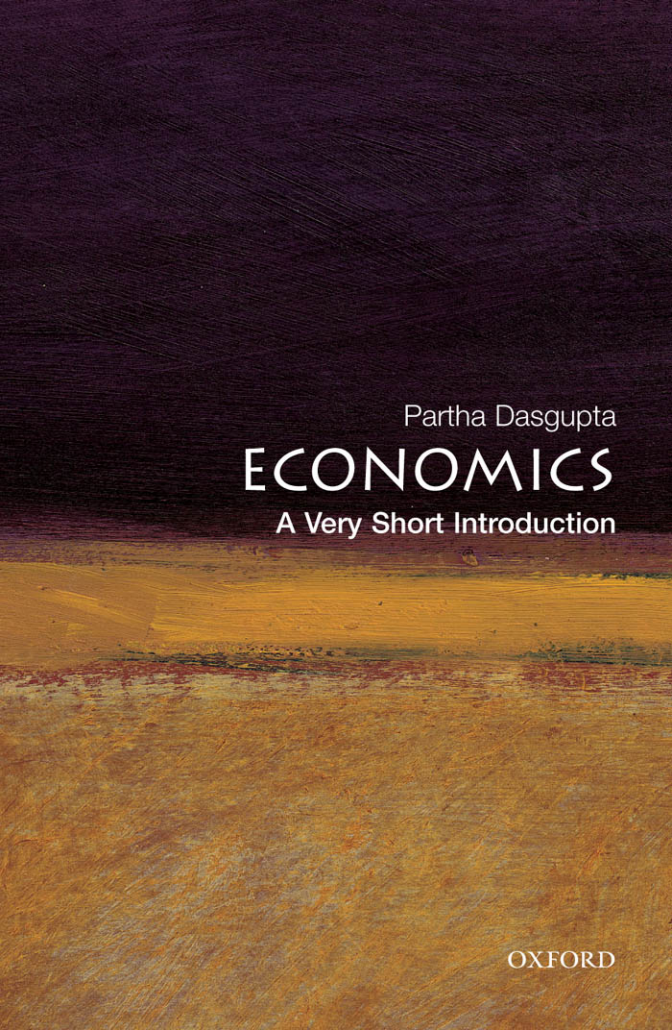
Partha Dasgupta
ECONOMICS
A Very Short Introduction
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Economics: A Very Short Introduction

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Preface

Writing an introduction to economics is both easy and hard. It's easy because in one way or another we are all economists. No one, for example, has to explain to us what prices are – we face them every day. Experts may have to explain why banks offer interest on saving deposits or why risk aversion is a tricky concept or why the way we measure wealth misses much of the point of measuring it, but none of these is an alien idea. As economics matters to us, we also have views on what should be done to put things right when we feel they are wrong. And we hold our views strongly because our ethics drive our politics and our politics inform our economics. When thinking economics we don't entertain doubts. So, the very reasons we want to study economics act as stumbling blocks even as we try to uncover the pathways by which the economic world gets shaped. But as economics is in large measure *about* those pathways – it's as evidence-based a social science as is possible – it shouldn't be surprising that most often disagreements people have over economic issues are, ultimately, about their reading of 'facts', not about the 'values' they hold. Which is why writing an introduction to economics is hard.

When I first drew up plans to write this book, I had it in mind to offer readers an overview of economics as it appears in leading economics journals and textbooks. But even though the analytical and empirical core of economics has grown from strength to

strength over the decades, I haven't been at ease with the selection of topics that textbooks offer for discussion (rural life in poor regions – that is, the economic life of some 2.5 billion people – doesn't get mentioned at all), nor with the subjects that are emphasized in leading economics journals (Nature rarely appears there as an active player). It also came home to me that Oxford University Press had asked me to write *a very short* introduction to economics and there are economics textbooks that are over 1,000 pages long! So it struck me that I should abandon my original plan and offer an account of the *reasoning* we economists apply in order to understand the social world around us and then deploy that reasoning to some of the most urgent problems Humanity faces today. It's only recently that I realized that I would be able to do that only if I shaped the discourse round the lives of my two literary grandchildren – Becky and Desta. Becky's and Desta's lives are as different as they can be, but as they are both *my* grandchildren, I believe I understand them. More importantly, economics has helped me to understand them.

