of a few years; it normally takes at least a generation. Hence, the data in Table 13.3 may not be a good indication of assimilation for the large number of Hispanic immigrants to the USA.

There are many other indicators that can help us understand how well, or poorly, immigrants assimilate. Variables such as language fluency, mixed marriages, housing, education, and university graduation rates have been examined by immigration researchers.

Not only does research on the assimilation of Mexican Americans in the USA show that new Hispanic immigrants earn substantially less than the US natives, but the children of Hispanic immigrants do not catch up. Livingston and Kahn (2002) found that second-generation Mexican Americans only partially catch up to the US average, and third-generation Mexican Americans show no further progress. Borjas (1985, 1994) uses evidence of the stalled economic progress after the second generation to argue that “the huge skill differentials observed among today’s foreign-born groups become tomorrow’s differences among American-born ethnic groups.”<sup>2</sup>

Kochhar, Fry, and Taylor (2011) show that the average Hispanic household wealth in 2009 was \$6,325, compared to \$113,149 for the average white household. Equally stunning is the recent increase in poverty among Hispanics in the USA: the Pew Hispanic Center (2011) reports that childhood poverty is higher among Hispanics than any other group in the USA, and the poverty rate has increased to an all-time high following the 2007–2008 recession. Not surprisingly, the lower income of Hispanic households has translated into almost no accumulation of net wealth.

Recall the discussion of human capital in Chap. 10 and, specifically, Bourdieu’s (1977, 1986) insightful perspective on how social, cultural, and economic capital are related. According to Bourdieu (1977, 1986, 2005), social capital, cultural capital, and economic capital are all accumulated together. Economic capital constitutes the wealth analyzed by Kochhar, Fry, and Taylor. The accumulation of cultural capital has a substantial effect on immigrants’ accumulation of social capital and economic capital, but cultural capital can only be accumulated in significant amounts if immigrants assimilate. In short, there is evidence that the income gap between Hispanics and other Americans may not diminish in the near future.

Trejo (1997, 2003) looks at the causes of the lack of income growth for Mexican immigrants, and he finds that the differences in income between Mexican Americans and other US residents are largely statistically explained by differences

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<sup>2</sup> Borjas (1994), p. 1713.

in human capital, just as Bourdieu suggests would likely be the case. In his studies, Trejo provides evidence showing that Mexican Americans do not continue catching up between the second and third generations because they do not continue to increase their relative levels of human capital after the second generation. This result seems to suggest the failure of Hispanics to assimilate into the US economy and society.

Duncan and Trejo (2006) survey a number of studies of assimilation by Mexican Americans, and they report that between the first and second generations, average schooling rises by almost 4 years, and incomes rise by 30 %. But then advancement stops, and third-generation Mexican Americans still have 1.3 fewer years of education than the average American, and incomes are still about 25 % lower. Suro and Passel (2003) examine income and education attainment and find the same pattern of rapid advancement from the first to the second generations of Hispanic immigrants, followed by little change from the second to the third generations. Table 13.4 summarizes the data from special survey by the US Census Bureau.

When it comes to English language skills, however, Suro and Passel (2003) do find a continued improvement in English proficiency from the second to the third generations. While fewer than half of all second-generation Hispanic immigrants live in households where English is the dominant language, nearly 80 % of third-generation Hispanics do. Also, Suro and Passel show that Hispanics do assimilate socially after the second generation. Only 8 % of first-generation Hispanics marry someone outside their ethnic group, nearly one-third of second-generation immigrants do, and 57 % of third-generation Hispanic immigrants do. Therefore, in terms of this indicator, there has been assimilation.

Blau and Kahn (2005) use the US Census Bureau's Current Population Survey data for 1994–2003 to distinguish the assimilation of male and female Mexican Americans in order to determine whether gender differences can explain the slow assimilation in terms of income. They find that immediately after immigrating to the USA, Mexican male and female immigrants both work fewer hours per week than their average US counterparts. But, in terms of hours worked they catch up within 20 years. Wages received remain far below the national average for Mexican immigrants, however. The wage differential shrinks only with the second-generation Mexican Americans largely because of increased levels of education. However, as other studies have found, there is no further improvement in education, labor supply, or wages beyond the second generation.

Mexican immigrants are more likely to be married than Americans overall, and fertility levels also exceed the US averages for women. Marriage rates remain above the US average through the third generation, and while female fertility declines by the third generation, it remains above the US average. Blau and Kahn (2005) conclude that Mexican American families continue to exhibit a family structure more similar to Mexican families than American families. Again, it appears as though Mexican Americans do not assimilate as fast as previous immigrant groups have done. Table 13.5 presents data from the Census Bureau's 2005 Community Survey that support the conclusions by Blau and Kahn.

**Table 13.4** Educational attainment by region of birth: 2005

	<i>Grades</i>						
	0–9th	9th–12th	H.S. grade	Some college	College grade	Adv. degree	Total
Native born	5,858,965	14,461,648	49,204,124	46,578,187	27,906,173	15,670,073	159,679,170
Foreign born	5,931,156	3,528,959	6,702,969	5,286,845	4,577,449	3,224,008	29,251,396
Mexico	3,466,811	1,630,793	1,943,943	854,833	280,827	122,158	8,299,365
Asia	652,306	478,827	1,223,479	1,320,985	2,039,894	1,455,359	7,170,850
Caribbean	404,628	369,608	795,732	640,336	326,979	183,661	2,720,944
Central America	646,885	343,244	490,353	334,400	143,590	52,628	2,011,100
South America	177,529	180,631	574,458	487,564	363,522	204,154	1,987,858
The Middle East	86,164	64,236	210,685	202,084	258,214	208,729	1,030,112
All other	496,843	461,620	1,464,319	1,446,643	1,164,423	997,319	6,030,167
<i>Percentages</i>							
Native born	3.7	9.1	30.8	29.2	17.5	9.8	100.0
Foreign born	20.3	12.1	22.9	18.1	15.6	11.0	100.0
Mexico	41.8	19.6	23.4	10.3	3.4	1.5	100.0
Asia	9.1	6.7	17.1	18.4	28.4	20.3	100.0
Caribbean	14.9	13.6	29.2	23.5	12.0	6.7	100.0
Central America	32.2	17.1	24.4	16.6	7.1	2.6	100.0
South America	8.9	9.1	28.9	24.5	18.3	10.3	100.0
The Middle East	8.4	6.2	20.5	19.6	25.1	20.3	100.0
All other	8.2	7.7	24.3	24.0	19.3	16.5	100.0

*Source:* Pew Hispanic Center (2006), “Tabulations using data from the 2005 American Community Survey,” October 2006

**Table 13.5** Family structure of the US immigrants by region of birth: 2005

	Family household				Total
	Married couple	Female head only	Male head only	Nonfamily household	
Native born	158,063,089	40,142,786	12,818,558	41,604,783	252,629,216
Foreign born	23,367,506	4,463,987	3,165,419	4,772,691	35,769,603
Mexico	7,179,023	1,471,870	1,399,503	943,455	10,993,851
Asia	6,110,777	744,171	507,797	1,022,420	8,385,165
Caribbean	1,675,811	732,483	252,695	489,803	3,150,792
Central America	1,385,611	435,377	371,817	316,521	2,509,326
South America	1,489,419	357,092	235,919	353,848	2,436,278
The Middle East	853,719	92,373	97,132	177,552	1,220,776
All other	4,673,146	630,621	300,556	1,469,092	7,073,415
<i>Percentages of population</i>					
Native born	62.6	15.9	5.1	16.5	100.0
Foreign born	65.3	12.5	8.8	13.3	100.0
Mexico	65.3	13.4	12.7	8.6	100.0
Asia	72.9	8.9	6.1	12.2	100.0
Caribbean	53.2	23.2	8.0	15.5	100.0
Central America	55.2	17.4	14.8	12.6	100.0
South America	61.1	14.7	9.7	14.5	100.0
The Middle East	69.9	7.6	8.0	14.5	100.0
All other	66.1	8.9	4.2	20.8	100.0
<i>Percentages of households</i>					
Native born	49.2	12.4	4.1	34.3	100.0
Foreign born	55.8	13.4	7.6	23.1	100.0
Mexico	60.2	14.9	11.7	13.3	100.0
Asia	63.3	9.2	5.2	22.2	100.0
Caribbean	42.3	24.2	6.9	26.6	100.0
Central America	49.5	19.5	12.1	18.9	100.0
South America	50.8	16.6	8.7	23.9	100.0
The Middle East	60.1	7.5	7.1	25.4	100.0
All other	51.6	9.2	3.7	35.5	100.0

Source: Pew Hispanic Center (2006). Tabulations using data from the 2005 American Community Survey, October 2006, Tables 15 and 16

### 13.2.2 *Further Reasons Why Hispanic Assimilation Is Slow*

Hispanic immigrants appear to be less entrepreneurial than other immigrant groups or Americans in general. Combined with the lower levels of education of Hispanic immigrants, the below average levels of entrepreneurial activity further reduce Hispanics' access to the traditional routes that past immigrants have used to quickly reach average US income levels. Fairlie and Woodruff (2006) find that only 6 % of Mexican immigrants to the USA are self-employed. This outcome contrasts sharply with other immigrant groups to the USA, which all exhibit self-employment rates more similar to native-country self-employment rates. Interestingly, Mexican immigrants' low rate of self-employment also contrasts sharply with the very high rate of self-employment in Mexico. Mexico has the highest self-employment rate of 28 OECD countries, and it is ranked fourth among a larger sample of 41 countries by the Global Entrepreneurship Monitor (2003).<sup>3</sup> Yuengert (1995) reports that across all immigrant groups, self-employment rates are usually positively correlated with native-country rates. This relationship does not hold for Hispanic immigrants to the USA, however.

The drastic fall in self-employment when Mexicans and other Hispanics cross the US border suggests that Mexican American immigrants and their children face barriers to entrepreneurship. Perhaps the lack of self-employment is due to the high percentage of unauthorized immigrants among Hispanic immigrants; unauthorized immigrants do not have access to bank financing, they cannot acquire the various permits and licenses to operate businesses, and they cannot use the courts to protect themselves against fraud, theft, and delinquent payments. The lack of self-employment and, presumably, entrepreneurship is, most likely, also related to the slow assimilation of Hispanics into the US society and the lack of social, cultural, and economic capital.

The discussion from Chaps. 9 and 10 on the dynamic gains and costs of immigration suggests that unless the USA finds ways to reduce the barriers to entrepreneurship that seem to apply disproportionately to Hispanic immigrants, the US economy will not reap the full gains from Hispanic immigration in the long run. Assimilation will be slower than necessary, which means that Hispanic immigrants will add less to the US output and demand. The barriers to entrepreneurship that Hispanics seem to face imply that the US economy will continue to miss the full growth effect of immigration.

Lazear (2006) blames Hispanic immigrants' slow assimilation on the way the USA has designed its immigration policies. He argues, first of all, that the US immigration policy results in a very large proportion of Mexicans and Hispanics entering the country either illegally because of Latin America's proximity to the USA and lax US border enforcement. And when Hispanics immigrate legally, it is almost always under the family reunion criterion rather than on the basis of their skills, educational attainment, or job prospects. Both unauthorized immigration and

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<sup>3</sup> Reported in Fairlie and Woodruff (2006).

family reunion tend to promote settlement in ethnic enclaves. According to Lazear, the large number of Hispanic immigrants means that they live in very large enclaves that encourage immigrants to hold on to their own customs longer and assimilate more slowly than other ethnic groups that begin in small enclaves. There are Spanish language newspapers, radio stations, and television stations in nearly all cities where there are Hispanic enclaves. The larger populations in the Hispanic enclaves also result in more second- and third-generation Hispanics marrying other Hispanics rather than partners with other ethnic backgrounds.

### ***13.2.3 Is It All Just a Data Problem?***

Duncan and Trejo (2006) offer another explanation for the apparent slow assimilation of Hispanics: it is just a data failure. They argue that the census data used in most studies give an inaccurate impression because the children of mixed parents, e.g., when a Mexican American marries a non-Mexican American, are usually not reported as being Mexican Americans. In other words, the data may be tracing mostly the assimilation histories of the children of parents who assimilated less, in part because they married a spouse from the same ethnic group. The census data are likely to miss many of the children of the parents that assimilated more quickly and found spouses in other ethnic groups. Hence, true assimilation of Mexican Americans is faster and more complete than the census data suggest.

In a study that predated many of the recent studies that found stagnating assimilation after the second generation, Jasso and Rosenzweig (1988) used data that tracks individuals over time, rather than the cross-sectional census data used by Borjas (1994) and Livingston and Kahn (2002), to argue that assimilation of Hispanics was not any slower than previous large immigrant groups in the early twentieth century. In any case, the many suggestions that today's Hispanic immigrants are less likely to assimilate than earlier US immigrants should be kept in perspective. The fact is that newly arriving immigrants to the USA have always maintained close ties with their native countries. Most immigrant communities a century ago had newspapers in the native languages of immigrants, ethnic food stores and restaurants, and clubs and associations organized along national lines. When radio became a dominant medium in the early twentieth century, foreign language programs were regularly broadcast in cities with significant immigrant enclaves. There was a Hibernian Hall in most cities of the US Northeast where Irish immigrants met and second-, third-, and fourth-generation Irish continued to meet. The Sons of Italy sponsored sports and social activities for Italian immigrants in many of the same cities. Of course, many churches and other religious organizations established in the USA reflected specific national origins and ethnic traditions. In any case, the high rates of return immigration discussed in Chap. 11 suggest that in the nineteenth and early twentieth centuries cultural and family ties to the homeland often trumped assimilation.

### 13.3 Geographic Diffusion

One common characteristic of immigration is that immigrants tend to cluster together in the destination countries, often in what become easily identifiable ethnic communities. In the USA, Hispanic immigrants have tended to also cluster in certain urban areas and certain states. What is also well known is that Hispanic immigrants from specific towns and regions of their native countries often cluster together in certain towns and regions.

#### 13.3.1 Networks and Herding

One common explanation for clustering is the presence of network externalities. In the case of immigration, earlier immigrants provide assistance to new immigrants, and previous immigrants can provide trusted information about the destination to other immigrants. Bauer, Epstein, and Gang (2002) differentiate between network effects and what they call *herding behavior*. They define immigrant network effects as immigrants deciding “I will go to where my people are, since it will help me.” Herding behavior, on the other hand, implies immigrants telling themselves: “I will go to where I have observed others go, because all these others who went before me probably have information that I do not have, even though I would have chosen independently to go elsewhere.” Herding behavior effectively assumes that people have little confidence in their own information, and they feel that others’ information must be better than theirs. Whether networking or herding, immigrants from the same source countries tend to concentrate in certain communities, states, or regions.

Bauer, Epstein, and Gang examine data for Mexican immigrants to the USA to test for the relative importance of herding and network effects in determining immigrant location decisions. They label as herding the practice of natives from the same local community following fellow community members to specific locations in the USA. Network externalities are measured by the share of Mexican immigrants in the population of a specific community in the USA. Bauer, Epstein, and Gang find that both herding and network effects matter; one reinforces the other. The network effect is not linear, however. Network effects expand immigration to a specific community up to where Mexicans account for about 10 % of the community’s population, after which the strength of network externalities declines. The network effect is U-shaped, therefore. Herding effects are similarly U-shaped. In addition, network and herding effects are significantly stronger for illegal immigrants and poorly educated immigrants.

#### 13.3.2 Toward the South and the Midwest

There has been a noticeable diffusion of Hispanic immigrants to a more diverse set of destinations in recent years. Kochhar, Suro, and Tafoya (2005) report that the Hispanic population is growing faster in the Southern states than anywhere else in

the USA. They describe how the economies in the South and the Midwest are changing rapidly, and they are growing rapidly as well: “Such conditions have acted as a magnet to young, male, foreign-born Latinos migrating in search of economic opportunities.”

Card and Lewis (2005) analyze the spread of Mexican immigrants beyond the traditional destination cities in California and Texas to “new” destinations like Atlanta, Georgia, Denver, Colorado, Portland, Oregon, and Raleigh-Durham, North Carolina. They are surprised by how these flows to “new” destinations parallel the growth of employment without very large changes in wage rates in those destination economies. Card and Lewis conclude that they are “left with the ‘puzzle’ of explaining the remarkable flexibility of employment demand in different cities to local variations in supply.” Is this a case of immigrants arriving and jobs then suddenly appearing to employ them? Or do the immigrants respond quickly to the opening of new jobs in these “new” destination cities?

### ***13.3.3 The Dispersal of Manufacturing Jobs and Immigrant Dispersal***

This dispersal of the growing number of Hispanic immigrants is not such a puzzle when it is viewed in light of the gradual shifts in manufacturing activity in the USA over the past half century. Hispanic immigrants have largely followed the dispersion of manufacturing activity to rural areas in the South, Midwest, and Great Plains regions. The current shift of manufacturing from the traditional manufacturing centers to rural regions of the American Midwest and Great Plains is fundamentally a continuation of the earlier trends that saw manufacturing shift from the traditional urban centers of the Northeast and North central regions of the country toward those regions in the South where wages are lower and labor unions are less powerful or nonexistent. The current growth of manufacturing in traditionally agricultural communities is also being driven by the arrival of foreign firms setting up manufacturing in the USA for the first time. These foreign *greenfield* investments similarly seek low labor costs, lower living costs for prospective employees, and business-friendly environments.

This geographic shift in manufacturing has been well documented and studied. However, commentators and researchers have largely overlooked a very important detail about the growth of manufacturing in rural America: the revival of the rural South, Midwest, and Great Plains depends on foreign immigrants. The people moving in to take the new manufacturing jobs are often recent immigrants, and a substantial portion of them are undocumented. Rural communities in the USA enjoy a comparative advantage in infrastructure and location; the United States’ modern transportation infrastructure places most rural communities within the distribution systems serving the US market for most products. The only thing

lacking in these communities is a large labor force. Immigration effectively provides this missing labor force. The fact that it is manufacturing that is driving the immigration flows is compatible with the observation that the “new” immigrant destinations are not seeing a reduction in white and black populations; to the contrary, the main immigrant destinations are experiencing increases in new black and white populations as well. For example, Kochhar, Suro, and Tafoya (2005) report that even in the six Southern states, where Hispanic populations grew so rapidly, white and black populations still grew by 11 and 21 %, respectively, from much higher bases over the same 1990–2000 period.

The seemingly endless “reserve army of labor” in the developing economies of the world represents a resource for manufacturing that has both expanded international trade and immigration. Under the well-known Heckscher–Ohlin model of international trade, a country’s comparative advantage depends on its resource endowment. A country with a large labor force thus has a comparative advantage in producing and exporting labor-intensive products. We have indeed seen much manufacturing move to labor-abundant countries. However, international trade depends on many things beyond mere quantities of labor and capital. Poorly developed transportation systems, lack of human capital, and insufficient physical capital are all factors that have kept returns to labor very low in countries with abundant labor. Labor’s marginal product depends on how many other factors it has to work with. Immigration seems to provide producers with both the abundant labor from overseas and the better infrastructure and human capital of their home markets. Hence, producers prefer to operate in the USA where infrastructure is ample and distances to markets are short. The markets for many products are increasingly concentrated, or agglomerated (see Chap. 10), in high-income countries, so transport costs can be reduced by keeping production closer to home, provided, of course, labor is available.

The holistic pattern of technological progress and shifting production patterns suggest that rural communities in areas like Appalachia and the Great Plains would not be able to reverse their declines without immigration. Indeed, if manufacturing continues to face increasing labor costs in the highly agglomerated urban regions of the USA, manufacturers and producers of services will increasingly look to lower cost locations. If low-cost labor is not available somewhere within the USA, the likelihood increases that manufacturing will instead move to China, India, or Brazil. In this case, the rural economies of Appalachia and the Great Plains will not enjoy their revival, and their economic decline will continue.

An example provided by the *Wall Street Journal* is Dalton, Georgia, the home of three major carpet-manufacturing plants, Shaw Industries Inc., Mohawk Industries Inc., and Beaulieu of America LLC. The US carpet industry faced a situation similar to that of many US industries faced with international competition and an increasingly scarce native workforce:

It didn’t make sense to leave. Carpet mills here have made huge investment in giant tufting machines that stitch yarn into plastic backing and dye tanks that soak color into bolts of weave the length of football fields. If the mills cut labor costs by moving offshore, they’d still face the extra expense of shipping heavy carpet back to their major market. Dalton is

within a 24-hour drive of about 85% of all U.S. buyers. Industry consolidation over the past two decades strengthened carpet makers' ties to the area, not only making Dalton a one-industry town but also making Dalton a one-town industry. So, with the industry's roots entrenched, Mexico has come to Dalton.<sup>4</sup>

The community began changing along with the carpet industry's workforce. In 2000, one-third of the children born in Dalton's Hamilton Medical Center were from Hispanic families. There were 12,000 Hispanics in Dalton in 2000, and they were noticeable in the community:

The sights and sounds of rural Mexico are everywhere along Dalton's main drag, Walnut Street, where accordion-rich music from Mexico's north blares from quick-stop taco shops. Poster and fliers in Spanish tout at least 10 different agencies offering ways for recent migrants to send money home. Each morning, a refrigerator truck of an Atlanta-based food distributor, Al Maizal, darts in and out of the local strip malls, stocking more than two dozen Mexican restaurants and convenience stores. Florists, funeral homes and pharmacies all promise walk-in customers that "se habla espanol"<sup>5</sup>

Not everyone in Dalton was happy about the changes their community is going through. Some years ago, the local newspaper had to stop running letters to the editor about immigration because the tone had gotten too angry. By 2005, over half the incoming kindergarten students were Hispanic.

## 13.4 Explaining Hispanic Immigration

According to Card and Lewis (2005), Mexican immigration to the USA was driven, on the supply side, by population growth, falling real wages, and persistently weak economic conditions in Mexico. They also point out that immigrants tend to follow prior immigrants from the same cities and regions, and they find that prior immigrants also explain the supply of Mexican immigrants to the various regions of the USA. On the demand side, they hypothesize that immigrants are attracted by employment and wages. They find that supply-side factors explain 75 % of the variation in immigration, and demand factors only another 10 %. In fact, they find that after 1990, demand factors are not significant in explaining inflows of Mexican immigrants; only supply push and prior flows determine immigrant inflows into specific counties in the USA. Similarly, Richter, Taylor, and Yunes-Naude (2006) find that the effects of changes in the US immigration policy or macroeconomic conditions on Mexican immigration to the USA are small compared to the network effects.

There were some special events that help to explain the surge in Hispanic immigration to the USA. For example, Martin (2004) describes how unauthorized immigration from Mexico to the USA grew after the ratification of the North

<sup>4</sup> Millman and Pinkston (2001).

<sup>5</sup> Millman and Pinkston (2001).

American Free Trade Agreement (NAFTA) because free trade in corn pushed many Mexican farmers off the land. Corn production in Mexico had been protected from imports, and a domestic price twice the world price had for years served as a social safety net in rural Mexico. When NAFTA came into effect in the mid-1990s, Mexico had about three million corn farmers. This compared to the 75,000 corn farmers in just the state of Iowa in the USA, who produced nearly twice as much corn as Mexico at half the price. In part, the US price of corn was low because of the US Government's direct subsidies and years of indirect subsidies through technical extension services and federally funded university research. It was not long after the establishment of free trade between the USA and Mexico that Mexican corn farmers abandoned their farms in great numbers. Many of these farmers migrated to the USA, most illegally. Richter, Taylor, and Yunez-Naude's (2006) findings that overall macroeconomic trends in Mexico and the US immigrant network effects dominate in explaining that immigrant flows are not incompatible with Martin's explanation: NAFTA triggered several economic changes that suppressed economic activity, so NAFTA and poor economic conditions in Mexico were closely correlated. The network effects affected immigration by inducing more displaced farmers to move to the USA rather than Mexico's urban centers.

### ***13.4.1 The Welfare Effects on the Source Hispanic Countries***

There has been little analysis of how the large outflows of Hispanic immigrants to the USA have affected the source economies. Clearly, the large numbers of people involved suggest that the effects of the departure of so many people must have been substantial. For example, since the civil war in the 1980s, the rise in crime, and the brutal government crackdowns on dissent in El Salvador, over 15 % of that Central American country has moved to the USA. Table 13.1 shows that there were nearly 12 million Mexican-born immigrants in the USA in 2010; that was more than 10 % of Mexico's entire 2010 population.

Mishra (2006) applied immigration data for 1970 through 2000 in a standard immigration model similar to the labor market supply and demand model used throughout this book. She concludes that the departure of Mexican immigrants to the USA raised the wage of the average Mexican remaining in Mexico by about 8 %. The wage effects differ greatly depending on Mexicans' levels of education, however. The wages of Mexicans with less than a high school education rose by only 5 %, while the wages of high school graduates rose by about 15 %. The reason for this disparity in wage effects is that a higher proportion of the relatively small group of high school graduates left the country. The great majority of Mexican immigrants have less than a high school education. Mishra also calculates that Mexican immigration to the USA reduced Mexico's 2000 GDP of \$580 billion by about one-half of 1 %, or \$3 billion. The gain for workers staying behind is 5.9 % of GDP, and the loss to the owners of the fixed factors is about 6.4 % of GDP. In terms

of the standard labor market model of immigration for the source country, which is illustrated in Fig. I.4 in the Introduction to Part I, the area  $e = 5.9\%$  of GDP, and the sum of  $e + g = 6.4\%$  of Mexican GDP.

### 13.4.2 The Demand Effects of Hispanic Immigration

The theoretical models of immigration discussed in earlier chapters suggest that immigrants have consumer demand effects, as well as labor supply and complementary factor supply effects. The 50 million Hispanics in the USA clearly constitute a very large ethnic market. Spending by Hispanic households is estimated to exceed 8 % of total household spending in the USA. The size of this market will continue to grow with the above average birth rates for Hispanics in the USA. Also, as incomes rise from first- to second-generation Hispanic immigrants, the market grows further. And, it will grow if Hispanic immigration to the USA continues growing.

It is interesting to note that marketers have suddenly recognized the importance of the Hispanics' product demand effect on the US economy. The Bank of America Corp. has begun offering credit cards to customers without social security numbers. Advertising revenue at Univision, the large US Spanish language television network, and its smaller rival Telemundo grew by over 20 % per year in the early 2000s, about double the increase of overall television advertising revenue in the USA. Marketers have been especially keen to identify themselves with Mexican holidays such as *Cinco de Mayo*. Corona beer, the Mexican brand that sells as a premium beer in the USA, now uses *Cinco de Mayo* to tout its Mexican heritage to all US consumers, spending over \$2 million during the first week of May alone (Millman, 2001). Already back in 2000, Sears, Roebuck & Co. had begun to shift advertising expenditures from *Cinco de Mayo* to Mexican Independence Day on September 16 because it felt *Cinco de Mayo* was becoming too much of an "American" holiday, much the way St. Patrick's Day or Oktoberfest are enthusiastically celebrated by Americans of all ethnic backgrounds (Millman, 2001). Clearly, even though the simple labor market model of immigration does not recognize the growth in demand after the arrival of immigrants, the firms that supply the US market certainly do.

## 13.5 Future Hispanic Immigration

A study for Mexico's Ministry of the Interior prepared by its Consejo Nacional de Población (2001) provided alternative estimates under different assumptions about economic growth in Mexico and the USA as well as different assumptions about future population growth in Mexico. The study concludes that under a scenario of rapid economic growth in Mexico and moderate growth in the demand for labor in

the USA, Mexican immigration to the USA will remain steady at about 400,000 per year. Such annual flows of immigrants imply that another ten million Mexican immigrants will arrive in the USA by the year 2030. On the other hand, slow economic growth in Mexico and robust labor demand in the USA would swell Mexican immigration to over half a million per year by 2030.