The ideas developed here were framed and explored in my book, *An Inquiry into Well-Being and Destitution* (Oxford: Clarendon Press, 1993). While writing that book I realized that economics had increasingly driven my ethics and that my ethics in turn had informed my politics. As that is an unusual causal chain, the earlier book was more technical and a lot 'heavier'. Theoretical and empirical advances since it was published have led me to hold the viewpoint I advanced there even more strongly now. I understand things much better than I did then – including *why* I don't understand many things. The present work is a natural extension of my earlier book.

While preparing this monograph I have benefited greatly from correspondence and discussions with Kenneth Arrow, Gretchen Daily, Carol Dasgupta, Paul Ehrlich, Petra Geraats, Lawrence Goulder, Timothy Gowers, Rashid Hassan, Sriya Iyer, Pramila Krishnan, Simon Levin, Karl-Göran Mäler, Eric Maskin, Pranab

Mukhopadhay, Kevin Mumford, Richard Nolan, Sheilagh Ogilvie, Kirsten Oleson, Alaknanda Patel, Subhrendu Pattanaik, William Peterson, Hamid Sabourian, Dan Schrag, Priya Shyamsundar, Jeff Vincent, Martin Weale, and Gavin Wright. The present version reflects the impact of the comments I received on an earlier draft from Kenneth Arrow, Carol Dasgupta, Geoffrey Harcourt, Mike Shaw, Robert Solow, and Sylvana Tomaselli. Sue Pilkington has helped me in innumerable ways to prepare the book for publication. I am grateful to them all.

St John's College
Cambridge
August 2006

List of illustrations

The publisher and the author apologize for any errors or omissions in the above list. If contacted they will be pleased to rectify these at the earliest opportunity.

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Prologue

Becky's world

Becky, who is 10 years old, lives with her parents and an older brother Sam in a suburban town in America's Midwest. Becky's father works in a firm specializing in property law. Depending on the firm's profits, his annual income varies somewhat, but is rarely below 145,000 US dollars ($145,000). Becky's parents met at college. For a few years her mother worked in publishing, but when Sam was born she decided to concentrate on raising a family. Now that both Becky and Sam attend school, she does voluntary work in local education. The family live in a two-storey house. It has four bedrooms, two bathrooms upstairs and a toilet downstairs, a large drawing-cum-dining room, a modern kitchen, and a family room in the basement. There is a plot of land at the rear – the backyard – which the family use for leisure activities.

Although their property is partially mortgaged, Becky's parents own stocks and bonds and have a saving account in the local branch of a national bank. Becky's father and his firm jointly contribute to his retirement pension. He also makes monthly payments into a scheme with the bank that will cover college education for Becky and Sam. The family's assets and their lives are insured. Becky's parents often remark that, because federal taxes are high, they have to be careful with money; and they are. Nevertheless, they own two

1. Becky's home

cars; the children attend camp each summer; and the family take a vacation together once camp is over. Becky's parents also remark that her generation will be much more prosperous than theirs. Becky wants to save the environment and insists on biking to school. Her ambition is to become a doctor.

Desta's world

Desta, who is about 10 years old, lives with her parents and five siblings in a village in subtropical, southwest Ethiopia. The family live in a two-room, grass-roofed mud hut. Desta's father grows maize and teff (a staple cereal unique to Ethiopia) on half a hectare of land that the government has awarded him. Desta's older brother helps him to farm the land and care for the household's livestock, which consist of a cow, a goat, and a few chickens. The small quantity of teff produced is sold so as to raise cash income, but the maize is in large measure consumed by the household as a staple.

2. Becky riding to school

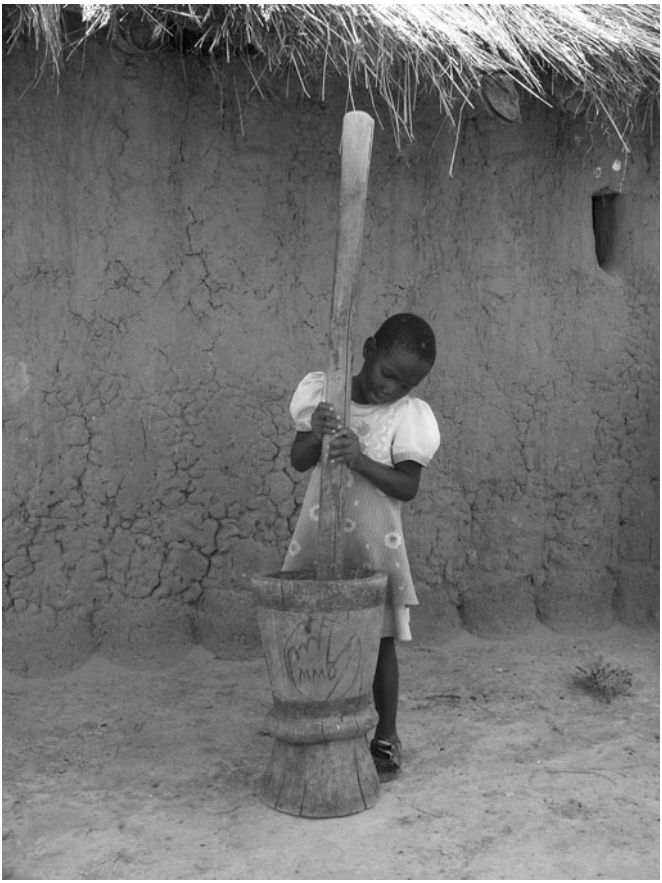
Desta's mother works a small plot next to their cottage, growing cabbage, onions, and enset (a year-round root crop that also serves as a staple). In order to supplement their household income, she brews a local drink made from maize. As she is also responsible for cooking, cleaning, and minding the infants, her work day usually lasts 14 hours. Despite the long hours, it wouldn't be possible for her to complete the tasks on her own. (As the ingredients are all raw, cooking alone takes 5 hours or more.) So Desta and her older sister help their mother with household chores and mind their younger siblings. Although a younger brother attends the local school, neither Desta nor her older sister has ever been enrolled there. Her parents can neither read nor write, but they are numerate.

Desta's home has no electricity or running water. Around where they live, sources of water, land for grazing cattle, and the woodlands are communal property. They are shared by people in

3. Desta's home

Desta's village; but the villagers don't allow outsiders to make use of them. Each day Desta's mother and the girls fetch water, collect fuelwood, and pick berries and herbs from the local commons. Desta's mother frequently complains that the time and effort needed to collect their daily needs has increased over the years.

There is no financial institution nearby to offer either credit or insurance. As funerals are expensive occasions, Desta's father long ago joined a community insurance scheme (*iddir*) to which he contributes monthly. When Desta's father purchased the cow they now own, he used the entire cash he had accumulated and stored at home, but had to supplement that with funds borrowed from kinfolk, with a promise to repay the debt when he had the ability to do so. In turn, when they are in need, his kinfolk come to him for a loan, which he supplies if he is able to. Desta's father says that such patterns of reciprocity he and those close to him practise are part of their culture. He says also that his sons are his main assets, as they



4. Desta at work

are the ones who will look after him and Desta's mother in their old age.

Economic statisticians estimate that, adjusting for differences in the cost of living between Ethiopia and the United States (US), Desta's family income is about $5,500 per year, of which $1,100 are

attributable to the products they draw from the local commons. However, as rainfall varies from year to year, Desta's family income fluctuates widely. In bad years, the grain they store at home gets depleted well before the next harvest. Food is then so scarce that they all grow weaker, the younger children especially so. It is only after harvest that they regain their weight and strength. Periodic hunger and illnesses have meant that Desta and her siblings are somewhat stunted. Over the years Desta's parents have lost two children in their infancy, stricken by malaria in one case and diarrhoea in the other. There have also been several miscarriages.

Desta knows that she will be married (in all likelihood to a farmer, like her father) five years from now and will then live on her husband's land in a neighbouring village. She expects her life to be similar to that of her mother.

The economist's agenda

That the lives people are able to construct differ enormously across the globe is a commonplace. In our age of travel, it is even a common sight. That Becky and Desta face widely different futures is also something we have come to expect, perhaps also to accept. Nevertheless, it may not be out of turn to imagine that the girls are intrinsically very similar. They both enjoy playing, eating, and gossiping; they are close to their families; they turn to their mothers when in distress; they like pretty things to wear; and they both have the capacity to be disappointed, get annoyed, be happy.