The study's conclusions reflect some of the empirical studies of Hispanic immigration discussed earlier in this chapter:

The narrow range in which these situations vary indicate that other factors closely related to the migration tradition of more than 100 years and the operation of complex social networks are apparently more determinative of international emigration than the impact of economic fluctuations in the labor markets in both countries.<sup>6</sup>

In other words, the fact that Mexican and the US economies are closely intertwined and so many people on both sides of the border have family ties means that further immigrant flows from Mexico to the USA are probably inevitable. The next Part of this book will look at immigration policy, and policy can certainly slow or accelerate future immigration. But fundamental economic and social forces also exert strong pressure as well, pressure that explicit policies to the contrary cannot easily control.

### **13.5.1 Will Hispanic Immigration Continue?**

Not all studies predict continually increasing immigration flows from Mexico and other Latin American countries. For one thing, population growth in Latin America is slowing rapidly. This means that 20 years from now, there will be fewer young workers. As already pointed out at the start of this chapter, Hispanic immigrants to the USA are disproportionately young and of working age, which has to some degree mitigated the problems associated with the ageing of the US society. But, it appears that Hispanic countries will not have as many young people to send to the USA in the future. Also, the currently young Hispanic population in the USA will age too, and Hispanics will eventually reach retirement age.

Finally, Table 13.6 presents a range of estimates of the future size of the Hispanic population in the USA by Roberto Suro and Jeffrey Passel of the Pew Hispanic Center. The number of Hispanic immigrants is predicted to continue growing, and the growth is spread across first-, second-, and third-generation Hispanics. These predictions suggest that Hispanics will have a strong impact on the US economy and the US society in the future. The growing size of the Hispanic community in the USA will, no doubt, lead to increased interest in assimilation. Time will tell whether the Hispanic population in the USA will increase its rate of assimilation or whether the sheer size of the Hispanic community will continue to hamper the assimilation process.

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<sup>6</sup> Quote is a translation provided in Simcox (2002).

**Table 13.6** Alternative immigration scenarios for Hispanics: 2000–2020

	Total Hispanic	First generation	Second generation	Third generation
<i>Mid-range estimate</i>				
2000	35,306,000	14,158,000	9,887,000	11,261,000
2010	47,696,000	18,126,000	15,404,000	14,167,000
2020	60,424,000	20,555,000	21,659,000	18,210,000
<i>High-range estimate</i>				
2000	35,306,000	14,158,000	9,887,000	11,261,000
2010	51,013,000	20,761,000	16,086,000	14,167,000
2020	67,282,000	25,090,000	23,970,000	18,221,000

Source: Table 3 from Suro and Passel (2003)

### 13.5.2 Temporary Immigration Programs

There have been suggestions that the USA should combat unauthorized immigration from other Western Hemisphere countries by instituting temporary immigration programs. The precedent for such a program is the *Bracero Program* during and after World War II, which allowed Mexican workers to temporarily work in agriculture in the USA. But such programs for temporary work permits more often than not seem to result in permanent immigration. For example, temporary immigration programs in Europe ended up increasing the permanent immigrant populations of many European countries. In order to assess whether temporary worker programs in the USA will end up reducing the unauthorized entry of Hispanic immigrants without adding to the further growth of the permanent Hispanic population, it is informative to look at a recent opinion survey of Hispanic immigrants by the Pew Hispanic Center described in Suro (2005).

The survey covers a large number of Mexican immigrants who visited a Mexican consulate in the USA in 2004 in order to apply for a *matricula consular*, the widely used identity card issued by the Mexican Government. Most Mexicans applying for such cards are unauthorized immigrants unable to obtain the US documents. Therefore, the survey clearly presents a sample of Mexican immigrants who would be the most likely applicants for temporary work visas if they were made available.

The survey results show that by a 4 to 1 margin, respondents said that they would participate in a temporary worker program that would allow Mexicans to work in the USA for a limited number of years and then return permanently to Mexico. Yet, 42 % of the respondents replied that they would stay in the USA. “As long as I can” and another 17 % said that they wanted to stay “for the rest of my life.” Only 27 % said that they intended to stay for less than 5 years. About three out of four respondents said that they would participate in a program that offered the prospect of permanent legalization of unauthorized immigrants. In short, one could reasonably expect that many participants in any temporary immigration scheme

would do what they could to remain in the USA when their temporary permit expired. Like what happened in Europe in the 1960s, many guest workers would find ways to become permanent residents and, eventually, citizens in the USA.

## 13.6 Conclusions

This chapter has presented some of the characteristics of the recent Hispanic immigration to the USA. In 2010, there were over 50 million Hispanic immigrants and their descendants living in the USA. The assimilation experience of this large cultural group does not seem to have followed the path past immigrants to the USA followed, and many third-generation Hispanics in the USA still find themselves with income and education levels substantially below the US averages. Some forecasts predict that as many as 60 million Hispanics will be living in the USA by 2020. Many Americans worry about various effects of Hispanic immigration.

Few other countries in the world are experiencing such a large inflow of people from a single foreign culture. Even if we recognize, and we should, that not all Hispanics are similar, it is still the case that over half of all Hispanic immigrants and descendants are from a single country, Mexico. Sociologists have studied Hispanic immigration much more thoroughly than economists because the cultural implications of such a mass movement of people are so important. However, economists also need to pay more attention to Hispanic immigration because the size of Hispanic immigration implies that assimilation is likely to be much slower than would normally be the case for smaller immigrant groups. The slower pace of assimilation has very real economic implications. Also, the expansion of Hispanic ethnic enclaves has clear demand-side implications. American business has already effectively recognized this in the form of more focused marketing aimed at the Hispanic market. It may also be interesting to study whether the predominantly Hispanic immigration to the USA brings substantially different outcomes compared to the more diverse immigration into the high-income countries of Europe and to Canada or the greater Asian immigration flows to Australia, for example. In any case, the study of Hispanic immigration should not belong exclusively to sociologists.

Finally, the following quote helps to keep the often-emotional discussions of Hispanic immigration in a broader perspective:

Few of their children in the country learn English...The signs in our streets have inscriptions in both languages ... Unless the stream of their importation could be turned they will soon so outnumber us that all the advantages we have will not be able to preserve our language, and even our government will become precarious.<sup>7</sup>

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<sup>7</sup> Benjamin Franklin, quoted in Kenneth C. Davis (2007), “The Founding Immigrants,” *New York Times*, July 3.

These words seem to represent the sentiments often displayed toward Hispanic immigration by commentators and Americans on the street. You will be interested to know that they were written nearly 250 years ago by Benjamin Franklin! Franklin was referring to German immigrants who had arrived in Pennsylvania in the 1750s! Those German immigrants, or at least their descendants, were eventually fully absorbed into the US society, and few Americans today could imagine why anyone would make such a fuss about German immigrants. Time will tell whether the fear that pervades discussions of Hispanic immigrants will eventually be looked back on as having been just as misguided as Benjamin Franklin's assessment of the Germans in the eighteenth-century Pennsylvania.

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## Part III

# Immigration Policy: Introduction

Despite the huge and obvious income differences across countries and the natural desire for people to improve their lives, nearly all people in the world continue to live in their native countries. Even in the global economy of today, only a bit more than 200 million, or not more than 3 %, of the world's seven billion people are living outside the country they were born in. The numbers suggest that we should not focus all of our attention on the question of why people immigrate; rather, we should also ask why most people do *not* immigrate. This section of the book examines one of the main reasons why more people do not move to foreign countries: Countries generally restrict entry to foreigners.

Nearly all countries maintain formal restrictions on immigration. Some countries prohibit almost all immigration. And most countries that do permit immigrants to enter accept them only under certain conditions and according to predetermined criteria. Some countries accept refugees on humanitarian grounds, and many countries accept some immigrants with specialized skills. A few countries, such as Australia, Canada, France, New Zealand, and the USA, accept substantial number of immigrants as permanent residents. But even these countries are far from open to immigrants; they still go to great efforts to limit and restrict entry to foreigners.

Immigration policies usually specify the criteria under which immigrant visas can be issued or refused. Some countries tie immigrant visas to specific skills or employment opportunities. Many governments offer employment visas that are often of limited duration. Also, immigrant destination countries often limit immigrant visas to people with family or close ethnic/cultural ties to the destination country.

## The Goals of Immigration Policy

The great variety of immigration policies across countries suggests that countries have different policy objectives. However, the chapters on the theory and evidence on immigration suggest that immigration has many causes and consequences. Accordingly, it is very difficult to determine the goals of immigration policy by which to ultimately judge the success or failure of such policies.

Before we can analyze immigration policies, we need to ask what exactly immigration policies *should* try to accomplish. This is clearly a subjective question, but there is no way to analyze policy without making such subjective determination. Note that the simple labor market model of immigration effectively makes the subjective determination that immigration be judged by how it affects the aggregate sum of individual incomes generated in the market economy. While many neoclassical economists have somehow convinced themselves that these assumptions permit economists to reach “objective” conclusions about economic policy, this is obviously not the case. The only honest, scientific way to judge policy is to explicitly recognize the underlying assumptions of the models used and how those assumptions affect the conclusions reached by economic analysis.

Economists must determine what they want immigration policy to accomplish before they can choose the models with which to analyze the results of the immigration policies. According to the immigration economist George Borjas (1995, p. 19):

... the positive theory of immigration policy ... is based on the idea that, distributional issues aside, the main objective of immigration policy should be to increase the national income accruing to natives. It is far from clear that immigration policy *should* pursue this objective. The immigration statutes reflect a political consensus that incorporates the conflicting social and economic interests of various demographic, socioeconomic, and ethnic groups, as well as political and humanitarian concerns.

Clearly, a country has to answer some very difficult questions when it formulates its immigration policies. For example, should a country’s immigration policies be designed with the objective of maximizing the welfare of natives, or should immigration policies also be concerned with the welfare of immigrants? To what degree should immigration policy take the well-being of other countries into consideration? Should certain groups of people be favored over others? Are there basic welfare levels that must be maintained for all people? The immigration policies that we observe being applied by countries throughout the world reflect how countries have effectively answered these types of questions.

This is not to say that countries always explicitly address these tough questions. Often, immigration policy seems to hinge on issues related to only a few of the many real causes and consequences of immigration. Immigration policy also reflects a society’s culture. For example, immigration policies depend on whether a society’s culture leads people to view human society from the classic liberal perspective of the *individual* or from the perspective of a collective *community*. If the pursuit of individual freedom is foremost, then people will be less likely to insist

their government impose barriers to the free exit and entry of people into their countries. On the other hand, if people have a strong sense of community or common culture, then they may be more likely to favor restrictions on the entry of foreigners. Highly nationalistic cultures tend to prefer immigration policies that eliminate perceived threats to national identity and culture.

Carens (1987, p. 251) points out that the classic liberal view offers “little basis for drawing fundamental distinctions between citizens and aliens who seek to become citizens.” Others who claim to base their thinking on the classical liberal principles arrive at similar conclusions. For example, Nozick (1974), the *libertarian school*, and *Objectivists* like the philosopher Rand (1967) would give national governments few roles beyond the protection of personal property and the freedom from abuse or intimidation by others.

However, not every school of thought inspired by classic liberalism concludes that government should be severely limited in its scope. Classic liberalism also led to the *social-contractionist* philosophy of Rawls (1971). In seeking to define what makes a society “just,” Rawls reasoned that a truly unbiased definition of social justice can only be arrived at from behind a “veil of ignorance” that hides one’s own circumstances. That is, a just society is the one people would choose to be born in if, hypothetically, they did not know their actual social class, race, gender, sexual orientation, level of wealth, education, talent, and other personal and social characteristics. Rawls reasoned that people should be especially concerned about the conditions of the least well-off people in a society because, from behind their veil of ignorance, they know that they could be one of those unfortunate people. Under Rawls’ definition of social justice, government has the expanded role of not only providing people personal freedom, but it should also provide assistance for the unfortunate and the unlucky. Rawls (1971) also argues that government, as the representative of all citizens of a country, should maintain minimum living standards, social justice, and equal educational opportunities.

It is not clear that Rawls’ concept of social justice leads to conclusions about immigration policy that differ substantially from the libertarian and objectivist descendants of classic liberalism. One could argue that social justice points to keeping the borders open for immigrants. People would certainly like to have the freedom to immigrate to another country if, after emerging from behind their veil of ignorance, they found themselves living in a country with civil war, widespread poverty, or active discrimination against the specific personal characteristics they might happen to be born with. However, Rawls’ view of social justice could also lead to the conclusion that a socially just national society must be “protected” from the disruptive inflow of foreign immigrants. Indeed, we often hear groups opposed to immigration arguing that the entry of foreigners into the country changes the income distribution, lowers wages of the least fortunate, and causes some people to suffer difficult changes in lifestyles. Note, however, that Rawls himself never intended his veil of ignorance to stop at the border.

Finally, yet another strand of classic liberalism led to the type of utilitarian thinking that lies behind the traditional models of immigration we have presented in this book. These models suggest that the net gains from immigration are positive

under most reasonable assumptions, although there are substantial shifts in welfare among distinct groups. While these models show why some people and groups might oppose open immigration, the social welfare functions that underlie these utilitarian models usually lead to the conclusion that human welfare is maximized by completely opening the borders to immigrants. We can conclude, therefore, that many schools of liberal thought tend to oppose widespread restrictions on immigration, but there is plenty of room for argument about specific policies and goals, especially when there is doubt about exactly how immigrants affect the welfare of natives.

The *community* perspective, as opposed to the liberal perspective, is much more likely to favor barriers to immigration. This perspective accepts that a sense of community is fundamental to human behavior because humans evolved as members of small hunter-gatherer groups, protective of each other and fearful of outsiders. Psychology, neuroscientific studies, and experimental economics have provided ample research confirming that people care about others, but they tend to have empathy and demonstrate altruism mostly for people they know and closely identify with. Modern societies have grown to where the nation is now the basic political unit for making rules and governing human activity, and modern humans tend to view the nation as their community. Hence, people care much more about the welfare of their compatriots than they do about the welfare of foreigners. Kopczuk, Slemrod, and Yitzhaki (2005) test Americans' actual willingness to provide assistance to people inside and outside their country, and they interpret the results as showing that observed behavior suggests that Americans' value of a foreigner's welfare may be as little as 1/2,000 of the value they put on the welfare of an American. Whether or not classic liberals would find such attitudes "just," actual human behavior seems to indicate that people would prefer their government to restrict the movement of people across the nation's borders whenever their arrival threatens the welfare of the community, the national culture, or even just some substantial number of fellow citizens.

In sum, immigration policy is the outcome of a complex interaction of economic forces, political systems, social structures, and basic human behavior. How culture and people's hardwired mental thought processes shape their attitudes towards foreigners may shape a country's immigration policy more than many of the economic forces detailed earlier in this book.

## Classifying Immigration Policies

In analyzing and comparing immigration policies across countries and over time, it will prove useful to classify immigration policies according to a set of goals that immigration policies are intended to accomplish. Specifically, a nation's immigration policy consists of a set of laws, regulations, and bureaucratic procedures that address the following questions:

1. Is immigration to be restricted?
2. If indeed immigration is to be restricted, how many immigrants will be allowed to enter the country?
3. If the number of foreigners seeking to immigrate exceeds the number of immigrants to be allowed into the country, what criteria will be used to ration the scarce entry permits?
4. How many resources will be devoted to enforcing the immigration restrictions?
5. What methods will be used to enforce immigration restrictions?
6. How are immigrants to be treated compared to citizens of the country?
7. Will all immigrants be treated the same, or will some categories of immigrants be favored over others?

Every country answers these questions differently. Some countries severely limit the number of entry visas, but they turn a blind eye to unauthorized immigrants who sneak across the border. Other countries severely punish unauthorized immigrants. In some countries immigrants enjoy virtually all the rights accorded to native citizens, but in other countries immigrants can never gain the full rights and privileges enjoyed by natives. In the chapters of this section of the book, our descriptions of immigration policy will be framed around these seven questions. By addressing the same seven questions, it becomes possible to compare immigration policies over time and across countries.

Chapter 14 of this Part of the book presents the history of the US immigration policy, from before independence through the middle of the first decade of the twenty-first century. The USA makes a very good case study because it has accepted more immigrants than any other country over the past 200 years, and it continues to be the most popular immigrant destination today. Also interesting is how the US immigration policy has shifted over the past 200 years. The radical shifts in the US immigration policy facilitate distinguishing how economic, political, and demographic forces shape the formation and application of immigration policy.

Chapter 15 describes immigration policy in Canada, and Chap. 16 covers the interesting case of Western Europe. Western European countries were the source of millions of immigrants during the nearly five centuries between 1500 and 1960, but now Europe is itself a destination for large number of foreign immigrants. Not all countries have followed the same paths as have the US policymakers, and the variations in experiences and policies across countries and regions provide further insight into the complex economic and political processes that shape immigration policies.

The policies adopted by a government tend to reflect a country's national goals and interests, the gains and losses experienced throughout the economy, and the motivations for people to immigrate, just as theory and evidence suggest. In short, the study of immigration policy provides a most interesting way to bring everything together from the previous two sections of the book.

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# Chapter 14

## Immigration Policy in the USA

**Abstract** This chapter presents a history of US immigration policy. US immigration policy has varied greatly over the country's history, shifting from complete openness at the time of independence to a rigid ethnic quota system in the early twentieth century, and now back to a more open, albeit confusingly regulated, system at the start of the twenty-first century. The chapter provides answers to the seven questions posed in the introduction to this section for each of the distinct immigration policy regimes that prevailed in the USA over the past two centuries.

*Give me your tired, your poor,  
Your huddled masses yearning to breath free,  
The wretched refuse of your teeming shore.  
Send these, the homeless, tempest-tost to me:  
I lift my lamp beside the golden door*<sup>1</sup>.

### Chapter Overview

The renowned historian, Oscar Handlin, wrote that the history of the USA is fundamentally “the history of immigration” (Handlin, 1951). Indeed, the USA has received more immigrants over the past two centuries than any other country in the world, and it continues to receive more immigrants than any other country today. That is not to say that the USA always welcomed, or today still welcomes, all immigrants. To the contrary, the wide fluctuations in immigration over the past two centuries were in large part due to shifts in US immigration policy. The USA has moved from nearly completely unrestricted entry of foreign immigrants to very tight and discriminatory restrictions and back again to a more liberal stance.

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<sup>1</sup> The last lines of “The New Colossus,” the poem Emma Lazarus wrote for an 1883 New York auction to raise money for building the pedestal that now supports the Statue of Liberty on Liberty Island in New York harbor.

**Table 14.1** Immigration to the USA

Decade	Number (thousands)	Rate <sup>a</sup>
1820–1830	152	1.3
1831–1840	599	3.9
1841–1850	1,713	8.3
1851–1860	2,598	9.4
1861–1870	2,315	6.4
1871–1880	2,812	6.2
1881–1890	5,247	9.2
1891–1900	3,688	5.4
1901–1910	8,795	10.4
1911–1920	5,736	5.7
1921–1930	4,107	3.5
1931–1940	528	0.4
1941–1950	1,035	0.7
1951–1960	2,515	1.5
1961–1970	3,322	1.7
1971–1980	4,493	2.1
1981–1990	7,256	3.0
1991–2000	9,081	3.4
2001–2010	10,501	3.4

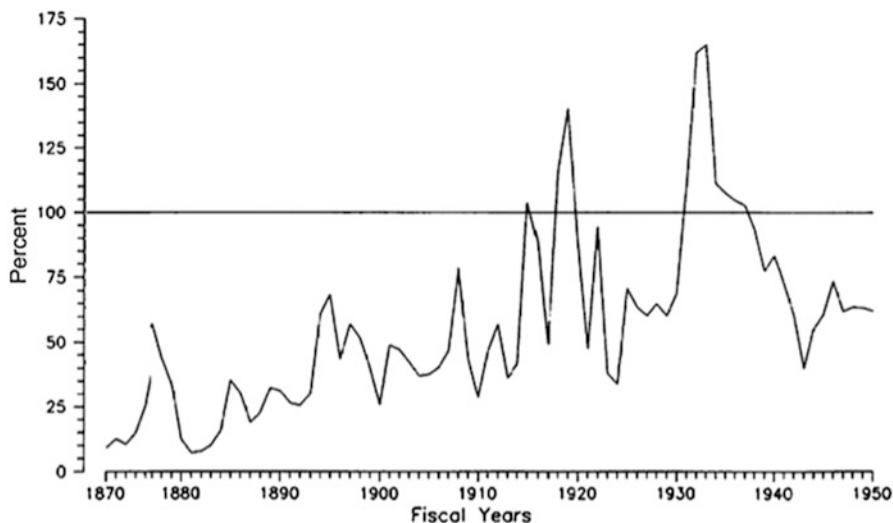
Source: US Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States 2003*, 117th Edition, Washington, DC, 2003; 2001–2010 from the Office of Immigration Statistics (2010), *2010 Yearbook of Immigration Statistics*, Washington, DC: Department of Homeland Security

<sup>a</sup>Number of immigrants per 1,000 residents of the USA

Shifts in US immigration policy were driven by complex relationships between economic conditions and political developments. Often, immigration policy reflected the cultural clash between native-born Americans and the “new immigrants.” Whatever their causes, these immigration policy shifts clearly shaped the flow of immigrants to the USA.

Table 14.1 shows how immigration to the USA grew throughout the nineteenth and twentieth centuries. From what today seems like a trickle, just 50,000 or so immigrants per year during the early part of the nineteenth century, immigration grew persistently and rapidly throughout that century. By the end of the nineteenth century, annual inflows of immigrants reached nearly one million persons per year. During the first decade of the twentieth century, 8.8 million immigrants arrived in the USA. In the year 1910 annual arrivals exceeded one million people, or 1 % of the US population at that time. In that same year, about 15 % of the US population was foreign born.

After 1913, World War I clearly interfered with the movement of people across oceans during the 1910s and 1940s. The Great Depression of the 1930s, when the unemployment rate surpassed 20 % in the USA, greatly reduced inflows of foreign immigrants. The decline in immigration began before the Depression, however. In 1924, for the first time, US immigration policy began to sharply restrict the entry of new immigrants.



**Fig. 14.1** Immigrant departures as a percent of arrivals. *Source:* Carter and Sutch (1997, Table 11)

As Table 14.1 shows, in the latter half of the twentieth century, official US immigration again grew steadily. Immigration reached nearly one million persons per year by the year 2000 and 1.3 million per year by 2006. This latest growth in US immigration matches the increases in immigration worldwide that are an integral part of the overall globalization of economic activity, but it also reflects the USA's increasingly accommodating immigration policies.

US immigration policy was not entirely open, however, as evidenced by the steady growth of unauthorized immigration to the USA during the latter half of the twentieth century. By the year 2000, there were an estimated 8.5 million unauthorized immigrants in the USA; by 2010, the number had grown to somewhere between 10 and 12 million. The growth of unauthorized immigration reflects the difficulties of applying immigration regulations in the face of economic incentives and the increasing ease with which people move between countries in the global economy.

US immigration has also varied in terms of the source countries and the permanence of the immigrants in the USA. Whereas most immigrants to the USA during the 1800s were mostly from the British Isles and northern Europe, during the very early twentieth century most immigrants were from southern and eastern Europe. Then, toward the latter part of the twentieth century, most immigrants to the USA were from developing countries in Latin America and Asia.

The very early immigrants to the USA were mostly permanent immigrants. Toward the end of the nineteenth century, however, there was a noticeable rise in the percentage of immigrants who eventually returned to their native countries. Figure 14.1 shows net immigration, which is the difference between new immigrant

arrivals and immigrant departures. Unfortunately, data on return immigration was not collected before 1870, but the trend is obvious from the post-1879 data. As international transportation became less dangerous and much less expensive, immigrants moved in both directions more frequently. The shorter-term fluctuations in return immigration reflected economic conditions in the USA and abroad. Note that during several years of the Great Depression, many more people left the USA, where unemployment was especially high. Other evidence suggests that nearly all of these departures were former immigrants returning to their native countries.

## 14.1 Early Immigration Policy

After the USA established its independence from Britain more than 200 years ago, its borders were effectively open to most immigrants. Immigration from Europe was, in fact, often encouraged, an understandable policy for a large country with relatively few inhabitants. The interest of the early leaders of the USA in promoting immigration is clearly revealed by the inclusion of the British Crown's restrictions on immigration to the 13 colonies as one of the justifications for *The Declaration of Independence* in 1776:

When in the Course of human Events, it becomes necessary for one People to dissolve the Political Bands which have connected them with another . . . a decent Respect for the Opinions of Mankind requires that they should declare the causes which impel them to the Separation . . .

. . . the present King of Great Britain . . . has endeavored to prevent the Population of these States; for that Purpose obstructing the Laws of Naturalization of Foreigners; refusing to pass others to encourage their Migrations hither, . . .

In 1787, many of the same leaders who signed the Declaration of Independence, plus a number of other prominent individuals from the various 13 United States of America, met again to draft a Constitution. The US Constitution contained provisions giving the Congress the power to "establish a uniform Rule of Naturalization." The Constitution also stipulated that Immigrants, once they gained citizenship, became eligible to hold all government offices except the Presidency. At the insistence of the delegates from the Southern states, the Constitution also condoned the forced immigration from Africa by banning the Federal Government from interfering with the slave trade for 20 years, until 1808.

Pro-immigration sentiment remained strong in the USA well into the nineteenth century. In a speech on December 2, 1783, not long after he led the US army that defeated British forces at the Battle of Yorktown, George Washington told an audience of Irish immigrants:

The bosom of America is open to receive not only the opulent and respectable stranger, but the oppressed and persecuted of all nations and religions, whom we shall welcome to participate in all of our rights and privileges, if by decency and propriety of conduct they appear to merit the enjoyment. (Fitzpatrick, 1931, p. 254)

Nearly 60 years later, President John Tyler would openly invite foreigners “to come and settle among us as members of or rapidly growing family.”<sup>2</sup>

### ***14.1.1 The Borders Were Not Entirely Open***

In 1790, as permitted by the Constitution, the Congress passed its first immigration legislation. Among other things, this legislation set a period of 2 years for an immigrant to become eligible for citizenship. The 1790 act also established that immigration was open to “free white persons.” In 1895, the number of years of residency required before citizenship could be applied for was upped to 5 years. Then, the *Alien and Sedition Acts* passed during the John Adams administration restricted the entry of even some “free white persons,” largely those people that the Federalists thought might vote for Thomas Jefferson. In 1798, the period required before citizenship could be applied for was increased to 14 years. In 1802, during the Jefferson administration, it was changed back to 5 years, where it has remained through today. Beyond these early acts, there was no other important immigration legislation until after the Civil War.

The free importation of African slaves was no longer permitted after its Constitutional authorization ended in 1808. At the invitation of President Jefferson, Congress passed a law in that year banning the further arrival of slaves. However, there is evidence that as many as 50,000 additional African slaves may have been brought into the country illegally after 1808.

### ***14.1.2 Assessing the Early Policies***

In terms of the seven questions that immigration policy must answer, as discussed in the previous chapter, during the early 1800s the USA answered the first question in the negative, which implied it did not have to address questions 2 through 5. Questions 6 and 7 were dealt with rather simply as well in the case of “free white persons” who arrived in the USA voluntarily: Immigrants were treated the same as citizens except that they did not have the right to vote or hold political office until they acquired full citizenship. Permanent immigrants, if they so desired, were usually able to acquire full citizenship after 5 years of continuous residence in the US. Immigrants from Africa, on the other hand, were slaves and enjoyed few if any rights. It would take the Civil War and many additional laws well into the twentieth century before the descendants of African slaves would gain full and equal citizenship. It would be 200 years after the import of African slaves was banned before an African-American would be nominated by a major political party to run for President.

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<sup>2</sup> From James D. Richardson (1903), *Messages and Papers of the Presidents*, Washington, DC: Bureau of National Literature and Art, p. 41.

The 1790 immigration law establishing unrestricted immigration for “free white people” would eventually be used against Asian immigrants later in the nineteenth century. Before then, however, Asian immigrants were not refused entry and the law was interpreted as applying to everyone except Africans. In sum, most immigration was open, and most immigrants enjoyed full rights in the USA during the first half of the nineteenth century. Racial discrimination was a prominent and dismal characteristic of the nineteenth century USA, however, and it was clearly reflected in immigration law and policy.

## 14.2 The Latter Half of the Nineteenth Century

Table 14.1 showed that during the 1830s about 60,000 immigrants arrived in the USA each year. By the 1850s, the number of immigrants had increased almost fivefold to over 250,000 per year. Relative to the US population, from just two or three new immigrants per year for every thousand residents, toward the end of the 1840s and into the 1850s, each year nearly ten new immigrants arrived for every thousand residents. That is, the US population was growing by about 1 % per year just from immigration.

### 14.2.1 Religion and Immigration

During the 1850s, many of those immigrants were Irish escaping the potato famine. The Irish immigrants were often criticized because they were Catholic. There had been anti-Catholic riots in several northeastern cities of the USA as early as the 1830s, fueled by the fear that the growth of Catholicism would undermine traditional Protestant society of the USA. Increasing numbers of Germans were also arriving by mid-century, and the majority of them were Catholic too. This anti-Catholic sentiment was easily transformed into anti-immigrant sentiment.

An exclusive and secret society of white protestant men called the Order of the Star-Spangled Banner arose in the 1850s to protest the threats of different cultures like Roman Catholicism. Because they would always reply, “I know nothing,” when questioned about their organization, members of the Order were referred to as the *Know-Nothings*. By the mid-1850s, the Order of the Star-Spangled Banner had over a million white males as members, which amounted to about one-eighth of all eligible white male voters in the country. Remember, only men could vote in the nineteenth century, and in the Southern states, only whites could vote. The Order formed a political party, the American Party, whose candidate, the former President Millard Fillmore, captured 20 % of the vote in 1856. The Civil War, in which many recent immigrants fought, lowered the anti-immigrant fervor, however, and the Know-Nothings gradually faded into obscurity. Similar groups would appear again from time to time throughout American history.

### **14.2.2 *Growing Opposition to Immigration Spurs New Legislation***

After the Civil War and the Emancipation Declaration, Congress began to draft legislation to modify the 1790 Immigration Act, which still required immigrants to be “free white persons.” The new legislation soon came under attack not because it enabled African Americans to be naturalized as full citizens, but because there was growing opposition to allowing Chinese immigrants into the country. In the 1860s, thousands of Chinese immigrants had come to work on the transcontinental railroad. The census showed that, by 1870, there were 63,000 Chinese in the USA, almost all males and almost all living in California. In 1880, the number had risen to over 100,000. The anti-Chinese sentiments were strong in California, where most Chinese immigrants resided. But when, in 1870, a shoe factory in North Adams, Massachusetts, brought in 75 Chinese workers from California to replace striking workers, labor organizations were quick to exploit racial biases to depict Chinese immigrants as a threat to American workers. When organized labor targeted Chinese immigration, they effectively provided economic cover for various explicitly racist and cultural supremacist groups.

Congress passed several laws restricting Chinese immigration, but the Presidents vetoed them because established trade treaties between the USA and China prohibited restrictions on Chinese immigration. In 1875, more general immigration laws were passed that prohibited the entry of foreigners who were “destitute,” engaged in “immoral activities,” or suffered from obvious health or physical problems. This law was not very explicit, and there was little money allocated for enforcement. In 1876, the Congress again passed legislation specifically banning Chinese immigration, and while President Rutherford B. Hayes’ again vetoed it, he did promise to renegotiate its treaties with the Chinese so as to permit the restriction of Chinese immigration. In 1882, after a new trade treaty with China was negotiated, the Congress passed a bill entitled “To Execute Certain Treaty Stipulations Relating to Chinese” but popularly known as the *Chinese Exclusion Act of 1882*. This legislation banned further immigration from China for 10 years except for immediate family of Chinese already in the country. Three months later, also in 1882, a general immigration law was passed that placed a tax on immigrants in order to pay for the new immigration bureaucracy that the law also authorized and placed under the supervision of the Secretary of the Treasury. This second 1882 law is best known for establishing the criterion that immigration authorities could deny entry to “paupers or persons likely to become a public charge.” Beginning in 1892, a special Commissioner General of Immigration was appointed by the President to run the immigration bureaucracy with its inspectors, examiners, translators, border guards, and administrators.

### **14.2.3 *The Chinese Exclusion Act***

The *Chinese Exclusion Act* was blatantly racist as it specifically limited Chinese immigrants. The prevailing anti-Chinese sentiment was bolstered by growing anti-immigrant sentiment during the recessionary years of the early 1890s, when

unemployment was very high throughout the country. In 1892, the *Geary Act* extended the ban on Chinese immigration for another 10 years and added new restrictions on Chinese living in the USA. For example, the Geary Act denied the right of bail to Chinese in habeas corpus proceedings, and all Chinese immigrants were required to obtain an identification document called a *certificate of residence*. Chinese American community organizations urged Chinese in the USA to refuse to acquire the certificates, and perhaps 90 % engaged in this passive protest. A case was taken to the Supreme Court to try to overturn the Geary Act as unconstitutional. With a stunning 5–3 vote, the Supreme Court decided that the US Congress had the power to monitor and deport resident aliens if “their removal is necessary or expedient for the public interest.”

The Supreme Court decision effectively confirmed that unnaturalized immigrants were at the mercy of the Congress and did not enjoy the full rights accorded US citizens under the Constitution. Lucy Salyer (1995) studied the legal implications of these laws and the Supreme Court decision, and she underscores their importance when she concludes that “the doctrines providing the foundation for immigration law arose out of the struggles on the West Coast among Chinese immigrants, government officials, and federal judges over the enforcement of the Chinese exclusion laws” (Salyer, 1995, p. 247). Chinese immigrants often challenged the US government in court, and this led government officials to pressure Congress and the Supreme Court to rule “that the nation’s gates could be effectively guarded only if they were allowed full authority and discretion over immigration policy without interference from the federal courts” (Salyer, 1995, p. 248). The support of the Supreme Court of the centralization of immigration procedures in the Presidency did not result in the wholesale loss of rights by non-naturalized residents, but it certainly supported the legitimacy of what became increasingly arbitrary processes and made the final decisions of the US immigration authorities and bureaucrats uncontestable in the courts. The recent arbitrary and unconstitutional ways in which the US government has dealt with suspected terrorists and their alleged supporters in the USA reflect a long-running drift of US law toward giving immigrants substantially less rights than native-born Americans.

#### **14.2.4 Controlling the Border**

Another important feature of the 1891 legislation was the creation of the Office of Immigration. This agency later came to be called the Immigration and Naturalization Service (INS), a name it maintained for nearly a century until a very recent reorganization of national security following the September 11, 2001 terrorist attacks. The purpose of the new agency was to enforce the immigration laws, and Congress gave it the power to deport noncitizens residing in the USA deemed by the agency to be undesirable in some defined way. The power to instantly deport noncitizens implied that this agency effectively had the power to limit the due

process of law under the US Constitution and the Bill or Rights for noncitizens. Immigrant processing centers were established on Ellis Island in New York and San Francisco to check to see if people met the health and moral conditions mandated by the laws.

The establishment of the immigrant processing center on Ellis Island is a landmark in US immigration policy. It represents the beginning of active control of immigrant inflows. Starting in 1892, over 12 million immigrants would pass through Ellis Island before the present procedure of processing immigrants overseas at US embassies and consulates went into effect in 1924. Despite Ellis Island's reputation, however, the screening was not terribly rigorous. First of all, not everyone was even required to pass through Ellis Island. Ships bringing immigrants would routinely dock at a pier on the Hudson or East River sides of Manhattan Island in New York, and first and second class passengers were immediately passed through customs and granted entry to the USA, "the theory being that if a person could afford to purchase a first or second class ticket, they were unlikely to become a public charge in America" (National Park Service, 2001). Most immigrants were third class and steerage (deck) passengers, however, and these passengers were ferried to Ellis Island. There they were given a quick physical exam (often lasting a mere 5 or 6 s) consisting of a quick check of the eyes and the skin. Then the immigrants were briefly questioned by inspectors in order to ascertain whether they were likely to become a burden on society. Immigrants were generally treated respectfully, and within a few hours nearly all were returned to Manhattan to travel on to their final destinations in the USA. Records show that fewer than 2 out of every 100 arrivals were refused entry. Of course, steamship lines were careful to screen their passengers before sailing because US authorities required the shipping lines to return those passengers who were refused entry to their original ports of embarkation.

Not as well known as Ellis Island is its counterpart on the West Coast, Angel Island in San Francisco Bay. Angel Island processed several hundred thousand immigrants between 1910 and 1940. Similar to Ellis Island in New York, first class passengers were disembarked in San Francisco, and the remainder were ferried to Angel Island for processing. The processing at Angel Island took much longer than Ellis Island, however, because it was designed to prevent unauthorized Chinese immigrants from gaining entry to the USA. The Asian Exclusion Act banned all Asian immigrants except immediate relatives of persons already living in the USA. Chinese immigrants were often kept in detention for a month or more before being allowed to enter the USA as immigration officials attempted to verify the alleged family ties to Chinese-Americans already living in the USA. Fearing that some would-be Chinese immigrants claimed kinships that did not exist, officials subjected both the immigrants and the supposed American relatives to extensive, and often abusive, questioning. Discrepancies between answers given to officials' questions by the detainees and their alleged relatives on shore did was often taken as proof the immigrants were lying about their kinship. Some Chinese and Japanese immigrants took advantage of an existing treaty between China and the USA that allowed businessmen to enter the country by pretending to be high-level business

representatives or merchants, but that effectively required that they purchase first class passage, a cost that was beyond the financial capacity of most immigrants.

There was corruption within the administration of Angel Island. Well-connected immigrants were processed much more quickly than others. For example, thousands of Japanese “mail-order brides” were quickly admitted into the USA under prior arrangements between brokers contracted by immigrants’ families and immigration inspectors. There are many stories of personnel on Angel Island passing information between detainees and on-shore relatives about the questions being asked so that they could coordinate their answers. After the 1906 San Francisco earthquake destroyed all immigration records, all Chinese in the country, whether they entered fraudulently or legally, were effectively accepted as legal residents for lack of evidence to the contrary. Despite this evasion of the restrictions, however, Angel Island must be recognized for its role in enforcing the discriminatory and racist *Asian Exclusion Act*. It served to prevent many would-be Chinese and Japanese immigrants from entering the USA. It still serves as a vivid example of how immigration restrictions can easily deteriorate into cruel and corrupt procedures.

### **14.2.5 *Immigration Remained Mostly Open***

Inflows of immigrants to the USA grew rapidly during the 1880s and again during the first decade of the twentieth century. In 1910 annual arrivals exceeded one million people, or 1 % of the US population at that time. In that same year, about 15 % of the US population was foreign born. It should, perhaps, not be too surprising that political pressure for curbs on immigration gained strength in the late nineteenth century and the first decade of the twentieth century. That was also a period characterized by occasional economic panics and recessions, especially during the early 1890s. As unemployment rose during those panics and recessions, many Americans came to believe that the large number of immigrants somehow added to their economic hardship. Many politicians were only too happy to demonize the nonvoting new arrivals in the hope of attracting the votes of citizens. The growth of Catholic immigrants from Ireland and Germany had already spooked many natives earlier in the nineteenth century, so it is not surprising that, given human nature, the even more diverse ethnic backgrounds of immigrants later in the nineteenth century would rekindle religious, racial, and ethnic biases and sensitivities. Opponents of immigration increasingly lamented the poor “quality” of new immigrants, which was a code word for immigrants from countries other than the traditional sources of US immigration like England, Scotland, Germany, and Scandinavia.

Yet, somehow legislation to curb immigration fell short of gaining majority of support in the US Congress. Legislation to place strict limits on all immigration came within a few votes of passing through Congress in 1897 and again in 1898, but somehow no major restrictions on immigration would actually be imposed for

another 20 years. Perhaps it was the improved economy or the lobbying by the owners of industry and commerce that pushed immigration curbs to the back burner of the legislative process. In any case, another 17 million immigrants would arrive in the USA before restrictive immigration legislation would finally be enacted.

Claudia Goldin (1994) documents that immigrants themselves were a decisive political force that was crucial in shaping legislation and preventing immigration restrictions from gaining enough votes for passage. Recall that in 1910 about 15 % of US residents were immigrants. The growing numbers of naturalized, and thus voting, immigrants in the large urban areas became a political force that kept urban politicians solidly pro-immigrant. In cities like New York and Chicago, immigrants made up as much as half the population. The semi-corrupt political machines in the large cities looked at arriving immigrant arrivals as future voters whose loyalty could be guaranteed by an openly pro-immigrant stance. Representatives of political machines often made it a point to court new immigrants to build political loyalties.

Also important for preventing more restrictions on immigration was the strong support for continued open immigration from employers. The large numbers of new immigrants each year put downward pressure on wages, and there was the frequent use of immigrants to break strikes and union organizing efforts by the new unions that were becoming very active in the USA around the turn of the century. Interestingly, the employment of immigrants sometimes led to more union pressure for better working conditions and higher wages because some of the immigrants came from England, Scotland, Ireland, and other countries where unionization was more advanced than in the USA at the time.<sup>3</sup>

### **14.2.6 Assessing the Early Policies**

At the end of the nineteenth century, US immigration policies explicitly answered the seven policy questions as follows:

1. Some foreigners were no longer permitted to freely immigrate to the USA, but white Europeans continued to have almost unrestricted entry.
2. There were no numerical limits to immigration, except that Asians without immediate family ties were completely banned.
3. The rationing issue did not come up because there were no numerical limits.
4. The USA devoted very few resources to enforce the restrictions on immigration, although an immigration bureaucracy was created and processing centers were built.
5. Immigrants were to pass through Ellis Island or, later, Angel Island, where they were questioned and given a health exam.

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<sup>3</sup> See, for example, Zinn (1970, 2003), Foner (1964), Wertheimer (1977), or Yellen (1974) for more on the role of immigrants in the US labor movement.

6. Immigrants continued to enjoy most of the rights that native Americans enjoyed under the Constitution, although court cases determined that the US Congress had the power to limit the Constitutional rights of non-naturalized residents.
7. Only Asian immigrants were explicitly identified and treated differently from the traditional European immigrants. African slaves were emancipated after the Civil War, although many formal and informal types of legal, social, and economic discrimination against African Americans continued.

In sum, except for the specific restrictions listed above, the USA remained mostly open to most foreign immigrants at the turn of the century.

## 14.3 The Shift in Policy in the Early Twentieth Century

Opposition to immigration continued to fester after 1900, even though formal measures to curb immigration failed to muster a majority in the Congress. During the first decade of the twentieth century, the annual number of immigrants arriving in the USA exceeded 1 % of the total US population in some years. The late 1800s and early 1900s was also a period of very rapid industrialization and technological progress in the USA, and not all the accompanying changes in the way of life were to everyone's liking. The increasing numbers of foreign immigrants were a convenient group of people to blame for all kinds of problems that people did not understand.

### 14.3.1 *The First General Restrictions of Immigration*

There were bills introduced in the Congress to require literacy tests for immigrants in 1903 and 1907. Similar bills were actually passed in 1913 and 1915. These bills were vetoed by President Wilson. In 1917, Congress again passed the literacy test, and this time it easily mustered the necessary two-thirds majority in both the House and the Senate to override President Wilson's veto. It should be noted that the literacy test did not require literacy in English, only in the native language of the immigrant. For example, literacy in Yiddish, the German dialect spoken by many Jewish immigrants, was accepted as satisfying the literacy requirement under the law. A provision requiring literacy in English was considered but never included in law. The ease with which the presidential vetoes were overridden in 1917 reflected a change in the scope of anti-immigrant feeling in the country. After World War I, opposition to open immigration became even more pronounced.

### 14.3.2 *The Post-World War I Shift in Policy*

Several trends combined to shift US immigration policy after the close of the war. First of all, the unsatisfactory ending to the war turned many Americans more isolationist. Equally important, the economic policy of seeking to return to the gold standard after the war led to tight monetary policy and a sharp increase in unemployment. The rise of communism in Russia may also have fueled the perception that foreign immigrants would bring alien political ideas to the USA, and anti-Semitism may also have played a role. Mostly, though, it was the election of an isolationist Republican president in 1920 combined with a severe economic recession in the USA that finally enabled restrictive immigration legislation to become law. This time, the usual cries about immigrants taking Americans' jobs quickly swung the legislative debate toward serious restrictions on immigration.

In 1921, Congress passed the *Emergency Quota Act*. This Act for the first time set strict limits on immigration. The act restricted immigration from outside the Western Hemisphere to about 350,000, and it was to remain in effect for just 1 year, but in 1922 the Congress renewed it for 2 more years. Opponents to open immigration gained strength in both the House and Senate in 1924, and there was now momentum for a new permanent law regulating immigration, including immigration from neighboring countries Mexico and Canada. The result was the *Immigration Act of 1924*.

This act mandated that immigration from each foreign country be limited to 2 % of the total number of descendants of immigrants of that national origin residing in the USA, with an overall limit of 150,000 people per year. Immediate family members and other close relatives were exempt from the overall limits, which still allowed about 300,000 immigrants to enter the USA each year during the remaining 1920s. Also, there was considerable argument about how to calculate national origins. It was proposed that a "scientific" study on the ethnic composition of the US population be carried out, but in the meantime the latest census should serve as the guide for determining the ethnic makeup of the US population. However, during the long deliberations leading up to the final bill the House of Representatives went along with its more "nativist" members and agreed to use the 1890 census, the first US census to ask people about their ethnic and national origins. Using the 1890 census appealed to those people who feared that the post-1890 immigration from Southern and Eastern Europe was upsetting what they perceived as the "traditional" ethnic makeup of the USA. Critics of the bill sarcastically referred to the 1890 census as the "Anglo-Saxon census."

This use of the 1890 census lasted only for a few years, however, and in 1929 the quotas were adjusted to reflect the results of a panel of experts that had worked under the auspices of a group called the American Council of Learned Societies. This panel somehow came to the conclusion that 43.4 % of Americans traced their origins back to people who were in the country at the time of the American Revolution and, presumably, of Anglo-Saxon descent. This revision actually

reduced the quotas for nearly all immigrants except those applying from the UK. Effectively, the “scientific” quotas were even more restrictive and biased.

One of the consequences of the strict quotas was the beginning of unauthorized immigration. While the flow of legal immigrants was restricted, the incentives for people to immigrate had not changed. In fact, incentives to immigrate to the USA may have gotten stronger during the 1920s. While many European economies suffered severe economic downturns, most segments of the US economy grew fairly rapidly during the “Roaring Twenties.” As immigrants began evading the new restrictions policymakers faced a serious failure of their new policies. Congress reacted in a way that has become familiar in the latter half of the twentieth century: It allocated more funds for enforcement of the immigration laws. The Bureau of Immigration was expanded, and the US Border Patrol was established to guard the Mexican and Canadian borders against the unauthorized entry of foreigners.

In summary, the early part of the twentieth century saw a complete revision of US immigration policy towards strict limits on new entries. US immigration policies explicitly answered all seven of the questions listed above as follows:

1. Immigration was to be strictly limited.
2. There was an overall limit of 150,000 immigrants plus exceptions for, among other things, family reunions and residents of the Western Hemisphere.
3. Country quotas not to exceed 2 % of total number of that national origin already in the USA.
4. The US Border Patrol was created to enforce immigration restrictions.
5. Immigrants were first required to pass through Ellis Island, Angel Island, and other border inspection stations; later, the task was passed to US Consulates overseas staffed with immigration personnel.
6. Aliens’ rights were further restricted by court decisions that recognized the power of the Congress to legislate how foreigners were treated.
7. Once in the country, all aliens were treated the same.

### 14.3.3 *Immigration During the Great Depression*

Immigration into the USA fell drastically in the 1930s, and the quotas had little to do with the decline in immigration. The Great Depression and high unemployment reduced the economic incentives for foreigners to come to the USA. As Table 14.1 showed, in many of the Great Depression years, the number of people leaving the country exceeded the number of new arrivals. During the 1930s, unemployment exceeded 20 % of the workforce, and there was no welfare system in place to provide support. US streets were clearly no longer paved with gold.

The Great Depression makes it difficult to assess the effect of the *Immigration Act of 1924*. Immigration seldom exceeded even the tight quota limits for most nationalities, so the restrictions were not often tested. However, there were a

number of policy issues that developed during the 1930s that reflect the difficulties in answering the full seven policy questions once the decision is made to restrict immigration. For example, the so-called “likely to become a public charge” clause that appeared in a 1882 immigration law was increasingly used by many overseas consuls to restrict specific categories of immigrants. In 1930, perhaps as a reaction to the rising unemployment, President Hoover explicitly instructed consular offices to refuse an immigrant visa to anyone suspected as a likely public charge. For example, the clause was increasingly used to bar prospective Mexican immigrants in the 1920s and 1930s.

Another problem was the high degree of discretionary power that overseas American Consulates had in granting immigrant visas. This discretionary power was derived from earlier court decisions upholding the executive branch’s power over immigration. This power was used very inconsistently during the 1930s when it came to refugees from Nazi Germany. Some Consuls granted as many visas as they could to persecuted Jews and other intellectuals, others granted very few. Incredibly, US Consuls in Germany, where Jews, intellectuals, and many other people were openly and clearly persecuted by the Nazi regime, granted only half as many immigrant visas as actually allowed under the quota system. Attempts by some legislators to pass bills allowing more refugees to enter the USA failed, and the Roosevelt administration, despite its liberal credentials, did not address the issue.

There are many stories of would-be refugees who, after failing to gain visas to enter the USA, perished in German concentration camps. A most shameful example was the 1938 voyage of a Hamburg-Amerika Line ship with 933 mostly Jewish refugees. The refugees had been put on the quota list at US consulates in Germany, but the final documents were delayed for unknown reasons. The refugees feared for their lives, so they boarded the ship bound for Havana, Cuba. They hoped to wait for their documents in the Western Hemisphere, far from Hitler’s police. Cuba already had over 2,000 similar German refugees waiting in Havana, and they refused entry to the 933 passengers. The ship then sailed for Miami, hoping to find sympathetic US authorities. Instead, the ship was ordered to leave US waters, and then a Coast Guard cutter was assigned to follow the ship to make sure no passengers tried to swim ashore. Eventually the ship returned to Europe, where France, Belgium, the Netherlands, and Great Britain each agreed to take a fourth of the passengers. Unfortunately, a few months later, Germany invaded the first three of those countries, and many of these Jewish refugees still perished at the hands of the Nazis. It is impossible to understand how the US authorities could have been so callous.

#### ***14.3.4 Immigration Policy During the War***

While Mexican immigration was strongly discouraged during the Great Depression, after the USA entered World War II, Mexican workers were actively encouraged to immigrate by new US government measures. Under the quickly

enacted *Bracero Program*, temporary work permits were issued to Mexicans working in agriculture and performing jobs formerly held by Americans who now joined the armed forces. The Bracero Program is an interesting example of how the combination of changing economic political conditions altered how the USA treated Mexican immigrants. This pattern would continue up through today.

World War II also triggered one of the most shameful episodes of US history: the “internment” of some 125,000 Japanese Americans after Japan attacked Pearl Harbor. US law permits the government to imprison persons 14 years old or older who are citizens of countries that the USA is at war with. However, the Japanese Americans imprisoned during World War II were American citizens, and most were born in the USA. Yet, these American citizens were arrested on shaky grounds and interned in ten camps, most of which were in desolate areas and provided the most rudimentary living conditions. Even though this government action was not sanctioned under US law or the US Constitution, amazingly the US Supreme Court would later react to lawsuits on behalf of the interned by retroactively approving the government’s actions.

## 14.4 Post World War II Immigration Policy

Economic and political conditions were much changed after the close of World War II. The change in conditions began to shift immigration policy. For example, in 1945 the *War Brides Act* permitted the spouses and children of overseas US citizens to immigrate to the USA outside the established quotas. Still, the shift in policy was slow and inconsistent.

### 14.4.1 Policy Immediately After the War

After World War II, the large numbers of refugees, or what were then called *displaced persons*, motivated special legislation authorizing the USA to accept about 400,000 immigrants outside the usual quotas. The target of this legislation was the people who had been separated from their native countries by the war and by the Soviet Union’s occupation of many Eastern European countries. Also included under these special provisions were people who had been imprisoned and persecuted in the axis countries, many of whom were still housed in various refugee camps around Europe. The 1948 *Displaced Persons Act* was a milestone in that it introduced the concept of sponsorship, under which some person or group in the USA assumed certain responsibilities for immigrants’ welfare after their arrival. Sponsorship enabled immigration authorities to satisfy earlier immigration legislation requiring it to refuse visas to persons “likely to become public charges.” There was a second bill, the *Refugee Relief Act of 1953*, authorizing another 200,000 visas for refugees outside the quota.

These small openings for more immigrants to enter the USA did not imply an end to the anti-immigrant and nativist sentiments that had closed the country to immigration in the 1920s, however. In fact, after World War II new legislation was proposed to reinforce the existing ethnic quota system. The Marshall Plan notwithstanding, many Americans were not interested in having the USA open up to the rest of the world after the war. As earlier in the twentieth century, many Americans were worried that large numbers of Eastern European, Jewish, and other nontraditional refugees would flood to the USA after the war, and that this would undermine American culture. Anti-immigrant feeling was also fueled by the Cold War paranoia about communist infiltrators in the USA, which peaked during the McCarthy hearings in the early 1950s. The Republican-controlled House and Senate began work on a new immigration bill that both strengthened the existing system of ethnic quotas and added explicit restrictions on the immigration of suspected subversives. The *1952 Immigration and Nationality Act*, also known as the *McCarran-Walter Act*, was drafted by Senator McCarran of Nevada, the head of the Senate Judiciary Committee. McCarran had long sought to further restrict immigration, and the Act kept most quotas in place, increased border patrols, and mandated new entry restrictions for persons with un-American political philosophies. The latter provision would end up keeping noted intellectuals such as Jean Paul Sartre from ever coming to the USA to give even a single lecture. Ironically, McCarran's legislation required quite a few compromises with politicians who favored various openings to immigration, and some provisions of the act actually mark the beginning of a shift towards more liberal immigration policies in the USA. The McCarran-Walter Act eliminated the anti-Asian bias in the quota system, and it reinforced the provisions of the 1924 legislation that immigrants from the Western Hemisphere and spouses and minor children of US citizens did not fall under the quota system. The act also included the unlimited authorization of immigrant visas for spouses and children of Americans and authorized immigrants worldwide. This "family reunion" criterion for awarding visas caused an immediate increase in immigration during the 1950s.