Their parents are also alike. They are knowledgeable about the ways of their worlds. They also care about their families, finding ingenious ways to meet the recurring problem of producing income and allocating resources among family members – over time and allowing for unexpected contingencies. So, a promising route for exploring the underlying causes behind their vastly different conditions of life would be to begin by observing that the opportunities and obstacles the families face are very different, that

in some sense Desta's family are far more restricted in what they are able to be and do than Becky's.

Economics in great measure tries to uncover the processes that influence how people's lives come to be what they are. The discipline also tries to identify ways to influence those very processes so as to improve the prospects of those who are hugely constrained in what they can be and do. The former activity involves finding explanations, while the latter tries to identify policy prescriptions. Economists also make forecasts of what the conditions of economic life are going to be; but if the predictions are to be taken seriously, they have to be built on an understanding of the processes that shape people's lives; which is why the attempt to explain takes precedence over forecasting.

The context in which explanations are sought or in which prescriptions are made could be a household, a village, a district, a country, or even the whole world – the extent to which people or places are aggregated merely reflects the details with which we choose to study the social world. Imagine that we wish to understand the basis on which food is shared among household members in a community. Household income would no doubt be expected to play a role; but we would need to look inside households if we are to discover whether food is allocated on the basis of age, gender, and status. If we find that it is, we should ask why they play a role and what policy prescriptions, if any, commend themselves. In contrast, suppose we want to know whether the world as a whole is wealthier today than it was 50 years ago. As the question is about global averages, we would be justified in ironing out differences within and among households.

Averaging is required over time as well. The purpose of the study and the cost of collecting information influence the choice of the unit of time over which the averaging is done. The population census in India, for example, is conducted every ten years. More frequent censuses would be more costly and wouldn't yield extra

information of any great importance. In contrast, if we are to study changes in the volume of home sales across seasons, even annual statistics would miss the point of the inquiry. Monthly statistics on home sales are a favourite compromise between detail and the cost of obtaining detail.

Modern economics, by which I mean the style of economics taught and practised in today's leading universities, likes to start the enquiries from the ground up: from individuals, through the household, village, district, state, country, to the whole world. In various degrees, the millions of individual decisions shape the eventualities people face; as both theory, common sense, and evidence tell us that there are enormous numbers of consequences of what we all do. Some of those consequences have been intended, but many are unintended. There is, however, a feedback, in that those consequences in turn go to shape what people subsequently can do and choose to do. When Becky's family drive their cars or use electricity, or when Desta's family create compost or burn wood for cooking, they add to global carbon emissions. Their contributions are no doubt negligible, but the millions of such tiny contributions sum to a sizeable amount, having consequences that people everywhere are likely to experience in different ways. It can be that the feedbacks are positive, so that the whole contribution is greater than the sum of the parts. Strikingly, unintended consequences can include emergent features, such as market prices, at which the demand for goods more or less equals their supply.

Earlier, I gave a description of Becky's and Desta's lives. *Understanding* their lives involves a lot more; it requires analysis, which usually calls for further description. To conduct an analysis, we need *first of all* to identify the material prospects the girls' households face – now and in the future, under uncertain contingencies. *Second*, we need to uncover the character of their choices and the pathways by which the choices made by millions of households like Becky's and Desta's go to produce the prospects they all face. *Third*, and relatedly, we need to uncover the

pathways by which the families came to inherit their current circumstances.

These amount to a tall, even forbidding, order. Moreover, there is a thought that can haunt us: since everything probably affects everything else, how can we ever make sense of the social world? If we are weighed down by that worry, though, we won't ever make progress. Every discipline that I am familiar with draws caricatures of the world in order to make sense of it. The modern economist does this by building *models*, which are deliberately stripped down representations of the phenomena out there. When I say 'stripped down', I really mean stripped down. It isn't uncommon among us economists to focus on one or two causal factors, exclude everything else, hoping that this will enable us to understand how just those aspects of reality work and interact. The economist John Maynard Keynes described our subject thus: 'Economics is a science of thinking in terms of models joined to the art of choosing models which are relevant to the contemporary world.'