#### **14.4.2 A New Immigration Law in 1965**

Some liberal Democrats already began to push for eliminating ethnic quotas in US immigration policy in the early 1950s. It is also worth noting that two different government studies authorized during the Truman administration (1948–1952) had called for the elimination of the national origins system. In 1963, President Kennedy proposed that the quota system be replaced by a system based on (1) skills and national labor requirements, (2) family reunion, and (3) the first-come, first-served principle. No action had yet been taken by the Congress when Kennedy was assassinated in the fall of 1963. But, after President Johnson signed the Civil Rights Act of 1964, the blatantly racist and discriminatory immigration statutes came under renewed attack. In 1965, the Johnson administration and the Democratic

leadership of the Congress pushed through new legislation to replace the clearly discriminatory ethnic quota system.

The *Immigration and Nationality Act Amendments of 1965* abolished the national quota system in favor of a new set of criteria for the granting of permanent resident visas. The 1965 legislation prescribed that 80 % of the numerical limits were to be allocated to relatives of persons already living in the USA, and the remaining were to be allocated to those with desirable skills and their family members. Immediate family, that is, spouses and children, of US citizens were no longer subject to numerical limits at all. The Act also included a relatively small number of visas that would be awarded under a pure lottery system in order to give people who do not qualify either for family reunion or exceptional talents some hope of entering the USA.

#### **14.4.3 The Economic Effects of the 1965 Act**

Few suspected that the new immigration law would lead to sharp increases in the number of immigrants, but that is indeed what happened. Table 14.1 shows how immigration increased in the 1970s and 1980s. Also not foreseen was the change in the mix of nationalities of immigrants. Europe recovered from World War II and, by the 1960s and 1970s, reached standards of living comparable to those in the USA. Thus, the economic incentives for Europeans to immigrate to the USA were no longer as strong as they had been. Some Europeans still sought out the USA because of family ties or more subtle incentives such as a freer environment for entrepreneurs, but overall immigration from Europe declined sharply relative to immigration from Latin America and Asia. Also, the emphasis on family ties tended to favor the more recent immigrants, who were more likely to be from Latin America and Asia; most European immigrants from the nineteenth century had long since cut their ties to Europe.

It is this change in the composition of immigrant that has attracted the greatest amount of attention. According to George Borjas (1985, 1994), the skill levels of successive immigrant waves to the USA have declined over the post-World War II period. Blau (1980) and Chiswick (1978) had showed that before the 1970s, immigrants as a group reached income parity with US native workers within their lifetime, but Borjas presented data showing that was no longer the case toward the end of the twentieth century. He argued that current immigrants are mostly low-skilled individuals who will never become as productive as the average US native. There is still debate on Borjas' contention, however, and the issue will probably not be settled until more evidence on income trends become available.

Critics of Borjas' thesis pose the following challenging question: If the low-skilled immigrants improve their own well-being, which they usually do when they come from low-income countries where wages are just a very small fraction of US wages, and they cause the returns to other factors in the USA, including human capital, to rise, why is such immigration bad for the USA? There are, in fact, two concerns that

are not fully satisfied by looking only at the overall income gains from immigration: (1) immigration seems to be contributing to the growing wage spread between low-income and high-income workers in recent years, and (2) certain types of US workers compete directly with immigrants, and their wages have indeed been adversely impacted. The latter concern fits perfectly with the simple labor market model of immigration: Low-skilled immigrants will put downward pressure on wages in those labor markets where they compete, while increasing the returns to other factors of production, including human capital. The growing inequality in the USA has broader implications and consequences.

The increased wage differential does not necessarily represent a problem for the USA if the increasing differential serves as an incentive for low-skilled workers, or the children of low-skilled workers, to acquire the skills that are most in demand in the labor markets. But, as shown in several studies detailed in the previous chapter on Hispanic immigration, the children and grand-children of low-skilled Hispanic immigrants do not seem to be catching up to median incomes or median levels of educational attainment. Hence Borjas fears that “the huge skill differentials observed among today’s foreign-born groups become tomorrow’s differences among American-born ethnic groups” (George Borjas, 1994, p. 1713).

#### **14.4.4 The Growth of Unauthorized Immigration**

One very prominent characteristic of recent US immigration has been the increase in unauthorized immigration to the USA. Despite permitting a substantial increase in the number of immigrant visas issued, the 1965 immigration reform has clearly not increased the supply of immigrant visas in line with the growth of demand. One major factor in the rise in unauthorized immigration was the expiration in 1964 of the *Bracero* program that had permitted the temporary entry of Mexican workers in agriculture and other manual labor jobs. The end of this program effectively cut off any possibilities for Mexicans without advanced education levels or special skills to come to the USA unless they had immediate family in the country. The 1,500 mile border was largely unguarded, however, and because labor market conditions had not changed, many former *braceros* continued to enter the USA to work illegally in the same jobs they held when the program still operated. US employers were willing accomplices, as were American landlords, retailers, and many other economic interests that stood to gain from the presence of foreign workers and consumers.

### **14.5 Recent USA Immigration Policy**

Legal and unauthorized immigration both grew substantially during the 1970s and 1980s. Additional legislation during the 1970s permitted increasing numbers of refugees from Cuba and Vietnam to enter the country. By 2000, there would be

about 1.5 million Vietnamese and other Southeast Asian immigrants in the USA. The economic recessions in the 1970s and early 1980s prevented the concern that immigrants were “taking Americans’ jobs” from ever going away.

### 14.5.1 IRCA

In 1979, Congress authorized the creation of the *Select Commission on Immigration and Refugee Policy* (SCIRP), with instructions to report by 1981 on how to deal with the growing legal and unauthorized immigration. The final 1981 report concluded that unauthorized immigration was the major problem. To deal with the issue, the SCIRP report recommended (1) increased border patrols, (2) forgery-proof identification cards for legal immigrants so that employers could be held responsible for hiring unauthorized workers, and (3) amnesty for unauthorized immigrants who had been in the country for a long time. In 1981, President Reagan established another task force to study immigration, and it came to the same conclusions that SCIRP did. After further political debate, legislation finally emerged: *The Immigration Reform and Control Act of 1986* (IRCA).

IRCA generally followed the recommendations by SCIRP and Reagan’s task force. The combination of amnesty, holding employers responsible for hiring unauthorized immigrants, and tougher border controls was a compromise that both sides of the issue, namely those in favor of tougher enforcement and those against harsh punishment of unauthorized immigrants, could accept. However, the legislation was fundamentally contradictory or inconsistent in that it both welcomed past unauthorized immigrants and threatened potential new unauthorized immigrants. On the one hand, IRCA’s one-time amnesty for unauthorized immigrants resulted in about 2.7 million unauthorized aliens living in the USA gaining legal residence status that would eventually be convertible into US citizenship. However, Congress failed to adequately fund the border and employer enforcement measures on an on-going basis. Twenty-five years later, measures to require forgery-proof identification documents for immigrants and to enforce employer responsibility were still in the process of being put into effect, even with further legislation authorizing them.

IRCA authorized sharply higher expenditures for the Border Patrol and, for the first time, established penalties on employers who knowingly employ unauthorized aliens. However, Hanson, Robertson, and Spilimbergo (1999) find that increased border patrols had no noticeable effect on the number of people entering the USA illegally, nor did the potential punishment of employers slow the hiring of unauthorized immigrants. Even though the new law prohibited employers from “knowingly hiring, recruiting, or referring for a fee aliens not authorized to work in the United States,” punishment was not very harsh. The term “knowingly” guaranteed that IRCA would never have much legal strength. More fundamentally, the required checks by employers to verify their employees’ legal status in the USA conflicted directly with the cherished US legal principle of “innocent until proven guilty,” and

many groups worked to reduce or invalidate the measures. What the requirement for employers to verify citizenship did do was create a new industry supplying forged copies of the US social security cards, driver's licenses, and birth certificates needed to prove legal status.

Some politicians have claimed that the amnesty actually increased unauthorized immigration to the USA. Even though the amnesty was advertised as a one-time event, never to be repeated, some prospective immigrants could also have interpreted it as a signal that if enough new unauthorized aliens enter the USA, eventually their status will again have to be legalized with yet another "one-time" amnesty. Orrenius and Zavodny (2001) present evidence that suggests flows of unauthorized immigrants after 1986 merely followed long-run trends and were, therefore, unaffected by the amnesty. Predictions by opponents of IRCA who had argued that there would be further amnesties proved to be mostly right. In 2000, President Clinton called for new legislation authorizing the legalization of the status of some additional unauthorized aliens living in the USA, and in 2006 the issue of amnesty for some or all of the 10–12 million unauthorized immigrants in the USA was a central piece of new immigration legislation. As of 2012, new legislative efforts to grant amnesty have not been successful. In the meantime, the number of unauthorized immigrants living in the USA continued to grow after the passage of the 1986 act. Only the massive economic recession in 2009 would finally slow the flow of unauthorized immigrants to the USA.

### **14.5.2 After IRCA**

The *Immigration Act of 1990* amended the 1965 Act and altered the mix of immigrants permitted to enter the USA. This new law continued the policy of allowing unlimited numbers of entry visas for close relatives of US citizens, but it responded to the arguments of those who lamented the decline in the average skill and education levels of US immigrants by reducing residence visas for unskilled labor and increasing visas for "priority workers" and professionals with job offers from US employers in hand. The 1990 Act also made 10,000 permanent residence visas available to foreign investors who brought more than \$1 million with them for investments that create employment for at least ten US residents. The *Illegal Immigration Reform and Immigrant Responsibility Act of 1996* introduced new measures to reduce the flow of unauthorized immigrants, which continued to grow despite IRCA. This new legislation set up a clearing house that employers could call to verify the status of prospective immigrant employees. This measure was deemed necessary because the proliferation of forged documents had made employer checks of standard documents almost meaningless. Funds for the Border Patrol were further increased. Finally, a perverse incentive was inadvertently also introduced into this act: by setting higher income requirements for sponsors of

legal immigrants prospective immigrants had greater difficulty finding a sponsor. Some simply came illegally instead.<sup>4</sup>

Other recent US legislation that affects immigrants is the *Personal Responsibility and Work Opportunity Reconciliation Act*, which reformed US public assistance programs in 1996. Noncitizens were barred from some types of public assistance, and eligibility for some other types of assistance was made more difficult. It was hoped that these measures would reduce the burden of immigrants on the budgets of those states receiving the greatest number of immigrants, such as California, New York, and Florida. The budgetary effect was not as great as hoped; after denying government benefits to noncitizens, there was a sharp increase in applications for US citizenship by those permanent resident foreigners most interested in using government services.

When high-tech industries faced severe shortages of skilled workers during the dot-com boom in the late 1990s, pressure began to mount for increasing the number of immigrant visas for engineers, programmers, and other highly educated people. In 2000, a bipartisan bill passed through Congress authorizing an increase in the number of H-1B visas from 115,000 in 1999 to 195,000 in 2000. H-1B visas are specific temporary work visas for foreigners with talents and skills that are in short supply in the USA. At the height of the “high-tech” economic boom in 2000, even Federal Reserve Chairman Alan Greenspan went on record to endorse an increase in immigrant visas for labor categories in short supply.<sup>5</sup> Of course, by 2001, after the information technology stock market bubble had burst and the US economy slowed, some of the foreign workers admitted under H-1B visas lost their jobs and there was less demand for new H-1B visas.

The increase in H-1B visas was a one-time authorization by the US Congress, and when the authorization for the increased allotment of annual H-1B visas ended in 2003, it was not renewed.<sup>6</sup> Demand greatly exceeded supply at that point. For example, in 2008 the entire quota was exhausted before the end of the first day on which applications were accepted. The 123,480 petitions received on that day were pooled and 65,000 were selected at random for further processing. The additional 20,000 Advanced Degree H-1B visas for 2008 were exhausted in the first month. Despite the 2008–2009 economic recession, requests for H-1B visas have exceeded supply every year through 2012. Prospective employers have mounted strong campaigns to raise the number of visas, but as of 2012, Congress has not been willing to raise the ceiling. On the other hand, short-term visas for seasonal workers and workers for specific projects in, respectively, agriculture and industry/services, the H-2A and H-2B visas, have been used more often. Like the H-1B visas, H-2A and H-2B visas can only be applied for if there are no resident workers available in

<sup>4</sup> See Espenshade, Baraka, and Huber (1997).

<sup>5</sup> Reported in the “Work Week” column of *The Wall Street Journal*, March 14, 2000.

<sup>6</sup> Townsend, K. (2001, June 14). High-tech hard times bring rude awakening for foreign workers on three-year US visas. *Financial Times*. Silverman, R. E. (2001, June 21). For foreign workers here on special visas, tech bust hits hard, *Wall Street Journal*.

the local labor market, but procedures make it relatively easy for employers to acquire these visas for temporary workers. Labor groups have, with justification, complained that temporary visas have been used by employers to lower labor costs and deter union organizing efforts.

### **14.5.3 Summarizing Recent US Policy**

In the year 2000, the end of the twentieth century, the USA answered the six questions that define immigration policy as follows:

1. Immigration was restricted by a complex set of criteria for allocating permanent residence visas and by additional programs for temporary work visas.
2. There were numerical limits for many categories of immigrants defined by family relationships, skills, education, etc. and for the special legislation such as the H-1B work visas in 2000–2002.
3. Most visas were awarded to people meeting the criteria for any given category of immigrant on a first-come, first-served basis. The market for immigrant visas essentially used a queuing (wait in line) system. The wait was much shorter in some categories than others, however.
4. The USA devoted more resources to enforce the restrictions.
5. The USA created additional agencies to administer and enforce the immigration laws.
6. Until foreigners gain permanent residence status, they do not enjoy the full rights accorded by the US Constitution and laws.
7. Some immigrants, such as spouses of American citizens, and people with exceptional qualifications are treated more favorably after being admitted into the country.

By 2000, there were many calls for reform of the immigration bureaucracy. The huge backlogs, the confusing regulations, and the inconsistent treatment of applicants, the lax enforcement of the immigration laws, the widespread presence of unauthorized immigrants, and the rapid expansion of the nonnative population in the USA left few people satisfied. Discussions on how to reform immigration policy were interrupted by the terrorist attack on the World Trade Center on September 11, 2001, however.

## **14.6 Post 9/11 Immigration Policy**

Following the September 11, 2001 terrorist attacks, US laws have further reduced the rights of foreigners in the USA. *The Patriot Act* of 2001 gave the government even greater powers to control, apprehend, and deport foreign citizens in the USA. Even foreigners who have been awarded permanent residence status in the country

no longer enjoyed full civil and political rights; these are only gained when, after a minimum of 5 years, foreigners gain full citizenship. And even then, the Patriot Act even allows the government to revoke citizenship if there is credible evidence of ties to foreign terrorists. Temporary student visa applications have been subject to more extensive security checks, and student visas effectively became more restricted, to the disappointment of the US education sector.

### ***14.6.1 Reform of the Immigration Bureaucracy and Enforcement***

In 2003, the Immigration and Naturalization Service (INS) was split into two separate agencies and moved into the new Department of Homeland Security. The first is US Citizenship and Immigration Services (USCIS), which now handles citizenship issues, applications for permanent residence, nonimmigrant visitor and student applications, asylum, and refugees. The second agency is the Bureau of Immigration and Customs Enforcement (ICE), which consolidates all border enforcement activities. The US Border Patrol, whose job has been to enforce the regulations covering the movement of people across the United States' borders, is now part of ICE.

In some ways, the new split of the old Immigration and Naturalization Service (INS) into two separate agencies makes perfect sense. The activities the INS used to perform were clearly contradictory. On the one hand, the INS was charged with processing new immigrant applications and welcoming immigrants to the country, but the same agency was also charged with investigative and enforcement of immigration laws, effectively preventing people from entering the country. The INS never satisfactorily balanced its dual tasks: Was it supposed to make it difficult for someone to immigrate, or was it supposed to facilitate the process? The separation of the INS' immigrant processing duties and border inspection duties into the separate USCIS and ICE agencies will hopefully improve its performance. USCIS employs about 18,000 people, plus the overseas consular staffs at US embassies and consulates augment the USCIS staff. ICE employs 20,000 police, investigators, and administrative staff located in all US states and nearly 50 foreign countries. US customs and immigration inspectors increasingly push foreign countries to let ICE check process passengers and freight before leaving the foreign territory as opposed to only checking at the US border or port of entry, as is traditionally done. Some people look at the presence of so many US enforcement personnel in foreign locations as a sign of the US power to impose its procedures on other countries. There are virtually no foreign security personnel stationed in the USA in roles similar to those performed by ICE overseas, even though other countries often have similar concerns about unauthorized immigration, smuggling, and terrorist threats.

It is fair to say that the growth of unauthorized immigration is the most daunting problem for US immigration policy. As the differences in incomes across countries has become more obvious to more people throughout the world, as communications

and transportation have improved, and as the number of relatives and fellow countrymen already in the USA has grown, more and more unauthorized immigrants have entered the USA. It is estimated that 10–12 million foreigners reside in the USA illegally. Public sentiment toward immigration in the USA has changed in recent years. For example, 49 % of respondents to a 1986 survey considered immigration to be a “bad thing” for the US economy, by 1994, 61 % of respondents held such a negative opinion on immigration.<sup>7</sup> A series of surveys throughout the 1990s showed that, when asked whether immigration should be allowed to increase, kept at current levels, or be reduced, only about 5 % of respondents favored an increase.<sup>8</sup>

### **14.6.2 Employment-Based Permanent Residency**

Recent immigration laws have partially reversed the emphasis on family-ties for granting immigrant visas following the Immigration and Nationality Act Amendments of 1965. The 1965 Act abolished the national quota system dating back to 1924 in favor of new regulations that allocated 80 % of all permanent resident visas to relatives of persons already living in the USA. The remaining 20 % of immigrant visas are mostly allocated to immigrants with desirable skills and their family members; these are the so-called employment-based, or EB-1 through EB-5, visas. The first three categories, EB-1 through EB-3 visas, cover foreigners who have special talents, hold advanced degrees, are managers for multinational firms, are exceptionally skilled in specific types of work, or can perform work for which there are few workers available in the USA. Specifically, these three categories of visas are the following:

- First Preference (*EB-1 Priority workers*): Foreigners with extraordinary ability, outstanding professors and researchers, and certain multinational executives and managers.
- Second Preference (*EB-2 Workers with advanced degrees or exceptional ability*): Foreigners who are members of the professions holding advanced degrees or their equivalent and foreigners who because of their exceptional ability in the sciences, arts, or business will substantially benefit the national economy, cultural, or educational interests or welfare of the USA.
- Third Preference (*EB-3 Professionals, skilled workers, and other workers*): Foreigners with at least 2 years of experience as skilled workers, professional with baccalaureate degree, and others with less than 2 years experience, such as an unskilled worker who is qualified to perform a job for which workers are not available in the USA.

<sup>7</sup> Reported in Miller, J. J. (1994, March 8). Immigrant-bashing's latest falsehood. *Wall Street Journal*.

<sup>8</sup> Reported in Scheve and Slaughter (2001, p. 37).

A Nobel laureate from Canada, the newly assigned Toyota manager assigned to head Toyota of America, or a major-league caliber shortstop from the Dominican Republic would be obvious candidates for EB-1 visas. Foreign graduate students who earn PhD's at US universities often end up working in academia or as researchers in the private sector under an EB-2 visa. The EB-3 category is a catch-all that covers skilled craftsmen and tradesmen as well as specialized workers for jobs for which there are few applicants from among the resident US labor force.

The other two employment-based permanent residence visas are fundamentally different from the previous three:

- Fourth Preference (*EB-4 Special workers such as those in a religious occupation or vocation*): Foreigners who, for at least 2 years before applying for admission to the USA, have been a member of a religious denomination that has a nonprofit religious organization in the USA, and who will be working in a religious vocation or occupation at the request of the religious organization.
- Fifth Preference (*EB-5 Employment Creation*): This category covers foreigners who will live in the USA for the purpose of establishing a new business and who will employ US workers.

Applications for these two types of visas generally do not require US Department of Labor certification, but in the case of the EB-5 visa, the petition process can be quite complex. The visas listed above are those that would be most applicable to businesspeople seeking to permanently work in the USA or US employers looking to hire foreign workers on a permanent basis.

### **14.6.3 Temporary Work Visas**

The USA issues a variety of temporary residence visas. These visas permit a worker to work and the worker's family to live in the USA for a specified period of time, after which the foreigners must depart the country. In some instances, these visas can be extended or converted to permanent residence visas. These visas are easier to obtain than permanent residence visas, and it normally takes 45 days or less to complete the application process.

In this category are visas that fall under the H-1B program. H-1B visas are issued for a period of 3 years, and they can be extended for a total time period not to exceed 6 years. The *American Competitiveness in the Twenty-First Century Act of 2000* about doubled the number of temporary H-1B work visas that can be issued. Before 2000, there was a ceiling of 65,000 H-1B visas per year. This was raised to 115,000 in 2000, and 195,000 for 2001, 2002, and 2003. Employment with universities and nonprofit research organizations are exempt from the numerical limits, and thus the 2000 act actually expands the number of temporary work-related visas by even more than the explicit numbers suggest. Statistics show that in 2001 384,200 H-1B visas were issued. However, beginning in 2006 the annual

ceiling was again lowered to 65,000 regular H-1B visas plus 20,000 special H-1B visas for foreign students graduating from US universities.

Procedures for acquiring H-1B visas must be initiated by employers in the USA, and the visas are jointly issued to the employer and the employee. This means that foreign workers are bound to their employers, and some economists have pointed out that this feature gives employers the power to exploit or otherwise mistreat temporary foreign workers. There are some provisions that allow workers to move to other employers under the H-1B program, but that requires time and paperwork.

Employers in the USA have another option to hire foreign workers under the H-2A and H-2B programs. These are truly temporary work visas, intended for seasonal workers in, respectively, agriculture and the industrial/service sectors of the economy where US workers are unavailable. Even more so than the H-1B visas, the latter visas are applied for by US employers, so the workers are effectively at the mercy of employers for acquiring and maintaining their temporary work authorization. These visas are often used by businesses that have seasonal labor needs, such as agriculture, food processing, tourism, lawn care, and construction. There is a 30,000 cap on H-2B visas, but H-2A visas are technically unlimited. The requirement that employers show evidence that domestic workers are not available is not difficult to satisfy; by offering extremely low wages for very unpleasant types of work, employers can be sure that few if any domestic workers apply.

Another important category of temporary work visas are the L1 visas for “intracompany transfers.” In 2001 328,500 L1 Visas were issued, about double the number from 5 years earlier. The large rise in L1 visas has stimulated some debate, with some suggestions that both US multinational firms and foreign multinational operating in the USA are abusing the category in order to bring less expensive workers from overseas. On the other hand, the large increase in foreign direct investment in the USA by foreign multinational firms over the past 10 years would naturally tend to increase the number of L1 visa requests as the foreign owners of US businesses shuffle in employees from foreign branches. As firms become increasingly oriented to the global economy, this category of visas is destined to continue growing. In 2002, new legislation reduced the former requirement that recipients of L1 visas have been employed by the multinational company for a full year to just 6 months.

All of these temporary visas have been strongly condemned by labor groups and human rights groups. A number of pro-immigration groups have used the experience of temporary work visas to advocate against further expansion of temporary worker programs, even if these programs appear to “legalize” the status of what might otherwise be unauthorized immigrants. US employers use the temporary visas to avoid having to pay higher wages and offer better working conditions to American workers. In effect, these temporary visas leave foreign workers little better off than unauthorized workers. Also, the formal programs often involve international brokers who supply foreign workers enabling US employers to acquire cheap foreign labor without the risk of breaking US law.<sup>9</sup>

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<sup>9</sup> See, for example, Hira (2010). This subject is also well covered in the press.

### **14.6.4 Diversity Immigrant Visas**

Recall that the Immigration Act of 1965 included a small number of permanent residence visas awarded in a lottery program. This program is popularly known as the *Green Card Lottery*. The purpose of the lottery is to maintain a certain amount of diversity among immigrants. There were some fears that family reunion would only favor a small number of nationalities and ethnic groups, and vises for highly talented people would almost certainly favor immigrants from a small number of countries with highly educated populations. Despite the lottery program, however, immigrant flows to the USA were mostly from a small number of countries, as detailed earlier in this chapter. The Immigration Act of 1990, therefore, amended the 1965 Act to provide for a new class of immigrants known as “diversity immigrants” by making available 55,000 permanent resident visas annually to natives of countries with low rates of immigration to the USA (DV visas).

### **14.6.5 Immigration Reform Stalls in 2006 and 2007**

With growing unauthorized immigration and the foreign born residents reaching 12 % of the total US population, immigration became a serous issue that was taken up by both the US Senate and the House of Representatives. In 2006, the US Senate approved a comprehensive immigration bill that combined an amnesty of many unauthorized immigrants living in the country, a new program of temporary work visas, workplace enforcement of documentation, a new border fence, and sharply increased border security personnel. The House of representatives, on the other hand, passed a bill that included only increased border security and increased punishment of unauthorized immigrants already in the country. An initial version of the House bill even designated as felons all unauthorized immigrants and any Americans who assisted unauthorized immigrants. Given these very different approaches to immigration reform from the two legislative bodies, no legislation was passed in 2006. Immigration policy, therefore, remained unchanged—the only possible outcome when there are widely opposing interests and no one interest group can dominate the political debate.

In 2007, with the Democratic Party having gained control of both the Senate and the House of representatives, Republican President George W. Bush and the legislative leaders attempted again to pass a comprehensive immigration bill similar to the one passed by the Senate in 2006. However, there was strong opposition to giving unauthorized immigrants amnesty within both political parties, and immigration opponents in the Republican Party were especially aggressive in blocking the bill in the Senate. Supporters of the bill were not able to muster that needed 60 % to overcome a threatened Republican filibuster and move the bill to final vote on the Senate floor, so the effort died.

By 2012, still no new immigration legislation had been passed other than further authorizations for building a border fence and funding border enforcement. In practice, however, the Obama administration greatly stepped up arrests and deportations of unauthorized immigrants. Also, immigration judges were increasingly charging and convicting unauthorized immigrants with felonies such as the use of a fake social security number and lying to obtain employment, forcing them to serve a prison term before they are deported. These convictions are often decided at trials where an immigrant's "day in court" is shared with hundreds of other immigrants in similar conditions. Hundreds of apprehended immigrant workers are charged, allowed to make a plea, and convicted in a matter of just a few hours in proceedings that have little to do with constitutional rights or justice. Then, with their felony convictions, the immigrants effectively forego any chance of future amnesty, and they would be arrested immediately if they came back to the USA after their deportation. Some four hundred thousand unauthorized immigrants were deported in 2010. It was estimated in 2011 that over three hundred thousand immigrants were imprisoned in the USA during the year.

At the end of 2012, therefore, US immigration policy was still characterized by the answers given to the seven questions in 2000, except for where those answers were modified by the Patriot Act of 2001. In general, resident aliens enjoy even fewer Constitutional protections than they did in 2000. The Patriot Act, passed in a frenzy about terrorism in 2001, enabled the immigration authorities to exercise power even more arbitrarily and unencumbered by legal challenges than the complex, contradictory, and confusing maze of regulations and provisions of two centuries of different immigration laws already allowed. US immigration policy has veered sharply toward more enforcement, both on the border and within the country. A new comprehensive reform such as the 1965 Immigration Act or the 1986 IRCA is not likely to emerge from the current US political environment. In any case, the high unemployment and seemingly endless economic recession has greatly cut down on unauthorized immigration; the Pew Hispanic Center estimates that there were fewer unauthorized Hispanic immigrants in the USA in 2011 than there were in 2007, the year before the US economy fell into deep recession.

## 14.7 Summary and Conclusions

The USA attracts more immigrants than any other country. Its large economy and high standard of living serve as strong pull factors. Also, its large immigrant population of 40 million eases the way for new immigrants, both legal and unauthorized, to find work and adjust socially. Also, improved communications and transportation continue to strengthen the incentives for people to move across borders and to weaken the forces that would keep people at home. Thus, the mere growth of immigration will keep the debate over immigration policy front and

center in the US political arena. The lingering economic recession only makes the topic more emotional, as people search for reasons for their unemployment and declining well-being.

The USA and its continually changing immigration policies over the past 200 years represents a valuable case study. The highlights of this chapter's detailed description of US immigration policy over the past 200 years were as follows:

- Throughout the 1800s, immigration was largely unrestricted.
- Immigration gradually grew throughout the nineteenth century, and it reached nearly one million persons per year over the period 1900–1910.
- There was increased political support for curbs on immigration in the late 1800s and early 1900s, but it took until the 1920s before legislation was passed to sharply limit immigration by means of a quota system aimed at keeping the ethnic/nationality of the US population from changing.
- The 1965 Immigration and Nationality Act Amendments, which abolished the quota system for a new set of criteria permitting effectively unlimited immigrant visas for relatives of persons already living in the USA and people with special skills, education, and talents, resulted in rapid growth of immigration. By the year 2000, close to one million persons were immigrating legally to the USA each year.
- Because the worldwide economic, social, and political integration associated with globalization has increased the incentives for people to move to other countries, the inevitable clash between these incentives and restrictive immigration policies has created a large new class of immigrants that has grown to large proportions in most high-income countries: illegal aliens.

By the turn of the millennium, the surge in immigration had not yet resulted in new laws curtailing immigration. The lack of a clear direction in immigration policy is due to the complexity of the issue in our global economy. Immigration, including unauthorized immigration, has become such an integral part of the US economy that there are strong vested interests simultaneously favoring and opposing immigration.

And so the debate goes on. Nativists, business interests, social libertarians, academics, economists, government officials, politicians, and many other groups have joined the discussions. While there is no indication that the debate is about to result in a consensus, more immigrants keep arriving in the USA from Latin America, Asia, the Caribbean, and elsewhere. The flow only seems to have subsided somewhat with the beginning of the recession in late 2008, but history suggests that economic slowdowns only temporarily reduce immigration, all other things equal. In the meantime, most Americans simply go about their daily lives, which are increasingly intertwined with and dependent on immigrants. Most of the immigrants similarly pay little attention to the heated political debate and go about improving their lives.

It is worth noting that potentially revolutionary changes in immigration policy festered for decades in the second half of the nineteenth century and the early twentieth century only to explode after World War I. The failure of the 2007

comprehensive immigration bill suggests opposition to immigration is festering today as well. Time will tell whether there will soon be substantial changes in the USA's current immigration policies and how those policies are enforced.

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# Chapter 15

## Immigration Policy in Canada

**Abstract** This chapter presents a brief history of Canadian immigration policy. Like US immigration policy, Canadian immigration policy has shifted from openness at the start of the nineteenth century to a rigid ethnic quota system in the early twentieth century, and now back to a more open policy regime. The current immigration policy in Canada differs from US policy in one important way: Canadian policy is more selective but admits many more immigrants on a per capita basis than does US policy. The chapter provides possible answers to the seven questions posed in the introduction to this section for each of the distinct immigration policy regimes.

*We know we start having demographic problems starting in 2010, so we'd better do something before then.* (The Canadian Minister of Immigration, quoted in 2000 in Beltrame, 2000.)

### Chapter Overview

The previous chapter showed that immigration policies played a major role in shaping the flows of immigrants to the USA. That is not to say that economic conditions did not play a major role in determining the push, pull, stay, and stay away forces highlighted in our models of immigration. The sharp decline in immigration during the 1930s was clearly the result of high unemployment during the Great Depression. Population pressure in Europe drove the exit of so many people from Europe during the eighteenth and nineteenth centuries. And the potato famine drove large numbers of Irish immigrants to the USA. in the latter half of the nineteenth century. Nevertheless, the barriers that the US government erected in the 1920s to keep out immigrants also greatly reduced the number of immigrants that would otherwise have entered the USA.

It is difficult to determine the importance of the various economic and social influences on immigration relative to explicit government immigration policies. Policy shifts and social conditions are related. For example, when jobs are scarce, people will pressure their government to reduce the labor market competition from immigrants. On the other hand, when economic growth is rapid, employers will ask their government for more open immigration policies to expand the availability of labor. Still, the relationship between policy and economic factors is far from perfect or predictable. Politics can take strange turns because the relationship between politics and economic policies is based on complex simultaneous relationships, omitted variables, errors in variables, truncated data sets, and many other problems familiar to social scientists who have experience in confronting economic hypotheses with real-world evidence. The solution to these difficulties is to seek more evidence, examples, and historical facts. That is the purpose of this chapter on immigration policy in Canada and the next chapter on immigration policy in Europe.

## 15.1 Overview of Immigration Policy in Canada

The history of immigration policy in Canada is, in many ways, similar to that of the USA. Canada allowed virtually unlimited immigration from Europe during its early years of existence, but around the turn of the twentieth century it began to limit immigrant flows according to the national origin of the immigrants. More recently, it has based the rationing of immigrant visas more on family relationships and skills. Canada has seen a change in the nationality of immigrants, just like the USA. While virtually all immigrants to Canada during the nineteenth and early twentieth centuries were from Western European countries, most immigrants arriving in Canada now are from various parts of Asia, the Caribbean, and Africa.

There are today also important differences between Canadian and US immigration policies, however. Today, Canada's visa criteria are much more skewed than the US policies toward admitting immigrants based on skills as opposed to family relations.

### 15.1.1 *Immigration and Population Growth in Canada*

Because, with its much smaller population, Canada is a much smaller economy than the USA, the absolute number of immigrants has not been as large in Canada as in the USA. But, on a per capita basis, immigration has been much more important as a source of population growth in Canada. Table 15.1 shows that in the most recent decade, immigration contributed more to Canadian population growth than the difference between natural births and deaths. Table 15.1 also reveals another important difference between the US and Canadian experiences, namely that

**Table 15.1** Canadian population growth and immigration

	Total population at end of period	Population added during period	Births	Deaths	Immigration	Emigration
<i>Decades</i>						
1851–1861	3,230,000	793,000	1,281,000	670,000	352,000	170,000
1861–1871	3,689,000	459,000	1,370,000	760,000	260,000	410,000
1871–1881	4,325,000	636,000	1,480,000	790,000	350,000	404,000
1881–1891	4,833,000	508,000	1,524,000	870,000	680,000	826,000
1891–1901	5,371,000	538,000	1,548,000	880,000	250,000	380,000
1901–1911	7,207,000	1,836,000	1,925,000	900,000	1,550,000	740,000
1911–1921	8,788,000	1,581,000	2,340,000	1,070,000	1,400,000	1,089,000
1921–1931	10,377,000	1,589,000	2,415,000	1,055,000	1,200,000	970,000
1931–1941	11,507,000	1,130,000	2,294,000	1,072,000	149,000	241,000
1941–1951	13,648,000	2,141,000	3,186,000	1,214,000	548,000	379,000
<i>5-year periods</i>						
1951–1956	16,081,000	2,433,000	2,106,000	633,000	783,000	185,000
1956–1961	18,238,000	2,157,000	2,362,000	687,000	760,000	278,000
1961–1966	20,015,000	1,777,000	2,249,000	731,000	539,000	280,000
1966–1971	21,568,000	1,553,000	1,856,000	766,000	890,000	427,000
1971–1976	23,450,000	1,488,000	1,760,000	824,000	1,053,000	358,000
1976–1981	24,820,000	1,371,000	1,820,000	843,000	771,000	278,000
1981–1986	26,101,000	1,281,000	1,872,000	885,000	678,000	278,000
1986–1991	28,031,000	1,930,000	1,933,000	946,000	1,164,000	213,000
1991–1996	29,611,000	1,580,000	1,936,000	1,024,000	1,118,000	338,000
1996–2001	31,021,000	1,410,000	1,705,000	1,089,000	1,217,000	376,000
2001–2006	32,577,000	1,556,000	1,682,000	1,129,000	1,194,000	203,000
2006–2011	34,483,000	1,906,000	1,885,000	1,208,000	1,263,000	262,000

Source: Statistics Canada (2005), “Population and growth components (1851–2001 Censuses)”. Downloaded 9 December, 2007 from Statistics Canada site; for 2001–2011 data: Statistics Canada’s CANSIM data base, Table 051-0004, “Components of population growth,” downloaded from Statistics Canada Web site July 30, 2012

Canada often lost as many people to emigration as it gained from immigration. Emigration from Canada was predominantly to the USA, which suggests that many immigrants used Canada as a way station to the USA.

### 15.1.2 The Early Years

The earliest European immigrants to Canada were French traders who followed the routes established by the French explorer Jacques Cartier in the early 1500s. The first permanent settlements by the French in the “New World” did not occur until 1604, when a group of French colonizers led by Samuel de Champlain

established a colony at Port Royal, off the Bay of Fundy in what is today Nova Scotia. Other French and British colonists settled in parts of what is today eastern Canada over the remainder of the seventeenth century. European immigration to both the British and French territories in Canada was slow. There were many setbacks from attacks by the natives, disease, hunger, and the harsh climate. Another factor that limited immigration to Canada was the proximity of the 13 British colonies that would become the Untied States; these colonies were often more attractive to immigrants. French colonists likewise found French colonies in other parts of the world more attractive than the forested lands of Canada. In 1763, when all of the French territory in what is now Canada was ceded to the British, there were only about 65,000 European colonists in the combined territory (Carrothers, 1948).

The end of the American Revolution brought a wave of immigrants from the USA. Many of the loyalists who openly sympathized with the British during the Revolutionary War in the USA elected to move to the British territory of Canada rather than return to Britain or face possible retaliation by remaining in the independent USA. After the War of 1812 between Britain and the USA, another wave of immigrants settled in Canada. These were mostly British army soldiers who had served in the war and were encouraged to stay by the colonial governors anxious to have more English-speaking British citizens to counter the influence of French-speaking residents of Quebec. New roads were opened to encourage settlement in what is today the province of Ontario. Scottish and Irish immigrants comprised an increasing share of immigration. The Irish potato famine of 1846–1849 brought hundreds of thousands of Irish to Canada, although more than half of these Irish immigrants eventually moved on to the USA. As described in the previous chapter, the US border was open to white European and Canadian immigrants in the 1800s.

### 15.1.3 Late Nineteenth Century Immigration

European immigration to Canada increased rapidly during the latter half of the nineteenth century, as it did in the USA and many other destination countries such as Australia, New Zealand, Argentina, Brazil, and South Africa. Political pressure developed to limit immigration, and eventually Canadian authorities began to impose restrictions on immigration. For example, in 1885 the Canadian government imposed a Chinese head tax of \$50 to reduce the immigration of Chinese immigrants. The parallel with the USA is obvious; recall the *Chinese Exclusion Act of 1882* discussed in the previous chapter.

Chinese immigrants first arrived in Canada in 1858 from California. They were attracted to the Fraser Canyon Gold Rush in what is today the province of British Columbia. Later, they came to the Cariboo Gold Rush in the same

region, and historical documents show that Chinese immigrants made up over half of the 20,000 population in the Cariboo town of Barkerville. The largest groups of Chinese immigrants arrived in the late 1870s and early 1880s to build the western section of the Canadian Pacific Railway. The British colony of British Columbia had agreed to join the Canadian Confederation on the condition that a transcontinental railway be built to link British Columbia to the rest of Canada. Canada's first Prime Minister, John MacDonald, wanted to meet the obligation at the lowest cost possible to the government. When objections arose to the recruitment of Chinese labor to build the railroad, he argued in Parliament: "It is simply a question of alternatives: either you must have this labour or you can't have the railway."<sup>1</sup> The railroad first attracted Chinese workers from California. The railway had to compete with the attraction of the goldfields in British Columbia, however. Many of the California Chinese tired of the drudgery of railroad construction and left for the goldfields. Additional Chinese workers were then brought directly from Guangdong Province in China, but many of these equally underpaid and overworked workers gradually also left for the goldfields. And so more workers had to be contracted. By the time the Canadian Pacific Railway was completed, several tens of thousands of Chinese men were in Canada.

The Canadian government sought to curtail further immigration from China, which is why it imposed the head tax of \$50 on Chinese immigrants in 1885. It is difficult to stop additional immigration between two countries with very different levels of income and employment, especially once a number of immigrants have paved the way. More Chinese immigrants continued to arrive despite the head tax, so the head tax was increased from \$50 to \$100 in 1900. Three years later, in 1903, the head tax on Chinese immigrants was raised to \$500, equivalent to \$8,000 today. Dench (2007) notes that between 1901 and 1918 the Canadian government collected \$18 million from Chinese immigrants, while it spent \$10 million to promote immigration from Europe over the same period.<sup>2</sup> There clearly was a strong anti-Chinese bias in Canadian immigration policy.

Other than the strong measures to reduce immigration from Asia, European immigrants continued to arrive in Canada. Canada had ample land available for immigrants. The first Canadian transcontinental railway, the Canadian Pacific, openly promoted settlement on lands bordering their rights of way in order to generate traffic. A second transcontinental railway that ran to the north of the Canadian Pacific, the Grant Trunk Pacific, did the same around the turn of the century. In 1905, two new provinces were created (Saskatchewan and Alberta) as immigrants expanded the population of the Canadian Plains region. Table 15.1 shows that during the first decade of the twentieth century, immigration exceeded 1.5 million.

<sup>1</sup> Quoted by Berton (1989, pp. 249–250).

<sup>2</sup> See also, Dench (2007).

### ***15.1.4 Summary of Nineteenth Century Canadian Immigration Policy***

To summarize Canada's nineteenth century immigration policies, we again refer to the set of seven questions introduced at the start of this policy section of the book.

1. Is immigration to be restricted?

In answering this question, it is important to keep in mind that Canada has maintained a close relationship with Great Britain throughout its history. Canada did not have a war for independence, which meant that well into the nineteenth century Canada's immigration policies reflected the interests of Britain as much as they reflected local Canadian interests. Overall, there was little interest in actively restricting immigration, and during most of the nineteenth century Canadian authorities instituted many explicit measures to encourage immigration. Early in the nineteenth century, there was a strong interest in shifting Canada's population balance away from French-speaking Quebec towards the English-speaking areas of the country.

The remaining questions were answered in ways that were somewhat similar to the USA's policy response to growing world migration flows. Recall what those questions were:

2. If immigration is to be restricted, how many immigrants will be allowed to enter the country?
3. If the number of foreigners seeking to immigrate exceeds the number of immigrants to be allowed into the country, what criteria will be used to ration the scarce entry permits?
4. How many resources will be devoted to enforcing immigration restrictions?
5. What methods will be used to enforce immigration restrictions?
6. How should immigrants be treated compared to citizens of the country?
7. Will all immigrants be treated the same, or will some categories of immigrants be favored over others?

For the nineteenth century, these last six questions were answered with a set of measures that largely encouraged immigration but nevertheless imposed subtle measures that favored some immigrants over others.

According to Kelley and Trebilcock (2000):

The location of immigration agents and the focus of financial incentives indicated the groups of immigrants which the government preferred. Throughout these years, Britons, northern Europeans, and Americans received the most attention and the most generous offers of assistance in emigrating to Canada. And while formal barriers to entry on the basis of race did not exist until the passing of the Chinese Immigration Act in 1985, the manner in which promotional activities and incentives were distributed exhibited strong racial preferences. (Kelley & Trebilcock, 2000, p. 107)

There were no numerical restrictions, nor were many resources devoted to enforcing the restrictions. In part, the treatment of immigrants was influenced by Canada's status within the British Empire. British citizens remained British citizens

when they immigrated to Canada, since Canada was British territory. Other immigrants could become British subjects after 3 years residency in Canada. At the same time, Canada was increasingly taking on the characteristics of a country, and this confused the issue of citizenship. Were Canadians British citizens or Canadian citizens? Only in the twentieth century would that question be clearly answered.

## 15.2 Canadian Immigration Policy in the Twentieth Century

At the turn of the century, and after substantial inflows of immigrants in the latter half of the nineteenth century, there was a growing sentiment in favor of limiting immigration to Canada. Among other factors, these sentiments reflected explicitly racist attitudes, not unlike US attitudes at that same time. There was obvious support of continued immigration on the part of corporate interests in Canada, which enjoyed the benefits of the increased labor supply that immigration brought about. Nevertheless, Canada's Chinese Immigration Act similarly revealed a latent cultural resistance to immigration that would, in the early twentieth century, bring about a major shift in Canadian immigration policy.

### 15.2.1 *The First Half of the Twentieth Century*

In 1910, the Canadian Parliament passed the *1910 Immigration Act*, which greatly increased the discretionary power of the government in deciding who could enter the country. The Act specifically gave the government legal authority to prohibit immigrants "belonging to any race deemed unsuited to the climate or requirements of Canada." The "climate" criterion was often applied to limit non-white applicants for immigration, allegedly because of concerns they would be too cold in Canada!<sup>3</sup> In 1923 the government first issued an order limiting Chinese immigration to "agriculturalists, farm labourers, female domestic servants, and wife and children of a person legally in Canada." Then, later that year, the legislature passed the *Chinese Immigration Act*, which banned Chinese immigrants altogether. The latter law went into effect on July 1, a day known as Canada Day to most Canadians; to Chinese Canadians it became known as *Humiliation Day*. This exclusion remained in effect until 1947. In 2006, Canada issued an official apology and compensation for having discriminated against Chinese immigrants.

In 1923, the government used its authority to regulate the entry of immigrants by explicitly stating the border was only open to British subjects, Americans, and citizens of "preferred countries," the latter defined as Norway, Sweden, Denmark,

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<sup>3</sup> The potential motivations behind this policy are discussed in Dench (2007).

Finland, Luxembourg, Germany, Switzerland, Holland, Belgium, and France. Only agriculturalists, farm laborers, female domestic servants, and sponsored family members would be admitted from “non-preferred countries,” which were listed as being Austria, Hungary, Poland, Romania, Lithuania, Estonia, Latvia, Bulgaria, Yugoslavia, and Czechoslovakia. Immigrants from Southern European countries or non-European countries would not be permitted at all.

The previous chapter pointed out the difficulties Jewish refugees from Nazi Germany encountered in gaining entry to the USA. Despite explicitly recognizing Germany as a “preferred country,” Canada similarly blocked the entry of many Jewish refugees during the 1930s. If there ever was any doubt, this fact made it clear that there were strong ethnic sentiments behind the designation of countries as “preferred.” Canada only admitted about 5,000 Jewish refugees during the 1930s (Bélanger, 2006). In comparison, Argentina admitted 63,000 Jewish refugees. Canada had never formulated a policy towards refugees, which meant refugees had to deal with the existing immigration bureaucracy and procedures that were largely shaped by ethnic biases and the high unemployment rate during the Great Depression.

The economic conditions during the 1930s also changed the way immigrants were treated. Not only were new immigrants prevented from entering the country, but there were also more deportations of immigrants previously permitted to enter the country. Specifically, between 1930 and 1935, some 28,000 immigrants were deported from Canada for becoming a “public charge” (Bélanger, 2006). In effect, the consequences of the Great Depression became grounds for deportation.

### **15.2.2 After World War II**

Canadian immigration policy began to shift after World War II. On labor day in 1947, Prime Minister MacKenzie King made a speech outlining his vision for post-war Canadian immigration policy:

The policy of the government is to foster the growth of the population of Canada by the encouragement of immigration. The government will seek by legislation, regulation, and vigorous administration, to ensure the careful selection and permanent settlement of such numbers of immigrant as can advantageously be absorbed in our national economy.<sup>4</sup>

MacKenzie noted that “objectionable discrimination” in earlier legislation and administration of immigration should be removed, but he was clearly not abolishing all the previous discriminatory restrictions on immigration:

...the people of Canada do not wish, as a result of mass immigration, to make a fundamental alteration in the character of our population. Large-scale immigration from the orient would change the fundamental composition of the Canadian population.<sup>5</sup>

<sup>4</sup> Quoted in Dench (2007).

<sup>5</sup> Quoted in Dench (2007).

Despite the continuation of blatant discrimination against Asians, the speech did signal a wholesale shift in policy compared to the inter-war period. Soon, additional legislation began to fill in the details on Canada's new immigration policy.

There were several reasons for the changes in immigration policy. First of all, World War II directly changed Canadian public opinion on human rights and tolerance of other cultures. There was also some sense of guilt about Canada's failure to accept Jewish immigrants fleeing Nazi Germany before the war. A strong anti-communist sentiment led the Canadian government to formulate, for the first time, a refugee policy to deal with persons fleeing communism in Eastern Europe. This legislation also served to increase Canada's acceptance of increasing numbers of refugees from countries that were not the traditional sources of Canadian immigrants.

Economic conditions probably played an important role in Canada's policy shift. During World War II and the years after the war, the Canadian economy had begun to grow and modernize. Immigrants were increasingly viewed less as threats to Canadians' well-being and more as potential contributors to Canadian economic growth. Immigrants were also seen as a way to increase the relative size of the national economy compared to its huge southern neighbor.

The 1946 *Canadian Citizenship Act* established Canadian citizenship for the first time. Because Canada was part of the British Commonwealth, Canadians had been British subjects. With the 1946 Act, Canada became the first Commonwealth country to establish citizenship distinct from British citizenship. All in all, new legislation began to open Canada to increasing entry of immigrants after World War II. Table 15.1 shows that immigration rose sharply after the war, and it has continued growing to where today most of Canada's population growth is due to immigration, not natural population growth.

### 15.2.3 Comparing Immigration Legislation

Towards the end of the twentieth century, the seven policy questions for Canada have very different answers than they did at the end of the nineteenth century. The answer to the first question "Is immigration to be restricted?" is clearly "yes," although the way in which Canada restricted immigration has changed continually during the twentieth century. The remaining questions are, perhaps, best addressed by contrasting the language of Canadian immigration acts from 1910, 1952, and 1976. For example, the *Immigration Act of 1910* states that the government may block the entry of:

1. Those belonging to nationalities unlikely to assimilate and who consequently prevent the building up of a united nation of people of similar customs and ideals.

2. Those who from the mode of life and occupations are likely to crowd into urban centers and bring about a state of congestion which might result in unemployment and a lowering of the standards of our national life.

The *Immigration Act of 1952* defines a number of categories of immigrants who may be excluded from entering the country:

1. Nationality, citizenship, ethnic group, occupation, class or geographical area of origin.
2. Peculiar customs, habits, modes of life, or methods of holding property.
3. Unsuitability with regard to climatic, economic, social conditions.
4. Probable inability to become readily assimilated or to assume the duties or responsibilities of citizenship.

The *1976 Immigration Act* established the following objectives of immigration policy:

1. To enrich and strengthen the cultural and social fabric of Canada, taking into account the federal and bilingual character of Canada.
2. To ensure that any person who seeks admission to Canada in either a permanent or temporary basis is subject to standards of admission that do not discriminate on grounds of race, national or ethnic origin, color, or sex.<sup>6</sup>

Notice that Canadian immigration law in the twentieth century thus progressed from a strong bias against non-white immigrants from countries other than Northern Europe to an explicit ban on discriminating purely on the basis of ethnic or racial origins. The 1952 legislation still gave the government and immigration officials ample room to arbitrarily limit the entry of immigrants from specific countries or of specific ethnic backgrounds, however. Also, the 1976 legislation still leaves some opening to discriminate against people who are judged to be less likely to assimilate quickly into Canadian society, but at least overt racial or ethnic discrimination was banned.

### 15.3 Canada's Immigration Policy Today

Today, Canadian immigration law establishes three categories of immigrants: (1) independent immigrants admitted on the basis of skill, capital, and labor market requirements, (2) family and closely related persons, and (3) refugees. The first category channels visa applicants through the Federal Skilled Worker Program (FSWP) and its Quebec counterpart. Immigrants are selected under a points system that stresses educational attainment, English and French language skills, and work

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<sup>6</sup>The text of the laws are from the Marianopolis College Web site *Quebec History, Documents of Canadian History*, “Contrasting Canadian Immigration Regulations (1910, 1952, 1970s),” <http://faculty.marianopolis.edu/c.belanger/QuebecHistory/readings/CanadianImmigrationRegulations/>

experience. Canadian government officials have considerable discretion in how they award points, and they can change the criteria as economic and labor market conditions change. Recently, to minimize the arbitrariness of their decisions for immigrants admitted on the basis of skills and labor market needs, Canadian authorities have established an objective point system to rate prospective immigrants.

### ***15.3.1 The 2002 Reform***

In 2002, the Canadian immigration system shifted towards an even greater emphasis on immigrants with work skills and good job prospects. The selection process of immigrants under the *Federal Skilled Worker Program (FSWP)* raised the importance of language and education in the selection process. A 2002 reform of the selection criteria of immigrants under the Federal Skilled Worker Program strengthened language and education requirements. The 2002 *Immigration and Refugee Protection Act (IRPA)* was designed to improve immigrants' economic outcomes as well as to raise the national level of human capital of the Canadian labor force. According to Picot and Sweetman (2012), the 2002 reform has led to some improvements in immigrants' economic outcomes. Also, a program to let Provincial governments select potential immigrants likely to settle in nontraditional immigrant destinations (i.e., everywhere except Toronto, Vancouver, and Montreal), called the *Provincial Nominee Program (PNP)*, seems to have had some success in redirecting incoming immigrants.

The PNP allowed provincial governments to operate their own immigrant selection systems, presumably because they would be better able to judge the labor market from their local perspective. There were some inherent problems with this program. If provinces set lower entry standards for immigrants compared to those of the federal government, then the PNPs could make some provinces "gateways" through which immigrants would still move on to the usual urban centers that have attracted the most immigrants in the past. However, preliminary investigations by Pandey and Townsend (2011) and Citizenship and Citizenship and Immigration Canada (2012), the Canadian government immigration agency, conclude that, so far, the PNPs have been more or less successful in increasing immigration rates to smaller provinces. While only a little over half of immigrants explicitly selected by the PNPs in the Atlantic provinces between 2000 and 2008 were still living in those provinces in 2008, 95 % of those selected by the Alberta and British Columbia PNPs were still in those provinces.

### ***15.3.2 The Canadian Point System***

The Canadian points system for awarding permanent residence visas is clearly skewed toward admitting immigrants based on skills; family ties count for less. Most working-age people with advanced skills or a university degree can satisfy the

visa criteria. You can go to Canada's immigration Web site at [www.cic.gc.ca](http://www.cic.gc.ca), and in a matter minutes you can tell whether you exceed the number of points required for a permanent immigrant visa. Points are awarded for education, English and French language skills, age, occupation, and whether you have a job offer in Canada. Essentially, if you are under 40, have a university degree or good qualifications in a profession, and are fluent in English, French, or both, you will most likely qualify for a permanent residence visa.

The popular press has run many stories of immigrants, such as, for example one Amr Elimam, a highly educated Egyptian. He looked at Canada's immigration Web site, counted his points, sent in his form, and some time later after providing more information and documents, received a visa in the mail.<sup>7</sup> Mr. Elimam soon found work in Toronto as a management consultant with KPMG, one of the major accounting firms. An interesting detail about Mr. Elimam is that he attended high school and college in the USA, but not having any family ties in the USA, Mr. Elimam did not think he would have much of a chance getting a green card in the USA. So after graduating from college in the USA, he sat down in front of the computer and tallied up his points. Getting the Canadian visa was "straightforward," he says.