As economists deal with quantifiable objects (calories consumed, hours worked, tonnes of steel produced, miles of cable laid, square kilometres of equatorial forests destroyed), the models are almost always mathematical constructs. They can be stated in words, but mathematics is an enormously efficient way to express the structure of a model; more interestingly, for discovering the implications of a model. Applied mathematicians and physicists have known this for a long time, but it was only in the second half of the 20th century that economists brazenly adopted that research tactic; as have related disciplines, such as ecology. The art of good modelling is to generate a lot of understanding from focusing on a very small number of causal factors. I say 'art', because there is no formula for creating a good model. The acid test of a model is whether it discriminates among alternative explanations of a phenomenon. Those that survive empirical tests are accepted – at least for a while – until further evidence comes along that casts doubt on them, in

which case economists go back to their drawing board to create better (not necessarily bigger!) models. And so on.

The methodology I have sketched here, all too briefly, enables economists to make a type of prediction that doesn't involve forecasting the future, but instead to make predictions of what the data that haven't yet been collected from the contemporary world will reveal. This is risky business, but if a model is to illuminate, it had better do more than just offer explanations after the events.

Until recently, economists studied economic history in much the same way historians study social and political history. They tried to uncover reasons why events in a particular place unfolded in the way they did, by identifying what they believed to be the key drivers there. The stress was on the uniqueness of the events being studied. A classic research topic in that mould involved asking why the first industrial revolution occurred in the 18th century and why it took place in England. As you can see, the question was based on three presumptions: there *was* a first industrial revolution; it occurred in the 18th century; and it was based in England. All three premises have been questioned, of course, but there was an enormous amount of work to be done even among those who had arrived at those premises from historical study. In the event, the literature built round those questions is one of the great achievements of economic history.

In recent years economists have added to that a statistical approach to the study of the past. The new approach stays close to economic theory, by laying emphasis on the generality of the processes that shape events. It adopts the view that a theory should uncover those features that are common among economic pathways in different places, at different times. Admittedly, no two economies are the same, but modern economists work on the commonality in the human experience, not so much on its differences. Say, you want to identify the contemporary features in Desta's and Becky's worlds that best explain why the standard of living in the former is so much

lower than in the latter. A body of economic models tells you that those features are represented by the variables *X*, *Y*, and *Z*. You look up international statistics on *X*, *Y*, and *Z* from a sample of, perhaps, 149 countries. The figures differ from country to country, but you regard the variables themselves as the explanatory factors common to all the countries in the sample. In other words, you interpret the 149 countries as parallel economies; and you treat features that are unique to each country as idiosyncrasies of that country. Of course, you aren't quite at liberty to model those idiosyncrasies any way you like. Statistical theory – which in the present context is called *econometrics* – will set limits on the way you are able to model them.

On the basis of the data on the 149 countries in your sample, you can now test whether you should be confident that *X*, *Y*, and *Z* are the factors determining the standard of living. Suppose the tests inform you that you are entitled to be confident. Then further analysis with the data will also enable you to determine how much of the variation in the standard of living in the sample is explained by variations in *X* in the sample, by variations in *Y*, and by variations in *Z*. Those proportions will give you a sense of the relative importance of the factors that determine the standard of living. Suppose 80% of the variation in the standard of living in those 149 countries can be explained by the variation in *X* in the sample; the remaining 20% by variations in *Y* and *Z*. You wouldn't be unjustified to conclude, tentatively, that *X* is the prime explanatory variable.

There are enormous problems in applying statistics to economic data. For example, it may be that your economic models, taken together, suggest that there could be as many as, say, 67 factors determining the standard of living (not just *X*, *Y*, and *Z*). However, you have a sample of only 149 countries. Any statistician will now tell you that 149 is too small a number for the task of unravelling the role of 67 factors. And there are other problems besetting the econometrician. But before you abandon statistics and rush back to the narrative style of empirical discourse, ask yourself why anyone

should believe one scholar's historical narrative over another's. You may even wonder whether the scholar's literary flair may have influenced your appreciation of her work. Someone now reassures you that even the author of a historical narrative has a model in mind. He tells you that the author's model influenced her choice of the evidence displayed in her work, that she chose as she did only after having sifted through a great deal of evidence. You ask in response how you are to judge whether her conceptual model is better than someone else's. Which brings us back to the problem of testing alternative models of social phenomena. In the next chapter we will discover that historical narratives continue to play an important role in modern economics, but they are put to work in conjunction with model-building and econometric tests.

There are implicit assumptions underlying econometric tests that are hard to evaluate (how the country-specific idiosyncrasies are modelled is only one of them). So, economic statistics are often at best translucent. It isn't uncommon for several competing models to co-exist, each having its own champion. Model-building, data availability, historical narratives, and advances in econometric techniques reinforce one other. As the economist Robert Solow expresses it, 'facts ask for explanations, and explanations ask for new facts'.

In this monograph, I first want to give you a feel for the way we economists go about uncovering the economic pathways that shape Becky's and Desta's lives. I shall do that by addressing the three sorts of questions that were identified earlier as our concern. I shall then explain why we need economic policies and how we should go about identifying good ones. We will certainly build models as we go along, but I shall mostly use words to describe them. I shall also refer to empirical findings, from anthropology, demography, ecology, geography, political science, sociology, and of course economics itself. But the lens through which we will study the social world is that of *economics*. We will assume a point of view of the circumstances of living that gives prominence to the allocation of

scarce resources – among contemporaries and across the generations. My idea is to take you on a tour to see how far we are able to reach an understanding of the social world around us and beyond.

Chapter 1
Macroeconomic history

I said one of the things we need to do if we are to understand Becky's and Desta's lives is to uncover the pathways by which their families came to inherit their current circumstances. This is the stuff of economic history. In studying history, we could, should we feel bold, take the long view – from about the time agriculture came to be settled practice in the northern part of the Fertile Crescent (roughly, southeast Turkey today) some 11,000 years ago – and try to explain why the many innovations and practices that have cumulatively contributed to the making of Becky's world either didn't reach or didn't take hold in Desta's part of the world.

Scholars have tried to do that. The geographer Jared Diamond, for example, has argued that people in the supercontinent of Eurasia have enjoyed two potent sets of advantages over people elsewhere. First, unlike Africa and the Americas, Eurasia is oriented along an east–west axis in the temperate zone and contains no overpowering mountain range or desert to prevent the diffusion of people, ideas, seeds, and animals. Second, Eurasia was blessed with a large number of domesticatable species of animals, which made it possible for humans there to engage in tasks they wouldn't have been able to undertake on their own. Economies grew and declined in different parts of Eurasia at different times – now India, now China, now Persia, now Islam, now one region in Europe, then another – but the supercontinent's size and orientation meant that,

during the past 11,000 years, humanity's achievements there have been rather like the performance of financial stocks: declines in some regions have been matched by growth in others. By the 16th century, the technological gap between the seafaring nations of Western Europe and the Americas was so large that a combination of guns, steel, and European germs enabled tiny groups of invaders to conquer the New World. Becky's very successful part of the world is in effect the outgrowth of a societal transplant that took place less than 500 years ago.

GDP as measuring rod

In order to talk of success and failure, as we are doing here, we need a measuring rod. The one most commonly used today is *gross domestic product* per person, or *GDP* per capita. Economists may have invented the concept and may have also warned against its many limitations; but, like it or not, the term is so ingrained in public consciousness, that if someone exclaims, 'Economic growth!', we don't need to ask, 'Growth in what?' – we know they mean growth in *real* GDP per capita; which is growth in GDP per capita, corrected for inflation or deflation.

A country's GDP is the value of all the final goods that are produced by its residents in a given year. It is a measure of an economy's total output. But when a commodity is produced and sold, the price paid for the purchase finds its way into someone's pocket. So, GDP can be measured also by adding up everyone's incomes – wages, salaries, interests, profits, and government income. GDP and national income are therefore two sides of the same coin.

Although GDP is often said to measure wealth, it doesn't do so. GDP is a flow (dollars per year, say), whereas wealth is a stock (dollars – period). As the concept of GDP was developed originally for market economies, the values imputed to the goods were market prices. But by a clever construction of notional prices (called 'shadow prices'; Chapters 7–8), economists have adapted GDP even

for economies like Desta's, where much economic activity is undertaken in non-market institutions. It was by imputing values to the produce taken from the local commons in Desta's village that economic statisticians concluded that one-fifth of her household's income amounts to the value of goods obtained directly from the natural resources in her locality, a figure I reported when describing Desta's world.