### **15.3.3 Should Policy Discriminate in Favor of Highly Educated Immigrants?**

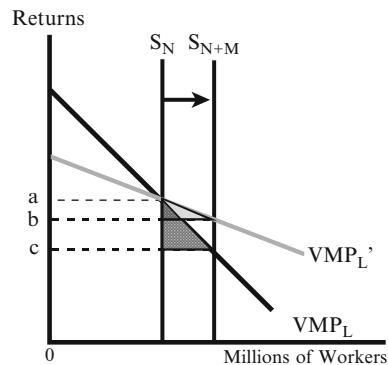
Canada's point system is biased towards attracting highly educated immigrants. Canada is not alone in having shifted the focus of its immigration policies towards attracting immigrants with large amounts of human capital; see, for example, Marshall's (2011) description of Canadian, Australian, and U.K. immigration policies. This worldwide shift in policies suggests that there is some consensus among economists and other social scientists that immigrants with more human capital are indeed more beneficial for destination countries. What types of economic models and evidence described earlier in this book can we draw on to address this question?

Suppose that the goal of immigration policy in the destination country is to maximize the welfare of the native population. Then, in the absence of demand effects, externalities, or growth effects, immigration policy should seek to maximize the sum of the returns to all native-owned factors of production. In terms of the standard labor market model of immigration, illustrated in Fig. 15.1, the net gain in welfare to the native population from immigration that shifts the labor supply curve from  $S_N$  to  $S_{N+M}$  is the checkered triangle if the demand for labor curve is  $VMP_L$ . This area is equal to the increase in national output minus the wages paid to the

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<sup>7</sup> Newman, B. (1999, December 9). In Canada, the point of immigration is most unsentimental. *Wall Street Journal*.

**Fig. 15.1** The net gains from immigration depends on how quickly the VMP of labor falls

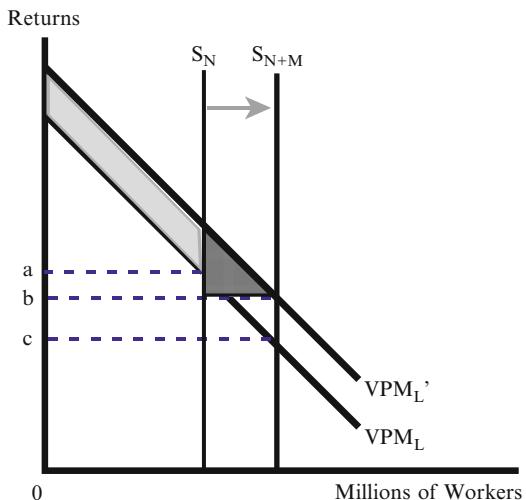


newly employed immigrants. Alternatively, if the demand for labor curve is  $VMP_L'$ , then the gain in welfare to the native population from the same quantity of new immigrants is the smaller gray triangle. The comparison of the two VMP curves shows that the more slowly the value of the marginal product of labor declines with the arrival of immigrants, the less is the net welfare gain to the destination country. Therefore, one way to determine whether immigrants with high levels of human capital are more beneficial to destination countries is to compare the slope of the VMP curve for educated labor to the slope of the VMP curve for uneducated labor. The steepness of the VMP curve ultimately depends upon the underlying production function, e.g., the elasticities of substitution between capital and labor, or between native- and foreign-born labor.

The empirical evidence on the wage effects of immigration suggests that these are very small. These results could be interpreted as suggesting the demand for labor curve is very flat. Recall that studies on the wage effects of immigration have found that, although they are small, there are modest negative wage effects in the labor markets for workers with relatively little human capital. In the USA, it has been estimated that immigrants caused no reduction in the wages of educated workers, but the least educated workers, such as high school graduates, have experienced a decline in wages of over 5 % because of immigration, all other things equal. According to the model above, this implies that the net welfare gains from immigration would be greatest if destination countries favor workers with little education and human capital.

Canadian immigration policy suggests that this straightforward conclusion generated by the labor supply and demand model under the assumption of no demand effects, externalities, or growth effects is not correct. As discussed in the theory chapters of this book, a small wage effect may also mean that immigration has demand effects, growth effects, and positive externalities. That is, immigrants are likely to cause the demand curve to shift along with the labor supply curve. Note that in the case of a parallel outward shift of the VMP curve, illustrated in Fig. 15.2, the checkered net gain triangle from Fig. 15.1 still adds to the total welfare of the native population, but there are further gains. The overall

**Fig. 15.2** The net gains from immigration also depend on whether externalities or demand and growth effects shift the VMP curve



purchasing power of the native population also adds the gray area between the original and new labor demand curves. Also, the redistribution of income caused by immigration may not be as bad as in the labor supply case of Fig. 15.1 because the wage may not fall as much, or at all, when the immigrants generate positive externalities, demand effects, or growth effects. In Fig. 15.2, a parallel shift in the demand for labor means that the wage falls only slightly from  $a$  to  $b$ , not all the way to  $c$ , as in Fig. 15.1.

The empirical results from studies of the USA, a country where the majority of immigrants are poorly educated and qualified for mostly low-wage jobs, show that immigrants as a group have little effect on the wages overall while they have depressing effects on wages in the low-skill sectors of the labor market. These results suggest that low-wage immigrants generate relatively few externalities, demand effects, and/or growth effects, at least not those that the labor market rewards them for. Highly educated immigrants are also more likely to have greater growth effects in that they are more likely to contribute to the creation of new knowledge and entrepreneurial activities. Finally, immigrants with higher education levels, and higher incomes, may be less likely to cause negative externalities in the form of difficulties in adapting to their new culture, the need for government services, or burdening the native population, although these costs are often exaggerated even for even poorly educated immigrants. Therefore, the Canadian policy of encouraging immigration of highly educated working-age people while refusing entry to immigrants destined for the low-wage sectors of the economy may indeed maximize net national welfare gains once the demand effects, the externalities, and the growth effects are factored in.

### ***15.3.4 The Seven Questions in the Early Twenty-First Century***

At the start of the twenty-first century, Canadian immigration policy remains relatively favorable to immigrants, although Canada increasingly qualifies who is eligible to enter the country.

***1. Is immigration to be restricted?***

There are strict restrictions on immigration to Canada. Would-be immigrants must qualify for an immigrant visa.

***2. If immigration is to be restricted, how many immigrants will be allowed to enter the country?***

There are no strict numerical limits on immigration. Rather, under Canada's point system, the quantity of immigrants is continually adjusted by means of increasing or decreasing the number of points required for entry.

***3. If the number of foreigners seeking to immigrate exceeds the number of immigrants to be allowed into the country, what criteria will be used to ration the scarce entry permits?***

Points are awarded in accordance with labor market conditions and the principle of family reunion.

***4. How many resources will be devoted to enforcing the immigration restrictions?***

***5. What methods will be used to enforce immigration restrictions?***

Canada maintains a growing immigration bureaucracy to handle immigration and citizenship matters for its high proportion of foreign-born residents. Border controls have been increased, in part at the insistence of the USA, its security-obsessed southern neighbor.

***6. How are immigrants to be treated compared to citizens of the country?***

Canada has strict laws protecting human and civil rights, and those laws usually extend to all people residing in the country.

***7. Will all immigrants be treated the same, or will some categories of immigrants be favored over others?***

Canada clearly discriminates according to its point system for awarding permanent residence visas. Specifically, Canada favors immigrants with advanced educational degrees, special talents, English and/or French language proficiency, and the presence of immediate family in Canada. Canadian law explicitly bans discrimination on the basis of race, gender, sexual orientation, and national/ethnic background.

### ***15.3.5 Immigrant Performance and Recent Shifts in Policy***

Canada has revised its immigration policy again in recent years as the results of the earlier changes became apparent. Picot and Hou (2010) suggest that these changes did improve wage levels among entering immigrants in the late 1990s. But new

programs such as the Provincial Nominee Program (PNP) and its growing share of new immigrants have made the selection criteria less clear. Research by Aydemir and Skuterud (2005), Frenette and Morissette (2005), Green and Worswick (2010), Picot (2008), Sweetman (2010), among others, suggests that the rate of integration of new immigrants into the Canadian labor market has slowed in recent decades. Picot and Sweetman (2012) specifically show that employment and earnings of new immigrants have declined relative to native Canadians since the early 1980s, although the decline was not constant. There were periods of improvement. The deterioration in income was much more substantial than the decline in employment. For example, employment rates for male immigrants caught up to those of native Canadians within 5 years throughout the 1980–2010 period. But earnings have fallen substantially. The earnings gap grows even faster when the data are adjusted for immigrant characteristics such as education and age. According to Picot and Sweetman (2012, p. 6), “data from the 2006 census suggest that during their first few years in the country, immigrants are earning perhaps 60–70 % as much as the Canadian-born, whereas in the late 1970s the proportion was in the 85–90 % range.”

The reasons for this relative decline in immigrant performance, in spite of immigration policies that favored highly educated and younger immigrants, are several. First of all, all workers in Canada, native and immigrant, have seen their wages decline. There was also the end of the information technology boom, a sector that had employed many of the new immigrant arrivals in the 1990s. Another factor has been the shift in immigrant source countries, with more immigrants coming from low-income Asian countries rather than European countries. It has also been noted that immigrants found it more and more difficult to translate their pre-immigration work experience into earnings in Canada, a result which may be related to the deterioration of language skills of immigrants. Given this body of research, Canadian policy-makers and stakeholders have put considerable effort into improving labor market outcomes for immigrants. They have modified selection rules, strengthened language tests, introduced new programs such as the CEC, increased the share of immigrants in the economic class, and bolstered settlement programs.

The Canadian immigration authorities have quite a bit of leeway in setting the details of the various components of Canada’s immigration policy. In response to the immigration outcomes described above, Canada’s the CIC has issued four sets of instructions that have significantly changed immigration policy. First, where the 2002 *Immigration and Refugee Protection Act (IRPA)* had replaced specific occupational points with a list of occupations for which visas would be issued, recently it was decided that for unlisted occupation immigrant applicants must have a job offer in hand or their application will be returned. And even for listed occupations, only a limited number of visas are issued on a first come, first served basis, and the remainder of the applications are returned. The authorities want to reduce the backlog of applications that had developed. The hope is that by eliminating the backlog, the selection system will be able to respond more quickly to changing conditions and new information.

## 15.4 Some Final Observations

Canadian immigration has varied greatly over the years, with both economics and politics contributing to the variation. As is to be expected, immigration policy has tracked economic conditions fairly closely. Still, there has been some exception to this correlation. Most notably, today Canadian immigration policy seems to be more closely linked to Canada's very long-term development than current economic conditions or even public sentiment. The fact that Canada receives, as a percentage of its population, a larger number of immigrants than do the USA and most other high-immigration countries of Europe is not to all Canadians liking. For example, the Canadian columnist Daniel Stoffman writes about the widespread concern that assimilation of immigrants seems to be slowing: "The solution is not more ESL teachers. Kids don't learn English from teachers. They learn it from other kids. But they can't if the other kids don't speak English. If the flow of new immigrants were more moderate, this problem would disappear" (Stoffman, 2006). Despite such concerns, the government of Canada is pushing on with its active encouragement of immigration.

One stated reason for Canada's active promotion of immigration, in addition to the obvious support for the policy by prospective employers of immigrants, is the fear that the slowdown of the natural rate of population growth and the resulting rapid ageing of the Canadian population will put severe pressure on the future provision of social services and retirement benefits. Current projections are that by 2021, Canada will have only two working Canadians for each retiree, compared to the current 6-to-1 ratio (Beltrame, 2000). Canada even has an Immigration Minister in its governing cabinet. In 2000 the Minister vowed to increase immigration by 50 %. As quoted at the start of this chapter, she stated: "We know we start having demographic problems starting in 2010, so we'd better do something before then."<sup>8</sup> In recent years, the number of immigration officers has been increased in order to speed the processing time for immigrants. The province of Manitoba even sends officials overseas to recruit immigrants as a means of offsetting the departure of native Canadians from the rural province for the rapidly growing urban centers in the eastern and western provinces.

Time will tell whether immigration solves the problem of Canada's ageing population, or whether it merely postpones the ageing process, as Cooper (2002), Fehr, Jokisch, and Kotlikoff (2004), and others have suggested. Even more of an open question is whether Canadians will continue to support the relatively open immigration policy that brings in such large numbers of immigrants. If history is any indication, policy may again shift if new economic and social problems attract the concern of the native population.

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<sup>8</sup> Quoted in Beltrame (2000).

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# Chapter 16

## Immigration Policy in Europe

**Abstract** This chapter presents a brief history of European immigration policy. Europe Shifted from being a major source of immigrants for several centuries to becoming a major destination for immigrants after the middle of the twentieth century. European immigration policy today is an interesting compromise between mitigating the difficulties of absorbing large numbers of foreigners, expanding the free movement of people among the member states of the European Union (EU), and respecting high standards for civil and human rights. This chapter concludes with discussions on temporary immigration programs and to what degree immigration can mitigate the problem of population ageing.

*My mother insisted we were going to stay in Germany just long enough to earn money for a new sewing machine, to start a tailor shop back home. Now we're into the third generation, and my mother still hasn't bought her sewing machine. Of course, that's because they made comfortable lives. No one really wanted to go home.*

(Eren Uesnal, A Berlin sociologist whose parents emigrated to Germany from Turkey in 1972)  
(Quoted in Nickerson C, & Staff G. (2006, April 19).  
A lesson in immigration: Guest worker experiments transformed Europe. *Boston Globe*.)

## Chapter Overview

One of the most interesting immigration episodes is the post-World War II shift of Europe from being the largest source of immigrants to one of the major destination regions for immigrants from the rest of the world. Table 16.1 details the size of the flow of Europeans to the main immigrant destinations of Argentina, Australia, Brazil, Canada, and the USA. As stated earlier, the USA was the single biggest recipient of immigrants from Europe during the nineteenth and early twentieth centuries. Together, these five countries received well over 50 million immigrants. Britain and Italy were the sources of about 20 % of this total each. Ireland

**Table 16.1** The Great European migration: 1815–1930 (millions of persons)

To:		From:	
The USA	37.3	Britain	11.4
Canada	4.7	Italy	9.9
Australia	3.5	Ireland	7.3
Brazil	4.3	Austria-Hungary	5.0
Argentina	6.4	Germany	4.8
		Spain	4.4
		Russia	3.1
		Portugal	1.8
		Sweden	1.2
		Norway	0.8
		Finland	0.4
		France	0.4
		Denmark	0.4
		Switzerland	0.3
		The Netherlands	0.2
		Belgium	0.2

Source: L. Ferenczi and W. F. Wilcox (1929), *International Migrations*, Vol. 1, New York: National Bureau of Economic Research

accounted for nearly 15 %, and Germany and Austria-Hungary about 10 % each. Interestingly, these European countries are among the largest recipients of immigrants today.

Table 16.2 shows the percentage of foreign-born living in a sample of European and traditional immigrant destination countries. Some European countries now have percentages of foreign-born populations that are approaching the foreign-born ratios in the traditional immigrant destination countries of the past. Table 16.3 provides further details.

During the post-World War II period, European countries have shifted gradually from being a source of immigrants to becoming net recipients of immigrants. Each country has followed its own pattern, however. A variety of factors, some worldwide, some continental, and some unique to each country, shaped immigrant flows. Specifically, the Northern European countries became net receivers of immigrants in the 1960s, when large numbers of southern Europeans, notably Italians, Spaniards, and Portuguese, moved north to work in the booming economies, such as Belgium, Germany, the Netherlands, and Switzerland. Thus, some European countries were net senders and others were net recipients. Table 16.4 shows how immigrant flows have varied over the past four decades in four Southern European countries.

In the 1960s, many Greeks, Italians, Portuguese, and Spaniards emigrated to Northern Europe. Then in the 1970s, Greece, Italy, and Spain began receiving immigrants from North Africa and the Middle East, among other sources. Portugal received many overseas Portuguese citizens in the early 1970s after colonies, such as Angola and Mozambique, gained independence, although it continued to send immigrants to the rest of Europe until well into the 1990s. By the 1990s, both Spain

**Table 16.2** Percentages of foreign-born populations: 1870–2000

	1870–1871	1890–1891	1910–1911	2000–2001
<i>Europe</i>				
Germany	0.5	0.9	1.9	8.9
France	2.0	3.0	3.0	10.0
The UK	0.5	0.7	0.9	4.3
Denmark	3.0	3.3	3.1	5.8
Norway	1.6	2.4	2.3	6.3
Sweden	0.3	0.5	0.9	11.3
<i>New World</i>				
Australia	46.5	31.8	17.1	23.6
New Zealand	63.5	41.5	30.3	19.5
Canada	16.5	13.3	22.0	17.4
The USA	14.4	14.7	14.7	11.1
Argentina	12.1	25.5	29.9	5.0
Brazil	3.9	2.5	7.3	

Source: Timothy J. Hatton and Jeffrey G. Williamson (2005), *Global Migration and the World Economy*, Cambridge, MA: MIT Press, Table 2.2, p. 16

**Table 16.3** Foreign-born population and labor force: 2009, 2010

	% of population	% of labor force
	2010	2009
<i>Europe</i>		
Austria	15.7	16.3
Belgium	13.9 <sup>a</sup>	13.8
Denmark	7.7	6.9
France	8.6 <sup>b</sup>	11.6
Germany	13.0	9.4
Ireland	17.3	10.0
Italy	8.0 <sup>a</sup>	11.3
Luxembourg	37.6	48.6
The Netherlands	11.2	11.5
Spain	14.8	18.5
Sweden	14.5	11.2 <sup>c</sup>
Switzerland	26.6	26.3
The UK	11.5	12.9
<i>Traditional immigrant destinations</i>		
Australia	28.6	26.9
Canada	19.9	21.2 <sup>c</sup>
The USA	12.9	16.2

Source: OECD (2012), *International Migration Outlook*, Paris: OECD; OECD (2012), Key Statistics on Migration in OECD Countries, Stocks and Flows of Immigrants, 2000–2009, downloaded from [www.oecd/migration/ketstatisticsonmigrationinoecdcountries.htm](http://www.oecd/migration/ketstatisticsonmigrationinoecdcountries.htm)

<sup>a</sup>2009

<sup>b</sup>2008

<sup>c</sup>2006

**Table 16.4** Net migration 1960–1999

	Greece	Italy	Portugal	Spain
1960–1969	−385,190	−918,981	−1,240,136	−887,508
1970–1979	205,874	−195,084	218,895	−12,807
1980–1989	208,215	−151,508	−204,810	−920,759
1990–1999	400,091	1,163,397	−2,652	274,289

EUROSTAT (1995), *Migration Statistics*; EUROSTAT (1999), *Demographic Statistics*

and Portugal began to receive Spanish and Portuguese-speaking immigrants from Latin America, a region that was suffering a severe economic recession. While each of the four countries shows a slightly different immigration pattern, the overall trends are similar in that each of the four countries shifts from being a net source to a net destination country.

The large variations in immigrant flows invite economists and other social scientists to come up with explanations. In short, the European immigration experience offers a very rich set of evidence with which economists can test their hypotheses and confront their models of immigration.

## 16.1 European Migration During the Colonial Era

Early European emigration consisted largely of people moving to overseas colonies. For example, Spaniards emigrated to Spanish colonies in Latin America, Portuguese emigrated to Brazil, and British citizens emigrated to British colonies around the world. The emigration policies of the colonial powers explicitly shaped these migration patterns.<sup>1</sup> Colonial powers often encouraged their citizens to emigrate to their colonies, and such encouragement often included substantial subsidies. One form of subsidy was the awarding of special privileges that could, potentially, enrich colonists. Successful colonists, in turn, were expected to subsidize the immigration of family and other compatriots. These colonial ventures were not always successful. For example, the Jamestown colony in Virginia failed miserably and left nearly all of the colonists dead from disease and starvation.

### 16.1.1 Colonial Regimes and Immigration

The special privileges that European colonial powers offered colonists varied greatly. Whereas Britain and the Netherlands sought to encourage large numbers of its citizens to move to its colonies in North America, Australia, and New Zealand by awarding small amounts of land to many immigrants, Spain and Portugal

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<sup>1</sup> The British policies are described in World Economic Survey 2004 (2004).

effectively created aristocracies in the Latin American colonies by granting very large plots of land to a few immigrants who were expected to set up to rule over the native population or the slaves forced to migrate from Africa. Histories of Latin America by Lang (1979), Baer (1995), Burkholder and Johnson (1990) and Meyer and Sherman (1991), among others, describe in detail how Spain and Portugal put in place, respectively, the *encomienda* and *capitânia* systems, which awarded large areas of Latin America to entrepreneurial emigrants willing to invest in overseas plantations and mines. These awards of foreign territory included the implicit authorization to exploit the native populations living on the lands. The colonists were, of course, also implicitly subsidized by the military support provided by the European kingdoms. The crown's armies usually initiated the conquest of colonial territory, the crown's bureaucrats helped to establish the colonial administration of the conquered territory, and the crown's navy protected the trans-Atlantic transportation of people, goods, and, of course, the raw materials that were critical to the eventual earnings from the colonial enterprises. Under the *encomienda* and *capitânia* systems, the colonists were required to turn over some percentage, usually between 10 and 20 %, of their earnings to the crown.

As described by Cameron (1993), in some regions of Asia and Africa colonial powers such as Britain, France, and the Netherlands established control by using divide and conquer tactics to co-opt selected minority ethnic groups to control the remainder of the native populations. The consequences of these policies became obvious only in the twentieth century. When these colonies gained independence after World War II, these hated "collaborators" were often forced to leave the newly independent countries, which meant there were then large immigrant inflows to the colonial powers. The former colonial powers often felt obligated to take in these threatened elites when they granted independence to their overseas colonies.

Colonialism was an integral component of the economic systems of sixteenth and seventeenth century Europe that we now often refer to as *mercantilism*. Mercantilist economic systems were characterized by their explicit protection by the government of certain commercial interest groups. Often, the colonizers set strict rules forbidding the colonies to engage in economic activities that competed directly with the home countries. For example, many colonies were prohibited from setting up manufacturing firms, imports by the colonies had to come from the "mother countries," and transportation of colonial products had to be carried in ships owned by the colonial powers. This protection was provided by European monarchs because they sought to consolidate their power after the feudal epoch, which was a system in which political and economic power was dispersed among large cadres of hereditary local rulers. Under mercantilism, the subsidized immigrants became the political leaders in the colonies, the representatives of the colonial power's monarchy. Their offspring eventually became the leaders of the countries that remained after independence from the colonial powers. The highly skewed distributions of wealth in many Latin American countries date from this

system of special privileges for immigrants and economic restrictions imposed on the colonies by the European colonial powers.

In the North American and Latin American colonies, the native populations were greatly reduced by the diseases brought by the colonists. In the plantation economies of Latin America and the Southern colonies of North America the new owners of the plantations and mines responded by acquiring large numbers of African slaves. In contrast, in the Northern colonies of North America, where the available land was not appropriate for growing cotton or tobacco, the economies were characterized by large numbers of small European immigrant farmers.

It has often been noted that the Northeast region of Brazil, where most plantations were located, is today much poorer than the southern part of the country that was colonized by large numbers of small farmers much later in the nineteenth century. Similarly, the southern US states with their plantations and slave populations became much poorer than the northern states, where small landholdings by many European immigrants were the norm.<sup>2</sup> From an immigration perspective, this difference in development outcomes is compatible with the growth models discussed in Chaps. 9 and 10. Large plantations operated by the people who also held political power in the colonies tended to block economic change and development. Economies with large numbers of small farmers proved to be more conducive to economic growth.

In short, European migration during the sixteenth and seventeenth centuries was far from homogeneous. However, this period did stand out for the predominance of immigrant flows consisting of (1) natives of the colonial powers to their own colonies, (2) the forced migration of slaves from Africa to colonies where labor intensive plantation and mining activities were important economic activities, and (3) increasing flows of immigrants from nearly all European countries to North America, several southern South American countries, and the British colonies Australia and New Zealand.

### ***16.1.2 The Nineteenth Century***

Even though the USA gained political autonomy from Britain after 1776, most British immigrants went there throughout the nineteenth and twentieth centuries. Policy played some role in this case, but, clearly, other factors also mattered. The colonies that received the largest numbers of European immigrants ended up with cultures that largely mirrored the cultures of the colonizing powers. These colonies adopted the colonizing country's language, religion, and other cultural elements, a trend that was further reinforced by the fact that immigrants from outside the realm of the colonial power were either banned or, because of discrimination, language, and cultural barriers, implicitly discouraged from entering the colony. Acemoglu,

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<sup>2</sup> See, for example, Tanner (1995) for a description of US immigration patterns.

Johnson, and Robinson (2002), in fact, argue that the reverse relationship between precolonial income levels and subsequent economic growth in the European colonies can be explained by immigration. These authors hypothesize that, before 1500 and the start of European colonization in Africa, Asia, and America, tropical countries had the highest per capita incomes. A combination of dense native populations and, compared to Europe, poor health conditions limited immigration to those who came to manage plantations and mines for temporary periods of time. Mass European immigration occurred in Canada, the USA, and Australia, where land was available and where health conditions were more benign. As a result, the latter countries ended up with European culture and institutions, which supported economic growth, while the former ended up with exploitative plantation economies and poor governance, which retarded economic development. Acemoglu, Johnson, and Robinson effectively argue that immigration and economic growth are positively correlated, as Chap. 9 suggested, and that the correlation is the result of European immigrants establishing growth-enhancing institutions in the European colonies.

This trend for people to migrate along colonial lines began to dissipate in the nineteenth century. First of all, the same economic forces that drove people to emigrate to the colonies of the major European colonial powers were also pushing people from countries without colonial empires to emigrate too. Towards the latter part of the nineteenth century, more and more people from Scandinavia, Switzerland, Greece, Italy, Russia, Czechoslovakia, and many other nontraditional immigrant sources emigrated to the land-abundant countries in the Western Hemisphere, such as the USA, Brazil, and Argentina, or they went to land-abundant British colonies such as Australia, Canada, New Zealand, and South Africa. For example, it is estimated that as late as 1870, over half of all foreign-born persons in the USA were British, including Irish, natives, but by the early twentieth century, only a little more than 10 % of the rapidly rising volume of new immigrants to the USA were from Great Britain and Ireland.

Note, however, that the patterns of European emigration defy simple descriptions. For example, between 1850 and 1910, the period during which the great European migration was at its peak, France had a very low emigration rate of less than two persons per thousand of mean population per decade, while Ireland's emigration rate between 1850 and 1910 averaged more than 90 persons per thousand population per decade. The Austro-Hungarian, Italian, Portuguese, Polish, and Russian rates of emigration trended upward after 1871, while the Danish, German, Irish, and Swedish rates trended downward. Hatton and Williamson (2005) provide evidence showing that, although the USA was the largest receiver of immigrants in number of persons, it did not experience the highest *rate* of immigration between 1850 and 1910 compared to other New World destinations. According to Hatton and Williamson's (2005) calculations, Argentina had the highest average decadal immigration rate during this period (155 per thousand of mean population each decade), followed by Cuba (118), Canada (89), the USA (76), and Brazil (42).

### 16.1.3 The Emigration Life Cycle

Hatton and Williamson (2005) argue that European migration followed a clear pattern of what they call an *emigration life cycle*. They interpret the data as showing that between 1850 and 1910, a source country's emigration rate was not constant; rather, it first tended to accelerate from very low levels, then decelerated, and finally fell off again. Hatton and Williamson suggest that this emigration life cycle tended to coincide with a period of sustained economic growth in the European source countries when their economies were experiencing rapid technological and structural change, shifting from agrarian to industrial societies. More generally, the growth of emigration during the Industrial Revolution when most European source countries experienced accelerating economic growth and rising real wages seems to refute the standard immigration model, which links immigration to the differences in economic growth and living standards across countries. Note also that some of the poorest European countries had the lowest emigration rates during certain decades of the nineteenth century.