Adjusting for differences in the cost of living across the world, global income per head today is about $8,000 a year. But for most of humanity's past, people have been abysmally poor. The economic statistician Angus Maddison has estimated from the very fragmentary evidence that exists, that, at the beginning of our Common Era (CE 0) the per capita income of the world was about $515 a year in today's prices. If Maddison's estimate is even approximately correct, it means that the average person 2,000 years ago enjoyed not much more than a dollar a day, a figure deemed by the World Bank as the line below which a person is in extreme poverty. Maddison has also suggested that the distribution of income 2,000 years ago was remarkably equal: almost everyone, everywhere was very poor. The figures he has reported tell us furthermore that average world income and the regional distribution of income per head were pretty much the same in CE 1000 as they had been 1,000 years earlier. It would appear that regional disparities became significant only from the beginning of the 19th century: income per head in Western Europe had by then become three times that in Africa. But world income per head was still only $755 a year in today's prices, meaning that it had increased by less than 50% over a 1,800-year period; amounting to an annual growth rate of under 0.02%. The figure is extremely low by contemporary standards: the annual growth rate of income per head has been about 2% a year over the past four decades. (A useful formula to remember is that, if a numerical entity – say real GDP per person – grows (or declines) at the annual rate of g%, that entity doubles (or halves) approximately every $70/g$ years. Examples: GDP per capita would double every 35 years if it were to grow at an

annual rate of 2%; and halve every 140 years if it declined at an annual rate of 0.5%.)

Large regional disparities in income are also less than 200 years old. The ratio of the average incomes in the US and Africa has risen from 3 at the beginning of the 19th century to more than 20 today – about $38,000 compared to $1,850 per year. Real GDP per capita in the US has grown 30 times in size in 200 years, implying that the average annual growth rate of income per person there has been about 1.7%. In sad contrast, income per capita in Ethiopia is about the same today as it was 200 year ago (a little over $700 a year today), a fact that is reflected in the differences we noted between the incomes per member in Becky's and Desta's households, respectively.

If you were to line up countries according to GDP per capita today, you would find two clusters: one poor (Desta's world), the other rich (Becky's world). There are middle-income nations spread thinly between the extremes (China, Brazil, Venezuela, and Argentina are prominent examples), but a large cluster of countries (in sub-Saharan Africa, the Indian subcontinent, South East Asia, Melanesia, and Central America) – with a total population of 2.3 billion – produces an average $2,100 a year per head, while another, smaller, cluster (Europe, North America, Australia, and Japan) – with a total population of a little under 1 billion – enjoys an average annual income of $30,000 (Table 1). The world would appear to be polarized. Moreover, with the possible exception of India, there is little sign that the poor world will catch up with the rich world in the foreseeable future. During the past four decades, real per capita GDP has grown at an average annual rate of 2.4% in rich countries, whereas it has grown at 1.8% in poor countries (Table 1). Worse, within the poor world, sub-Saharan Africa has experienced a small decline in real GDP per capita during the past four decades.

In contrast to poor countries, agricultural output is a small fraction of national income in the rich world. The share of agriculture in

GDP is about 25% in the poor world; less than 5% in rich countries. Less than 10% of the population in rich countries live in rural areas. In contrast, more than 70% of people in poor countries live in villages (Table 1); which gives rise to the thought that people in poor countries mostly work in economies that draw their production inputs directly from Nature – they are 'biomass-based' economies. Ecology is of direct concern to the world's poor, in a way it isn't to the world's rich.

Recently, the United Nations Development Programme (UNDP) has sought to extend the basis on which the standard of living is measured. It has done so by constructing a numerical index that combines GDP per capita, life expectancy at birth, and literacy. UNDP has christened it the Human Development Index (HDI). Again, leaving aside a few exceptions, HDI has been found to be low in poor countries, high in rich countries (Table 1).

Proximate causes behind differences between Becky's and Desta's worlds

What enables people in Becky's world to be so much richer than people in Desta's world? Several features suggest themselves.

People in rich countries have better equipment to work with (electric drills are more powerful than pickaxes; tractors are superior to ploughs; and modern medicine is vastly more effective than traditional cures). So, one argument goes that the accumulation of physical capital (more accurately, *manufactured* capital) in Becky's world has been a significant contributor to the high standard of living people enjoy there. This could be the factor *X* that I mentioned in the Prologue to illustrate the way economic theory and applied economics mesh today.

Others have noted that people in rich countries are far better educated, implying that they are able to make use of ideas to produce goods that are out of reach for people in countries where

large numbers are illiterate. A crude index of education is the proportion of adults (people aged 15 and above) who are literate, the figure for which today is over 95% in the rich world, but only 58% in the poor world (Table 1). Gender inequalities are considerably greater in the poor than in the rich world. The proportion of adult women who are literate in poor countries is 48%, whereas in the rich world the corresponding proportion is pretty much the same as that for men, namely, over 95% (Table 1).