One suggested explanation for the weak correlation between emigration rates and home/destination wage differences is provided by Hatton and Williamson (2005), who test the latter hypothesis with a model of how a country's emigration evolves over time. They argue that as the source country's wage rises from initially low levels, emigration evolves from being "supply constrained" to "demand constrained." Specifically, when wages are very low family resources are too low to make migration affordable, and many would-be émigrés are caught in a "poverty trap" in their home countries. When some economic growth occurs and wages rise in the home country, the poverty trap disappears and the migration decision falls primarily under the influence of relative earnings opportunities in the destination country, i.e., labor *demand* conditions. At this stage of the evolution of emigration, higher home wages are more closely correlated with rising levels of emigration.

Hatton and Williamson also incorporate aspects of Easterlin's (1961) hypothesis that nineteenth century European emigration was directly related to the acceleration of European population growth. Easterlin argued that industrialization in the earlier part of the nineteenth century generated spikes in the natural rate of population growth in European countries, and the resulting rise in labor supply then caused real wages to fall and, therefore, emigration to rise. Hatton and Williamson suggest another, more direct but related effect: The spike in population growth caused a spike in the number of young adults 20 years later, and these younger adults had a higher likelihood of migrating away from their local communities, all other things equal. Hatton and Williamson's *demographic effect* on emigration is compatible with the hypothesis, often suggested in the sociology literature, that European population growth created pressure on the stock of land and made emigration to land-abundant countries like Australia, Argentina, southern Brazil, Canada, and the USA. In Hatton and Williamson's (2005) model, the demographic effect causes the observed coincidence of rising emigration rates *and* rising real source country wages.

One reason that European economic and demographic factors were a major influence on nineteenth century European emigration was that there were few barriers to immigration in the principal destination countries. Recall from the previous chapters that Canada and the USA effectively left their borders open to European immigrants. Australia, Argentina, Brazil, Canada, New Zealand, Uruguay, and many other land-abundant Western Hemisphere countries similarly welcomed European immigrants in the nineteenth century. The importance of open borders for the surge in immigration is clear when we take into consideration the precipitous fall in immigration in these destination countries when all of them imposed immigration restrictions in the twentieth century.

### ***16.1.4 European Emigration After World War I***

European emigration slowed sharply after World War I, partly because of poor economic conditions in the traditional destination countries, but also because the major immigrant destinations erected higher barriers to immigration. These new barriers were imposed in response to domestic political pressures driven by growing unemployment and, after 1929, the Great Depression. Nevertheless, several million more Europeans still left for the traditional overseas destinations during the 1920s.

Once the Great Depression caused widespread unemployment in the traditional immigrant destinations, there were actually large net flows of immigrants back to Europe. The higher barriers to immigration soon proved to be nonbinding as few new immigrants sought to enter the destination countries. When a different world emerged after World War II, and new economic and social incentives for people to migrate appeared, the immigration policies enacted between the World Wars again became binding on actual immigrant flows.

## **16.2 The Post-World War II Period**

After World War II, large-scale European emigration resumed. But, then in the late 1950s and all of the 1960s Europe experienced unprecedented economic growth, and emigration slowed drastically. As economic conditions improved, European immigration policies changed, and by the early 1960s, several European countries had become major immigration destinations. Economic recovery created an acute labor shortage in a number of European countries, most notably Germany, Holland, Belgium, and France, and rapidly rising wages plus readily available job opportunities began to *pull* in foreign immigrants. Initially, most of the immigrants to Northern European countries came from Southern European countries such as Italy, Spain, and Portugal. Soon, however, these destination countries began to attract workers from North Africa and Turkey, thus initiating the cultural diversity that now characterizes many European societies.

Also, after European countries began to grant independence to their colonies, Europeans could no longer emigrate to those colonies as freely as before. More important, many former European immigrants and their descendants were forced to return to Europe as the newly independent former colonies struggled to reform their colonial social and political structures. There were also migrations related to the disruptive effects of World War II. For example, West Germany received about eight million ethnic Germans who were expelled from Eastern Europe in the early 1950s, and then another 2.6 million Germans immigrated from East Germany between 1950 and the erection of the Berlin wall by East Germany in 1961. Several hundred thousand Indonesians who had worked for the Dutch administration in Indonesia were more or less forced to flee to Holland after an extended conflict led to Indonesian independence from Holland in 1949. More than one million French residents returned from Algeria during and after that country's war of independence in the late 1950s.

### ***16.2.1 Guest Workers***

During the 1950s and 1960s, most of the Northern European countries welcomed immigrants through the implementation of migrant recruitment policies. For example, Germany started a “guest worker” system, negotiating recruitment treaties with various Southern European countries, Morocco and Tunisia. The German Federal Labor Office operated 400 overseas recruiting offices abroad on behalf of German firms. Former colonial powers such as France and the UK drew on their former colonies for unskilled labor, while other countries such as Germany, Austria and the Scandinavian countries recruited workers primarily from Southern Europe, the Mediterranean countries and Turkey. Zimmerman (1995) estimates that about five million people migrated to the North from the Mediterranean countries during this period. In addition, when the UK, France, the Netherlands, Belgium and Portugal, relinquished their colonies following the Second World War, many residents of those colonies flocked to the former mother countries. The former colonial powers typically granted rights to citizens of former colonies and many Europeans residing in the colonies returned home.

The economic recession that hit Europe after 1973 put a stop to the guest worker programs. However, many of the guest workers ended up staying in Germany, Holland, Switzerland, and the other northern European countries they had been working in. The immigration laws permitted workers to remain permanently after working for some number of years, and, because most of the countries allowed immigration for family reunions, spouses and other family members of the newly settled workers soon began arriving. Also, many guest workers put down roots in the destination countries, and they used these countries' liberal policies on human and civil rights to eventually gain permanent legal status or citizenship in the destination countries.

When the first guest workers, or *gastarbeiter*, arrived in Germany from Turkey in 1961 under a special government program to provide workers for Germany's "economic miracle," no one envisioned these workers remaining in the country for more than a few years. "The idea, originally, was that the foreign workers would stay for as long as economically necessary, then go home. It didn't go like that," according to Michael Bommes, the Director of the Institute for Migration at Osnabrueck University in Germany. In 2010, immigrants made up 13 % of Germany's population and over 10 % of its workforce. Many of those *gastarbeiter* found ways to stay, and they brought the rest of their families. The same thing happened in the other Western European countries that sought guest workers during the 1960s. And the same thing is likely to happen in other countries where standards of living remain well above those of the countries the guest workers come from. If the destination countries also have liberal political and legal institutions that respect the welfare and interests of immigrants, then some of the temporary immigrants are likely to become permanent residents. In his introduction to the 2008 edition of the OECD's *International Immigration Outlook*, John Martin (2008, p. 20) warns that the "expectation of temporary stay by labour immigrants does not appear to be a foundation on which one can construct a solid immigration policy."

The Arab oil embargo of 1973 suddenly slowed economic growth in most of the Western and Northern European economies. Guest worker programs were abruptly ended, and active recruitment of immigrant workers stopped. While immigration dropped during 1974–1975, especially in France and Germany, to many people's surprise, it began to rise again starting in 1976. Zimmerman (1995) points out that not only was it difficult for governments to induce return migration, the foreign population in Europe went up because of higher fertility rates for immigrants and the arrival of those immigrants' spouses, children, parents, other relatives, and many friends who learned about life in Western Europe.

These guest worker episodes illustrate the complexity of immigration policy. Clear rules for guest workers can be overruled by other rules, laws, and legal institutions. Also, additional laws, rules, regulations, and government institutions are often enacted on top of earlier laws, rules, and regulations, thus providing immigrants and their legal advisors plenty of room to convert temporary immigrant status to permanent status.

### 16.2.2 The Post-Soviet Era

The fall of the Berlin Wall in 1989 and the subsequent collapse of the Soviet Union and Iron Curtain triggered internal migration on the continent, coupled with steady inflows of migrants from outside Europe. The political upheaval following the Soviet collapse triggered a large movement of persons from Eastern to Western Europe. A large early component of this movement consisted of about 400,000 ethnic German *Aussiedler*, who moved from Eastern Europe and the former Soviet

Union to Germany. The Balkan wars after the collapse of Yugoslavia created large numbers of refugees who fled to other European countries. Again, the liberal legal environment and the human rights principles in most European countries have enabled these refugees to remain in their destinations.

Immigration into Germany was especially large in the 1990s, in per capita terms reaching the high levels of 1–2 % per year experienced by the USA at beginning of the twentieth century. Most of the recent immigrants to Germany have been ethnic Germans that had been living in Eastern European countries. It has remained difficult for other foreigners to immigrate to Germany, although in 2001 the government was expected to begin permitting about 50,000 immigrants of non-German descent to gain permanent resident visas. Immigration for non-EU citizens has been easier in many other countries of the European Union (EU). For example, it is easier to gain permanent resident status and, ultimately, citizenship in France, the Netherlands, or the UK.

Since 1992, when the EU became a full-fledged common market, citizens of one member country have been able to migrate freely to any other EU member with full labor rights. Immigration from neighboring countries is still slow, however, as many informal barriers continue to hamper the flow of people. There are different languages to learn, educational credentials differ, climates differ, and lifestyles vary greatly from one country to another. At the same time, many immigrants continue to come from outside the EU because of the large wage differences between EU and non-EU countries.

The EU has increasingly coordinated its economic policies across countries, and EU policies vis-a-vis outside countries are now common to all the EU countries. When the EU took up the issue of expansion beyond its 15 members in 2001, the potential immigrant flows from the new members, mostly Eastern European countries, were a sticking point during the accession negotiations. The negotiations resulted in an agreement to delay the liberalization of immigration so that it would lag behind the scheduled liberalization of trade and investment. It is also interesting to note that the EU was willing to sign a free trade agreement with Turkey, the source of many immigrants in the past, but it still has not yet moved definitively toward full membership for Turkey in the EU. Full membership would imply that eventually there would be completely unhindered migration flows from Turkey to other EU countries. In sum, by the first decade of the twenty-first century, all of the original 16 Western European members of the EU were net recipients of immigrants, with immigrants from Eastern Europe supplementing increasing numbers of immigrants from Africa.

### ***16.2.3 Recent EU Immigration Policy***

The first of two agreements on freedom for people to cross borders within Europe were signed in the Luxembourg town of Schengen in 1985 by Germany, France, and the Benelux countries. This agreement led to the elimination of internal border

checks. In the early 1990s, Italy, Spain, Portugal, Greece, Austria, and Finland joined the so-called *Schengen Area*. A second *Schengen Agreement* liberalizing movement across EU borders was signed in 1990, and together these two agreements became part of the *Treaty of Amsterdam* on basic human rights in the EU.

In 1990, a consensus developed on a set of rules and judicial procedures for dealing with the growing phenomenon of unauthorized immigration. Included in a new set of regulations was a joint project to computerize information on immigrants. There were further agreements on admission policies, and specific criteria relating to family reunion, employment, and long-term residency were adopted. Despite the harmonization of immigration procedures among the Schengen countries, it was still left to the individual destination countries to negotiate with source countries on agreements to take back unauthorized immigrants. The *Dublin Convention of 1990* established that each country was responsible for setting its own asylum policy and humanitarian aspects of immigration. On a practical level, individual countries maintained quite a bit of local control over immigration for the simple reason that all of the Schengen rules and procedures had to be implemented by the individual countries. We know from the examinations of USA and Canadian immigration policy that there are always differences between the letter of the law and the final application of the laws. Those differences currently vary across the diverse members of the EU.

In sum, the EU has effectively created an immigration system that is a mixture of regional and national policies. Individuals seeking entry to Europe are often able to exploit differences in national policies in order to, eventually, gain entry to all European countries under the provisions of the EU. Wihtol de Wenden (2007) notes the potential for conflicts between countries. She also notes an interesting paradox: Political groups that in the past opposed Europeanization now demand better coordination among European countries in sharing information and the elimination of differences in national regulations that permit more foreigners to take up residence in European countries.

## 16.3 The Interesting Case of Ireland

Ireland is an especially interesting example of how economics and policy combine to influence immigration flows. During the nineteenth and early twentieth centuries, Ireland was the third-largest source of European immigrants to the rest of the world. As a percentage of the population, Ireland's rate of emigration was more than double that of any other European source country. And, for most of the twentieth century, Ireland remained a source of immigrants. The UK, another European country, became the largest destination of Irish immigrants. Ireland's population peaked at 8.5 million in 1845, the year the potato famine began. That is not to say there was no Irish emigration before 1845; to the contrary, about 0.7 % of the Irish emigrated each year between 1820 and 1845. However, the potato famine caused

emigration to soar to over 3 % of the population per year for several years running, and the combination of emigration and mass starvation caused Ireland's population to decline precipitously to 6.5 million by 1851. Even after the effects of the famine dissipated, emigration continued. It was not until the early 1900s that the rate of Irish emigration returned to its pre-famine level of less than 1 % of the population per year. By then, the population of Ireland had fallen to just barely over four million.

Over 80 % of Irish emigrants went to the USA, with England and Canada, respectively, the second that third most important destinations. Protestant Irish from the Ulster region of Ireland more often emigrated to Britain or Canada, whereas the great majority of Catholic Irish emigrated to the USA. As we noted in the previous chapter, a large proportion of Irish immigrants in Canada eventually moved on to the USA too. Also of note is that nearly all Irish immigrants to the USA remained there; Hatton and Williamson (2005) estimate that the return rate was only about 5 %, a much lower rate than for most other nineteenth century immigrants to the USA, perhaps because Irish immigrants faced less of a language barrier in the USA.

Hatton and Williamson's (1993) statistical analysis of Irish emigration finds that more Irish emigrated when unemployment rates in destination countries were relatively low, when economic conditions in Ireland were below trend, and when the wage differentials between Ireland and destination countries were greater. Irish immigrants also tended to go to where earlier Irish immigrants had settled. The gradual decline in Irish emigration over the course of the nineteenth century is statistically explained by the economic recovery of Ireland and the decline in wage differentials between Ireland and the destination countries. Looking at individual propensities to emigrate, Hatton and Williamson found that average family size had a large influence; the larger the family, the more likely someone from that family would emigrate. Hence, demographic factors were important determinants of Irish emigration. Hatton and Williamson (1993, p. 594) thus conclude that: "Overall it appears that income, poverty, and demographic variables were the key determinants of county [Irish] emigration rates."

Over the next 100 years, emigration consistently exceeded the natural increase in Irish population, and the population of Ireland declined from 6.5 million in the middle of the nineteenth century to 2.8 million in 1960. Even today, three million Irish citizens live abroad, 1.2 million of which were born in Ireland. In total, more than ten million Irish emigrated during the 150 years following the potato famine in the middle of the nineteenth century.

There was a sudden shift in the Irish migration pattern in the 1990s. In 1996, Ireland became a country of net immigration, one of the last Western European countries to do so. Then, immigration to Ireland accelerated enough for Ireland's 2005 population to reach its 1851 level of population. There are several causes of this sudden turnaround of immigration in Ireland. First of all, the European countries opened their borders to the free movement of people within the EU, and Ireland instituted economic policies that caused its economy to grow faster than any other European economy. During the latter part of the 1990s and the first decade of the

twenty-first century, the Irish economy became one of the wealthiest members of the EU. While Irish wages averaged less than 70 % of European wages at the start of the 1980s, they reached parity with the rest of Europe in the 1990s, and they had exceeded average European wages by the early 2000s. Also, the fall of the Iron Curtain, and the accession to membership in the EU by many of the former Eastern European Soviet “satellites,” encouraged workers in the latter countries to seek to immigrate to other European countries where wages were higher.

Ruhs (2004) distinguished some other important characteristics of recent Irish immigration. First of all, since the 1980s Irish return migration has accounted for about half of total Irish immigration. That is, improved economic conditions stimulated a substantial portion of the huge overseas Irish population to come back home. Also of interest is the sharp increase in applications for asylum by immigrants from, in order of importance, Nigeria, Romania, Moldova, Zimbabwe, Ukraine, and Poland. In the most recent years, an increasing proportion of Irish immigrants come from the recent new members of the EU.

When the EU expanded its membership from 15 Western European countries to 25 members in the early twenty-first century, it added a number of low-wage Eastern European countries that had been part of the former Soviet bloc: Poland, Lithuania, Latvia, the Czech Republic, Estonia, Slovakia, Hungary, and Slovenia. The original 15 members agreed that they would be permitted to block the entry of immigrants from the new member states for up to 7 years. Many governments were afraid a sudden opening of their borders to the lower-wage Eastern European countries would have adverse effects on their labor markets. Ireland, however, decided to grant workers from the new member states immediate access to its labor market. Ireland, along with Sweden and the UK, was just one of three EU countries that did not opt to place temporary restrictions on immigrants from the new accession countries. By the early 2000s, Ireland was issuing upwards of 50,000 work permits to foreigners each year.

More recently, Ireland has provided an interesting case study of how domestic immigration policy adjusts to changes in economic conditions, and when those conditions suddenly change the attitudes of native citizens towards immigrants that compete with them in the labor market. By 2008, Ireland had begun monitoring immigrants’ usage of public services such as health, education, and unemployment assistance in order to determine to what extent immigrants come to Ireland to work and how many immigrants come for government benefits. Earlier in 2004, the Irish government had already put up for referendum a measure that ends the automatic granting of permanent residence status to foreign-born parents of Irish-born children. This measure, which won a very large majority vote, was aimed at ending the practice where foreign asylum seekers would have children in Ireland while awaiting a decision on their status and thus gain permanent residency even though their cases for asylum were eventually judged to be unfounded. In 2005, the government also decided to begin moving towards a skill-based immigration policy for immigrants from the new members of the EU and from countries outside the EU.

By 2010, deteriorating economic conditions following the 2008 financial crisis caused 65,000 people to leave Ireland, mostly to the UK as well as traditional destinations such as Australia, Canada, and the USA. Almost half of these leaving were Eastern Europeans returning home after having immigrated to Ireland earlier in the decade. But emigration continued to accelerate as Ireland's 2008 financial crisis pushed its economy deep into recession. According to the country's Economic and Social Research Institute, another 200,000 people are likely to emigrate between 2010 and 2015. "We've always had a culture of emigration," says Jamie Smyth, social affairs correspondent at the Irish Times.<sup>3</sup>

## 16.4 Recent Immigration Policy in Spain

Immigration policy in Europe may be influenced by recent changes in immigration policy in Spain, which is one of the EU member countries that have recently received large numbers of unauthorized immigrants. There were about 6.5 million foreign-born people living in Spain in 2010 (Vasileva, 2011). Unauthorized immigration grew rapidly during the early 2000s despite a very high unemployment rate among native Spaniards. There apparently were plenty of low-paying jobs that native workers did not want to fill. Spain is home to many illegal immigrants from North and Central Africa and Latin America, perhaps over one million in total. The Strait of Gibraltar, which separates Spain from Africa, is only 15 km wide at its narrowest point. Latin Americans are attracted to Spain because they share a common language, and Ecuadorians and Colombians are the two largest non-EU nationalities in Spain.

The coincidence of high native unemployment and large inflows of unauthorized immigrants led to a shift in immigration policy in 2005. The policy shift may also reflect the terrorist attacks in Madrid in 2004, which heightened the fear that more terrorists could be hiding among the many illegal immigrants from North Africa and the Middle East living in Spain. More funds will be devoted to guarding the border. For one thing, electronic barriers are being built along Spanish coastlines. Spain has also begun to sign bilateral agreements that permit the prompt repatriation of unauthorized immigrants caught in Spanish territory. On the other hand, the new reforms recognize that many unauthorized immigrants have been in Spain for some time and are employed in jobs crucial to the economy. An amnesty program was instituted in order to draw the illegal immigrants out into the open and to have them employed legally. Government officials claimed that legalizing the status of unauthorized foreign workers enables the government to keep better track of foreigners, and it meant that social insurance contributions would be paid by employers and income taxes were more likely to be collected. After the amnesty ended in May of 2005, fines for unauthorized workers and their employers rose sharply to as much as 160,000 euros per illegal employee.

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<sup>3</sup> Reported in BBC (2010).

After the collapse of the housing boom and the subsequent financial crisis in 2008 drove the Spanish economy deep into recession, further tightening of Spain's generous immigration policies were made. In 2009 and 2010, about 16,000 immigrants (of which 4,000 were family members of principal applicants) returned to their origin countries under a new assisted return program (*Programa de Retorno Voluntario de Trabajadores Extranjeros no Comunitarios*). This program applied mostly to unauthorized Latin American immigrants. More measures to apprehend unauthorized immigrants at the border were also instituted. At the same time, immigration slowed drastically as Spain's unemployment rate rose to over 20 % (nearly 50 % for those aged 18–25), and emigration also rose sharply. By 2010, therefore, fundamental economic incentives were at least partially reducing Spain's inflow of both legal and unauthorized immigrants (OECD, 2012).

## 16.5 Can Immigration Solve Europe's Demographic Burden?

One of the common themes among pundits in the news media is that Western European countries need immigration in order to offset the economic consequences of the rapid ageing of the native-born population. The sharp decline in birth rates in post-World War II Western Europe is destined to sharply raise the percentage of retired Europeans relative to working Europeans. Immigration can change the evolving course of Europe's demographic profile because, on average, immigrants tend to be younger and of working age. Immigration is seen by some as the solution to the rising burden of an ageing population. This issue was more generally discussed in Chap. 11. Recall from that discussion that Cooper (2002) argued that population ageing would almost certainly push governments to tolerate more immigration:

...the prospective decline of natural population growth likely to be observed in the coming decades suggests a prediction: Immigration into all rich countries will occur on a much greater scale than is currently envisioned in official population projections, illegally if not legally; on balance such immigration will be more welcome than it seems to be at present. Indeed, it will even be encouraged.

Are Cooper's predictions about immigration policy accurate for the EU?

Many writers have, probably correctly, observed that it is difficult to imagine Europe, Japan, and other developed countries willingly opening their borders to the very large immigrant inflows necessary to prevent a decline in their workers-per-retiree ratios. According to the United Nations' 2004 *World Economic and Social Survey*, for immigration to eliminate the rising economic burden of ageing populations in Western Europe, North America, and Japan, "incoming migration would have to expand at virtually impossible rates to offset declining support ratios, that is, workers per retiree."<sup>4</sup> EU countries as a group would have to accept between

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<sup>4</sup> Quoted in Williams (2004).

50 and 75 million immigrants from outside the region over the next 50 years if the already high burden on working people is to remain unchanged (Crawford, 2001). Such levels of immigration equal about 20 % of Europe's total population.

Predicting how immigration flows will affect a country's ability to handle the demographic transition is not easy. There are a number of offsetting factors to consider. First of all, while immigrants increase the size of the labor force, they have a variety of influences on income in the country, as the models of immigration have made clear. Secondly, immigrants increase their human capital after they arrive in the country, which will increase their productivity and marginal effect on national income. Thirdly, immigrants, like natives, are eligible for a variety of government transfers, and how those transfer programs evolve over time influences the calculations. Finally, immigrants themselves eventually age and require pension payments and other assistance. After looking at many of these potential changes, Fehr, Jokisch, and Kotlikoff (2004, p. 322) reach the sobering conclusion that even a large expansion of immigration, "whether across all skill groups or among particular skill groups, will do remarkably little to alter the major capital shortage, tax hikes, and reductions in real wages that can be expected along the demographic transition."

## 16.6 Conclusions

This chapter and the previous two chapters discuss contrasting policies towards immigration in the USA, Canada, and the EU. Interestingly, there seem to be more similarities than differences among these very different countries and regions. The USA, Canada, and Europe all experienced continual changes in immigration policies as economic, social, and political conditions changed. Certainly economic and social conditions, and unemployment specifically, played important roles in shaping immigration policy. In short, a country's immigration policy, like all government policy, is endogenous to its economic and social systems. The fields of political science, sociology, and psychology, among others, also have much to tell us about the various lags between economic events and changes in immigration policy. An especially troubling aspect of immigration policy is the huge gap between policymakers' stated intentions and actual outcomes. Did policymakers really believe that the 1986 IRCA law in the USA would end unauthorized immigration or that Europe's guest worker programs would attract only immigrants content to just work for a brief period and then quietly go back to their poor native countries? Or was IRCA just political expediency and a careful balancing act to satisfy, or not offend, groups with very different interests?

The huge gap between the stated intent and the actual results of immigration policies reflects either a lack of understanding of immigration on the part of policymakers or the intentional misleading by policymakers of electorates who lack an understanding of the causes and consequences of immigration. Either way, there is much work for economists to do in order to, on the one hand, gain

better understanding of the causes and consequences of immigration, and on the other hand, to better understand the links between economic outcomes and economic policy.

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# Chapter 17

## Conclusions and Final Observations

**Abstract** This book's survey of what economists have written about immigration concludes that neither the theoretical models nor their supporting evidence provide accurate information on which to base efficient immigration policies. To develop more accurate models and more accurately test those models, economists must take a broader, holistic view of immigration. Immigration is a complex and dynamic process that cannot be captured in a partial equilibrium static model. Even with a better understanding of the economics of immigration, however, it is not clear that policymakers will embrace more efficient internationally coordinated immigration policies.

*Man hat Arbeitskräfte gerufen, und es kommen Menschen.*

(Translation: *We sought workers, and people came.*) (Quoted from an essay by the Swiss writer Max Frisch on Swiss immigration that was distributed during a talk he gave in Luzern in 1965.)

## Chapter Overview

In the introductory first chapter of this book, we warned that this book's survey of the economics of immigration would show that much work remains to be done before we can achieve a full understanding of the economic and social causes and consequences of people's rapidly increasing international mobility. We also noted that immigration is a most fascinating phenomenon to study. We hope that, indeed, the previous chapters of this book have accurately correctly revealed both the challenges and the excitement of the subject of immigration.

It is fair to say that the field of economics has not paid nearly enough attention to the phenomenon of immigration. This is somewhat puzzling given that the term *globalization* appears constantly in many fields, including economics, business, sociology, political science, and anthropology. In the research, writing, and teaching of international economics, only two of the three categories of international

economic activity are prominently covered: international trade and investment. Textbooks of international economics pay little attention to immigration, with the majority devoting fewer than five pages to the subject, while international trade and international finance are given hundreds of pages each. And even when they focus on immigration, economists tend to model immigration as a shift in labor between countries, as just another factor movement. The contrast between economists' often esoteric and narrow analysis of immigration issues on the one hand and the political and social reactions to rapidly growing real immigration flows on the other is nothing short of stunning.

While economists debated over the past two or three decades whether the trade surplus is some infinitesimal positive or negative fraction of a nation's GDP, or whether a nation's foreign debt was growing a percentage point, the proportion of the world's population living outside their native countries doubled. In most high-income countries, nonnatives now make up more than 10 % of the population and workforce, and in Canada and Switzerland these percentages approach one quarter of the population. Millions of people went to live in other countries illegally, effectively creating large parallel populations that lack formal rights and social protections. The unauthorized population today exceeds ten million people in the USA and at least half that many in Europe. Economists seem to have been largely oblivious to the political frictions caused by the presence of these cadres of clandestine foreigners implicitly invited by employers and government officials, but increasingly feared by native residents of the destination countries. The few economists who study immigration have continued to argue about the size of welfare triangles in misleading static labor market models even as the US government began making mass arrests and criminal prosecutions that destroy human lives and violate the USA's most hallowed principles of human rights.

In early 2008, for example, 270 Guatemalan immigrants in the state of Iowa were arrested in a raid on a local meatpacking plant, subjected to an assembly-line legal procedure in temporary courts set up at a local fairground, and kept from contacting their families or legal counsel. Despite protests by the American Immigration Lawyers Association, the workers faced the judges without the usual counseling, and each worker ended up pleading guilty to poorly understood charges and accepting sentences of 5 months in Federal prison to be followed by deportation, or what the US government now simply calls *removal*, as if the invention of a new technical term somehow justifies the arbitrary and inhuman procedures. By 2012, there were several hundred thousand immigrants in prison at any one time in the USA, awaiting their hearing, serving their poorly understood sentences, or awaiting final removal. What can economics add to the difficult and often-emotional discourse on immigration? How can it explain this complex reality? Our answer is: economics has much to add and explain, if only it wanted to! This lack of interest is scandalous. If the movement of people across borders is going to be used to justify violations of countries' basic principles of civil rights, economists had better at least step forward and provide some accurate analysis of what is really at stake.

## 17.1 Immigration: A Fundamental Economic Phenomenon

In order to understand immigration, economists first need to recognize its dynamic and evolutionary nature. The immigration we study today is just the latest manifestation of a fundamental human trait, which is to walk, sail, and ride across the surface of the earth. Ever since the human race evolved in Africa some 200,000 years ago, humans have spread to all corners of the globe in search of better living conditions and imagined riches. This global spread of humanity is what distinguishes humans from most other living species.

Humans have the incredible ability to live in nearly all climates, at nearly all altitudes, and within just about every natural environment found on earth. Most other living species are restricted to specific areas on earth, unable to survive outside certain climate zones and natural landscapes. Humans have somehow evolved the mental and physical capabilities that permit them to survive and, judging by their growing numbers, thrive almost anywhere. As discussed and detailed by Seabright (2010) in his fascinating account of the development of human society, humans have evolved the mental capacity for abstract thought. Humans are able to conceptually analyze their situation and redesign their rules of behavior to alter the collective outcomes of their economic and social activities. Humans have also developed the means to accumulate knowledge outside the evolutionary biological confines of the human body, including language, writing, and art. Such disembodied knowledge can be expanded much more quickly than the biological process of evolution can increase a living organism's capacity to deal with its changing environments. These capabilities enabled humans to adapt to nearly every natural environment across the globe. Hence, migration became a distinguishing trait of humans.

Migration did not end with the complete occupation of all parts of the world, however. Humans' capacity for abstract thought also enabled them to survive after they reached the capacity of the earth's available resources for current levels of human technology. Humans were able to change their social environment and raise their production technologies much faster than the process of evolution could ever have done. Some 10,000 years ago, humans adjusted from living in small hunter-gatherer societies to permanent settlements based on agriculture. Much more recently, the Industrial Revolution accelerated the shift towards large urban societies, a transformation of human society that has accelerated recently with the recent expansion of the service sectors of human economies. Today, humans are integrated in a global and complex economic and social system in which everyone is fully dependent on strangers throughout the world. Within this complex society, immigration has now become a prominent economic and social phenomenon.

Unfortunately, the much slower process of human evolution has not enabled basic human emotions and instincts to keep up with the complexity of human society. The human capacity for abstract thought has not always been able to design the assorted rules, regulations, governing structures, and cultures that induce people to behave in ways that can sustain today's complex human society. In the case of immigration,

we humans continue to fear foreigners, to ignore our long-run common interests, and to deny our dependence on strangers for our daily existence.

Economists in particular have not exploited their capacity for abstract thinking to gain a better understanding of the economic and social complexity we have created for ourselves. Often, special interests and human emotions seem to dominate the political debate on immigration and shape economic policy, while economists seem to be unable to address many of the issues that drive those interests and emotions. The popular labor market model of immigration is inherently limited to analyzing immigrants as factors of production. Economists would do well to memorize Max Frisch's quote above and repeat it to themselves every time they think about immigration. Immigration is not exclusively a labor issue. Rather, it is a phenomenon within the evolving larger human economic and social environments. It can also be argued that the past and current migrations that have built the global economy that now give humans the capacity to change their natural environment in potentially disastrous ways. The natural environment should probably also be incorporated into the study of immigration, both as a cause and a consequence of immigration. In short, we economists can no longer ignore the complexity within which economic phenomena occur.

## 17.2 We Must Think Outside Our Little Boxes

Chapters 2 through 7 presented the theory and empirics of the standard labor market approach to the economics of immigration. To their credit, labor economists analyzed immigration when other fields of economics paid it no attention. If any field should have analyzed the economic causes and effects of immigration it should have been international economics. However, international economists concentrated their attention on international trade and finance, and they dealt with the international movement of labor in only the most tangential way. The field of regional economics has analyzed migration more, but its focus has been exclusively on internal migration. Even in the economic development literature the analysis has been focused on internal migration. The unfortunate lack of communication between regional and international economics has prevented research in regional economics in internal migration from being applied to international migration. The bias towards viewing immigrants exclusively as workers and describing the effects of immigration almost entirely in terms of changes in labor market outcomes is the result of centering the economics of immigration in the field of labor economics.

This is not to say that the labor market approach has added no useful information to the immigration debate. To the contrary, much has been learned. The evidence examined in Chap. 5 suggests that immigration has very little effect on destination country labor markets. Immigration tends to be complementary to most categories of labor, and even in the cases where immigrants are substitutes for domestic labor the wage effect is negative but small. The owners of business and capital are also complementary to immigrant labor, and in the destination countries they are,

therefore, positioned to reap some gains from the arrival of immigrants. These gains by capital and other factors also appear to be small, although we have little confidence in such a conclusion because the labor market focus has not paid nearly as much attention to the gains or losses to factors of production beyond labor. The fact that business often lobbies hard for expanding immigration suggests that the gains may be substantial. However, the evidence from estimating the short run wage effects of immigration, covered in Chap. 6, suggests that it is the immigrants themselves who reap most of the gains from moving across borders to work and live.

Chapter 7 looked at the empirical evidence on the distributional effects of immigration more broadly. It was noted in that chapter that immigration triggers a whole set of reactions throughout the economy beyond the labor supply shift that the labor market model hypothesizes. For example, native labor is likely to migrate away from those regions where immigrants arrive, or it may migrate to other industries and professions. In each of these cases, the net labor supply curve shifts by less than the immigrant inflow. Also, other complementary factors, such as capital and other types of labor, are likely to move toward those regions and industries where immigrants add to the labor force. Most important, perhaps, is the finding by a small number of studies that the arrival of immigrants increases *both* the demand and supply curves of labor. Immigrants are consumers as well as workers, after all. Finally, immigrants can generate a variety of externalities, some positive and some negative. Immigrants demand a share of “the commons” in destination countries, for example, and the resulting rise in congestion is costly to natives. More directly, studies have shown that, contrary to popular myth, immigrants generally do not use as many public services per capita as natives in most countries. On the positive side, immigrants add to the size of an economy and, therefore, may generate economies of scale effects.

Chapter 8 looked at the effects of immigration on the source country. Again, the economic effects are not clearly positive or negative. Even the brain drain, which is one of the few popular topics related to immigration in the development economics literature, is not necessarily a bad outcome for developing countries once remittances and return migration are factored in. Chapter 10 examined the economic effects of temporary immigration. As important as this form of international migration is, there are few models and even less evidence of its impact.

Chapters 9 and 10 surveyed a literature that pushes the economics of immigration into completely new territory. These chapters abandon the static modeling approach in favor of a dynamic evolutionary perspective on immigration. It is the static nature of the economic analysis covered in Chaps. 2 through 8 that is potentially most damaging to the conclusions about the gains and losses from immigration. The fact is that immigration is part of an evolving process of economic development, while static analysis assumes that the circumstances within which a certain aspect of immigration changes remain constant.

Today’s immigration flows across national borders are just the latest installment in the long and gradual process of globalization of human society. The pace of globalization has accelerated sharply over the past two centuries, and international migration has grown along with all other forms of globalization, namely international trade, international investment, and international finance. In such a dynamic

economic and social environment, it is not possible for a static or partial equilibrium model to accurately explain the causes and consequences of immigration by isolating it from all of the related forms of globalization.

The dynamic effects of immigration and the dynamic feedback effects from other forms of globalization on immigration are large. Growth is a compound process, and, like the race between the hare and the tortoise, the “power of compounding” will sooner or later see the long-run growth effects of immigration overwhelm any one-time change in the economy, no matter how large it may seem. How immigration changes an economy’s growth rate is much more important than a short-run change in welfare estimated using a static labor market model of immigration. In general, if immigration increases the overall growth of the destination economy, as some evidence suggests is indeed the case, then all workers and owners of other factors are likely to gain, regardless of the short-run adjustments.

The problem is that economists have developed few dynamic models of immigration beyond the ad hoc approach, such as we described in Chap. 9, of inserting immigration into the standard Solow and “Schumpeterian” endogenous growth models. Chapter 10 examined more complex dynamic models, most notably the model of international agglomeration. But, there are no off-the-shelf analytical procedures to answer questions about immigration’s long-run growth impacts and welfare implications. Economists have also generated very little statistical evidence linking immigration to economic growth. The lack of data and the complexity of dynamic economic processes make it nearly impossible to reach precise conclusions using even the most sophisticated econometric methods.

## 17.3 An Appeal to Holism

The complexity of the process of globalization and the specific roles of immigration within that process mean we need to expand our analysis beyond the familiar economic relationships studied by traditional mainstream economics. To accurately discern the causes, effects, and long-run consequences of immigration, we need to formally recognize the interdependence of all social, and natural, phenomena. These concerns suggest that the economics of immigration should embrace a perspective known as *holism*. The perspective of holism takes the analyst across disciplinary boundaries to many other fields of the natural and social sciences, and it views economic phenomena as part of an on-going dynamic process. Most important, it views any single phenomenon within a broader system rather than in isolation.

### 17.3.1 Defining Holism

The term *holism* is derived from the Greek word *holos*, meaning *entire, total, whole*. The term was first used early in the twentieth century to describe new dynamic theories in the physical sciences, such as Charles Darwin’s theory of evolution,

Henri Becquerel's theory of radioactivity, and Albert Einstein's theory of relativity. These new theories described the world as evolving dynamic systems, in which the parts were related to all other parts in complex ways that condition how each observed part actually functions. Essentially, holism recognizes that the component parts of the whole cannot be understood in isolation and their functions cannot be predicted without knowing the environment in which they exist.

Holism has been described as the diametric opposite to *scientific reductionism*. Scientific reductionism refers to the approach to understanding the *whole* by learning about its *parts*. Clearly, there is some relationship between the whole and its component parts, and in this sense there appears to be no inherent conflict between scientific reductionism and holism. However, to understand a complex process or system, one obviously must understand not only the parts, but also how the parts *interact*. Focusing only on the parts is not *scientific* when there are good reasons to suspect that the interactions between the parts help to determine the performance of the parts as well as the aggregate outcomes of the entire system.

Holism has been pursued in many fields other than economics. In sociology, Emile Durkheim argued against the notion that society was nothing more than a collection of individuals. He showed that a *community* can take on many different forms depending on how the individuals who make up the society organize themselves and behave within that organization. In medicine, the holistic approach to healing recognizes that the emotional, mental, and physical elements of each person work together. Most psychologists recognize that a person's relationship to society shapes behavior. The International Electrical Engineering Association recently published guidelines suggesting engineers should take a holistic approach to their work in order to avoid incompatibilities between specific projects and the societies in where the projects are carried out. And, of course, holism is fundamental to the field of ecology. The economist Kenneth Boulding (1956, p. 197) appropriately described holism as the approach that links "the specific that has no meaning and the general that has no content."

### 17.3.2 *The Economics of Immigration Must Embrace Holism*

There is no better indication of the dual need to understand the parts and the way the parts interact and function as a whole than when we analyze immigration. Immigration is clearly a holistic phenomenon that is related in complex ways to the social and natural environments humans live in. People migrate for many reasons, and their decisions and actions are shaped by factors such as expected income differences, family conditions, immigration policies in the source and destination countries, public and private institutions in the source and destination countries, and the adjustments in the source and destination countries in response to immigration flows. The models and statistical evidence presented in this book also suggest that immigration both causes wages to change and is itself a function of wages at home and abroad.

Furthermore, immigration both affects and is affected by economic growth, or the lack of it. Immigration changes the demographics of countries, just as demographic differences can influence immigration flows. The chapters on immigration policy showed that immigration influences, and is influenced by, shifts in immigration policies. In fact, gradual changes in immigration flows can trigger sudden sharp reversals in immigration policy, suggesting that the relationship between immigration policy and actual immigration flows is not linear, as so many economic models assume. Nonlinearities are a common feature of complex systems.

In short, immigration can only be understood as a *holistic* social, natural, and economic phenomenon that is, on the one hand, a part of human society and the earth's natural environment but, on the other hand, *interacts* with those social and natural environments in complex ways. Hopefully, the chapters on unauthorized immigration, Hispanic immigration, return immigration, and immigration policy have provided some insight into the "holistic" nature of immigration and its broad causes and consequences. Clearly, attempts to analyze immigration using models that isolate just one aspect of the immigration process, as the labor market models of immigration effectively do, are doomed to failure. Similarly, empirical models based on partial and static models cannot accurately distinguish the causes or consequences of immigration.

The jump from the labor market model of immigration, in which all other things remain the same in response to a shift in the labor supply curve, to true holism, in which immigration interacts dynamically with all other human activities in earth's natural environment, is a major challenge for economists to meet. Even at the Santa Fe Institute, the think tank where holism and the study of complex systems has been actively pursued, the holistic methods for analyzing human society are still quite experimental. We do not wish to infer that a more holistic perspective is something that makes the life of economists easier. The technical difficulty of incorporating holism into economic research, such as the lack of dynamic mathematical models or the poor quality of data, does not disqualify it from still providing guidance for practical analysis. The shortcomings of much of the analysis of immigration are not the result of a conscious decision by economists to avoid holism. The problem has been that economists used familiar methods when they began to analyze immigration, and those methods ignored the complexity of human social and economic activity. By not looking outside the box, economists missed out on many easy opportunities to improve and expand their analysis.

### **17.3.3 *The Holistic Approach to the Study of Immigration: An Example***

Why would economists blindly continue to devote years of effort to the study of partial equilibrium relationships that are not only often refuted by the data, but are wrong from a holistic perspective? More specifically, how is it possible that economists ignored the need to adjust their models of immigration's wage effects

for internal migration, capital investment, product demand effects, and endogenous policy adjustments? Even a superficially holistic perspective would have warned them about these, and many other effects. At the very minimum, economists should have run regressions that controlled for some of these factors.

All economists would agree that sound empirical analysis begins with a well-conceived, thorough, and realistic theoretical analysis. Much of the literature on the economics of immigration is devoid of high quality theoretical analysis that captures the “big picture” and also incorporates the many complex relationships associated with immigration. Most empirical analyses are based on the elementary textbook style single-period partial equilibrium model of a labor market, where natives and immigrants are perfect substitutes, there are no secondary adjustments to immigration, and there are no policies or dynamic growth effects. A holistic approach to modeling immigration would, most likely, point to a general equilibrium, dynamic model where natives and immigrants are imperfect substitutes, which explains both immediate and longer-run adjustments to immigration, which endogenizes immigration policy, which captures growth responses to immigration, and which links international trade with international labor mobility. An especially important requirement of this “unified” theory is that it should account for bi-directional causality between variables. A more holistic view provided by such a unified theory would provide researchers with the guidance they need for deriving an empirical specification that ensures robust hypothesis testing. Furthermore, success in testing the model requires complete and intricate data, which at present are unavailable for many countries. No one claims that a holistic approach to immigration is easy!

To elaborate further on the value of a holistic approach, consider the following simple regression model that relates immigration to the wage differential. For example, suppose we use data on immigration flows between two countries for a sample of 20 countries to estimate the coefficient  $a_1$  in the regression equation

$$\text{Imm} = a_0 + a_1(w_1/w_2) + \epsilon \quad (17.1)$$

where Imm is the emigration rate from countries 1–2,  $w_1$  ( $w_2$ ) is the wage in country 1 (2), and  $\epsilon$  is an error term. Applying ordinary least squares using this regression equation would provide an inaccurate indication of how immigration is related to the wage differential. The estimate of  $a_1$  would be subject to omitted variable bias because other determinants of immigration are not “controlled” for in the equation.

A solution to omitted variable bias is to add more variables to the regression model, say by applying data on 20 countries using the following model

$$\text{Imm} = a_0 + a_1(w_1/w_2) + \mathbf{b}\mathbf{X} = \epsilon \quad (17.2)$$

in which  $\mathbf{b}$  is a vector of coefficients and  $\mathbf{X}$  is a matrix of data for 20 countries on a set of other variables hypothesized to affect immigration. In the case of immigration, such an equation will still be biased. As has been found in many studies, immigration both influences, and is influenced by, a great variety of factors. That is, estimates using (17.2) are subject to simultaneity bias. Fortunately, there are two ways to deal

with simultaneity bias: (1) replace the variables that are bi-directionally related or correlated with other variables within the model by instrumental variables that, somehow, are correlated with the endogenous variables but are not related to any other variables in the model, or (2) use a simultaneous-equations model that explicitly recognizes the various interrelationships between the variables in the model. Convenient computer programs to estimate simultaneous-equations models are readily available. Unfortunately, estimation procedures limit the number of variables in the model to some number less than the number of observations (the degrees of freedom problem), while data for many countries tend to be annual or even just decennial. Furthermore, good instrumental variables are hard to find.

An even more serious challenge for statistical analysis of evolving social phenomena such as immigration is the need for dynamic analysis to test for relationships over time. For example, we have noted in various places in this book that current immigration is related to past immigration. More generally, immigration is part of the continually evolving process of human social change, and there are many lagged influences and lagged effects to be considered. Obviously, the use of time-series data that trace immigration over various periods of time can be used to estimate the coefficients in dynamic regression models, but consistent observations of variables over the years are also hard to come by. And, the degrees of freedom problem still remains; only a few time-series variables can be entered into the model to mitigate omitted variable bias when there are just a few observations for different years or decades.

Finally, it is not at all clear that the relationship between immigration and the many hypothesized social, environmental, political, and other relevant variables are linear in nature. Social systems are complex and, most likely, nonlinear. Regressions to test economic relationships are often estimated with the variables in logarithmic form, but that only linearizes variables subject to constant growth rates over time. Complex and potentially explosive or implosive systems require much more complex and presently unknown functional forms.

One way to apply the principle of holism is to do many different statistical studies for different countries using many different data sets, empirical specifications, and statistical tests. Then, after many of these independent estimations have been completed, a “meta-study” of all of the results can be carried out to determine whether the results across these many studies constitute a *robust* conclusion. An example of this approach is the meta-analytic study of Longhi, Nijkamp, and Poot (2005) on the wage effects of exogenous immigration. Robustness is achieved when the results across all the different studies consistently lead to a similar conclusion. The idea behind robustness is that, even though any individual statistical study suffers from a variety of data problems and sources of estimation bias, if many independent studies using different data sets, control variables, empirical specifications, and statistical methods come to the same conclusion, then perhaps we can begin to be somewhat confident about the result.

The economics of immigration is not yet close to claiming even a modest degree of robustness for the statistical results we have reported in this book. There simply have not been enough studies, and researchers have not exhibited sufficient respect

for the holistic nature of immigration by venturing beyond the most simple regression models and the convenient applications for which data was easily available. New data must be collected, especially for unauthorized immigration, two-way migration, migration between developing countries, and return immigration. More sophisticated theoretical and empirical models must be specified, and, given the dynamic and complex nature of immigration, panel data must be used. Hopefully, economists will embrace the principle of holism and abandon narrow empirical studies that insert exclusively cross-section or time-series data into single-equation regression models that effectively ignore the true nature of human migration.

## 17.4 Developing International Institutions for an International Phenomenon

The traditional models of immigration described in Chaps. 2 through 8, plus the empirical evidence examined using econometric methods based on these models, suggest that immigration increases overall world income. If, indeed, these conclusions are correct, then a strong case can be made for reducing the restrictions that countries have placed on immigration. Of course, the partial equilibrium static models of immigration, as well as most of the evidence generated by these models, suggest that there are likely to be both gainers and losers when people move between countries. Thus, there is likely to be resistance to the liberalization of international migration. More holistically, it is clear that immigration is a complex phenomenon with myriad causes and consequences. A more holistic perspective that sees immigration as a component of a dynamic process that leads to the international agglomeration of economic activities reveals even more complex issues: entire countries could experience population declines and economic stagnation while others flourish. Humanity's growing environmental footprint will also influence immigration flows and national resistance to those flows. For all of these reasons, we expect immigration to remain the subject of many lively political debates.

Considerations such as these have led some economists and policymakers to ask whether the world should not seek to establish some kind of international organization to facilitate multilateral negotiations on an international agreement that would help to bring about a sustainable set of immigration policies.

### 17.4.1 *The Global Commission on International Migration*

The United Nations has established a *Global Commission on International Migration* in 2003. However, this international commission has not yet moved much beyond a study group. There has been little interest among member nations for a major round of negotiations to liberalize international migration, as the World Trade Organization and its predecessor, the General Agreement of Trade and

Tariffs (GATT), have organized for dealing with international trade policy over the past 50 years.

Hatton (2006) argues that such an agreement would be very difficult because trade is determined, in the long run, by comparative advantage, but international migration is determined by absolute advantage. Specifically, it is well known that total factor productivity, or more generally the level of technology, varies greatly across countries. In high-income countries all factors of production are much more productive than they are in low-income countries. Such technology differences do not stand in the way for balanced trade based on comparative advantage. However, there will not be balanced migration in both directions; people will largely move from the low-wage, low-income countries to the high-wage, high-income countries. Hatton (2006, p. 24) therefore concludes that “it will be hard, if not impossible, to reach the sorts of global agreements for migration as have been negotiated for trade.”

Jagdish Bhagwati, the well-known trade economist does not agree with Hatton; Bhagwati has repeatedly called for creating a World Migration Organization to begin negotiations for some degree of international coordination of immigration policies across countries. He claims that immigration needs to expand, but the current confusing array of national immigration policies and the growth of unauthorized immigration call out for a more coordinated approach to managing and safeguarding the flows of humans across borders.

### ***17.4.2 What Is the Optimal Flow of Immigrants?***

Benhabib and Jovanovic (2007) perform an interesting exercise in which they calculate the optimal immigration flows under different international welfare functions. They find that, depending on how the world welfare function weighs the incomes of people in poor countries relative to the incomes of people in rich countries, very different patterns of immigration are required to maximize world welfare. For example, they find that in a case of an egalitarian welfare function that weighs everyone’s welfare equally across the world’s population, world welfare would be maximized by having 3.2 billion low-skilled people emigrate from third world to OECD countries. In another case that weighs the welfare of natives of high-skill OECD countries much higher than the welfare of natives in third world countries, the optimal immigration policy may be to prohibit all immigration or to restrict immigration to high-skilled workers (a brain drain). Benhabib and Jovanovic hypothesize many other cases by varying the weights in the welfare function, making diverse assumptions about the distribution of skills across countries, and assuming different migration costs and immigration externalities. Their exercises make an interesting point, however, which is that an international agreement on immigration is hampered by countries’ diverse populations and tendency for political leaders to play to the narrow interests of their wealthiest and most powerful citizens.

Still, it may be possible to reach some agreement on how to deal with the brain drain, human trafficking, unauthorized immigration, temporary immigration, and immigrant remittances. With regard to these issues, there are mutual gains and losses across countries, and cooperation among countries can clearly reduce the losses and increase the gains for all. The European Union (EU), which now consists of 27 countries at substantially different levels of development and per capita income, has in fact negotiated a very detailed agreement on migration among the EU member countries. Granted, migration among EU countries does not provide nearly as great an economic gain as would migration between the poorest and richest nations of the world. On the other hand, as Corner (2008) and McClintock (2008) argue, a move toward global governance and the unequal sharing of costs and benefits that characterizes issues such as international migration necessarily involves the loss of national sovereignty.

### ***17.4.3 Small Steps Towards Global Governance***

McClintock (2008) suggests that the difficult expansion of international cooperation is more likely to succeed if it starts with regional groups of countries such as the EU. Sovereignty will only be ceded gradually as specific issues arise, and even then only when there are good relations among the countries involved. The set of issues and the number of countries with good relations can grow over time, much as the scope and membership of the EU has grown over the past 50 years. But, McClintock explicitly argues that the United Nations is currently not designed to deal with real sovereignty issues. Regional groups such as the EU are better positioned. Their regional structure of governance, which includes a real transfer of sovereignty from nations to a multinational institution, can then gradually expand to include a greater share of the world's nations.

Freeman (2006) takes a less global approach to bringing world migration flows closer to their optimum. In light of the evidence showing that the greater portion of the economic gains from international migration accrue to immigrants while all the other interest groups in the source and destination countries are left to fight over the remainder of the economic gains and losses, Freeman suggests that immigrants be charged a high fee for permitting them to migrate to another country. He specifically suggests that countries with long waiting lists for immigrant visas, such as the USA, Western Europe, or Canada, should auction a limited number of visas or, better yet, charge a high fee—perhaps as much as \$50,000—for each permanent residence visa. Chapter 14 on US immigration policy mentioned that the USA has already raised fees for processing immigrant visas, but these higher fees were only raised to cover the high costs incurred by the US government for processing the heavy load of visa applications. Freeman is proposing much higher fees to raise money to directly compensate those who are negatively impacted by the arrival of immigrants or to fund education and job subsidies that mitigate the negative effects of immigrants. At the same time, opening the door to fees would

end up making immigration much more selective by favoring those with the means to pay the fees. Employment-related immigration is likely to increase relative to other forms of immigration.

Clearly, much more *abstract thought* needs to be applied to the issue of international migration before we can determine the best mix of national and international policies to deal with the fundamental human desire to migrate. Seabright (2010) convincingly argues that we, and that includes economists, can do this very well.

## 17.5 Final Comment

And now we conclude our survey of the economics of immigration. The material presented may have left you with more questions than answers, but that is to be expected given the small number of immigration issues economists have addressed. In fact, we hope that we have made you aware of many new questions that did not occur to you before. Perhaps you can help to fill in the many gaps in understanding with your future research.

The economics of immigration is, first and foremost, the study of human beings. More important, it is the study of human beings making among the most substantial decisions of their lives, decisions reached under a high degree of uncertainty. Moving between countries and cultures is not an easy decision for most people to take. The movement of people is something much more consequential than a shift in factors of production. This makes the study of immigration inter-disciplinary, complex, important, and very interesting.

On top of the inherent difficulties of leaving home and moving to another country, governments and people on both sides of the world's borders continue to make international migration quite difficult for immigrants. At the time of this writing, the year 2012, we could observe the blatantly anti-immigrant rhetoric of right-wing politicians seeking office in the Dutch parliamentary elections, the rapidly growing number of arrests and imprisonment of unauthorized immigrants by a US president who had campaigned 4 years earlier for more humane treatment of immigrants, and the destruction of encampments and the forced deportation of long-time unauthorized Roma immigrants by a new socialist French government that had, only a few months earlier, criticized the previous government's insensitivity to immigrant issues.

It is our hope that this book, by spreading the knowledge economists have accumulated and motivating more economists and other social scientists to actively add to that knowledge, helps to broaden and humanize the public debate on immigration. As Max Frisch reminds us, immigrants are people, just like all of us.

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