Table 1. Rich and poor nations

	Rich nations	*Poor nations*
Population (billions)	1.0	2.3
GDP per capita	$30,000	$2,100
Human Development Index	high	low
Annual population growth rate (%): 1966–2004	0.8	2.4
Annual growth rate of GDP per capita (%): 1966–2004	2.4	1.8
Total fertility rate (TFR)	1.8	3.7
Adult literacy (%) (female literacy (%))	>95 (>95)	58 (48)
Index of government corruption	low	high
Life expectancy at birth (years)	78	58
Under 5 mortality (per 1,000)	7	120
Rural population (% of total population)	10	70
Agriculture's share in GDP (%)	5	25

Source: *World Development Indicators* (World Bank, 2005)

Allied to education is health. Life expectancy at birth in rich countries is now 78 years, whereas it is about 58 years in poor countries. Some 120 children among every 1,000 of those under 5 years of age die each year in the poor world; the corresponding figure for rich countries is 7 (Table 1).

Relatedly, clean water and good hygiene have reduced morbidity in rich countries greatly. About one-quarter of the population in the poor world suffer from undernourishment, whereas the corresponding figure in rich countries is negligible. As undernutrition and vulnerability to infections reinforce each other, poor nourishment and morbidity go together. There is evidence that undernourishment in early childhood affects the development of cognitive faculties. Taken together, the average person in the rich world is capable of supplying work of far higher quality and for many more years than his counterpart in a poor country. Education and health go by the name *human capital*. A literature pioneered by the economists Theodore Schultz and Gary Becker reveals that the accumulation of human capital has been a significant factor behind the high standard of living people in Becky's world enjoy today. This could be the factor *Y* that was mentioned in the Prologue.

Many economists, however, regard the production of new ideas as the prime factor behind economic progress. They say that rich countries have become rich because people there have been successful in producing ideas not only for new products (printing press, steam engine, electricity, chemical products, the electronic computer), but also for cheaper ways of producing old products (transportation, mining). Of course, education and advances in science and technology combine as an economic force. Primary and secondary education alone can't take a society that far today. A country where tertiary education is low would not have a population capable of working with the most advanced technology. Nor are scientific and technological advances capable of being achieved today by people with no advanced

education. Ideas could be the factor *Z* that was mentioned in the Prologue.

Related to this is an issue that has proved to be far more contentious than it should have been: population growth. Even unaided intuition suggests that if numbers grow quickly, the rate at which capital assets must increase would need to be high in order to maintain living standards. If the desire to accumulate physical and human capital is the same in two countries, and if rising numbers don't reduce the cost of accumulating that capital, the country where population grows at a slower rate can be expected to enjoy a higher living standard in the long run. Since the mid-1960s, population in what is today the poor world has grown at an average annual rate of about 2.4%, while the corresponding figure in today's rich world has been about 0.8% (Table 1). This is a big difference. Statistical demographers now agree that, controlling for other factors, countries where population increase has been large in recent decades have experienced slow growth in real GDP per capita. Later in this book we will note that high population growth in today's poor countries has also put enormous pressure on their ecology, creating further problems for rural people.

A country's population growth is affected not just by net reproduction, but by net immigration and the age distribution too. In order to isolate net reproduction, it is common practice to work with the *fertility rate* (more accurately, the *total fertility rate* or *TFR*), which is the number of live births a woman expects to deliver over her life. Suppose parents desire to have a certain number of surviving children. Then the fertility rate should decline once the mortality rate among children under 5 starts to decline. Demographers have puzzled why reductions in fertility rates in today's poor world have been slower than they had expected. The first known decline in fertility rates in northwestern Europe (England and France especially) occurred in the 17th century, when the rate fell from about 7 to 4 (Chapter 6). The fertility rate in the rich world today is 1.8 (below 2.1, the figure at which population

would stabilize in the long run), whereas it is 3.7 in the poor world (Table 1). Despite a significant decline in child mortality rates, the TFR in a number of countries in sub-Saharan Africa continues to be between 6 and 8. We should ask whether there have been countervailing forces at work to keep fertility rates high in that continent. We should ask too whether the resulting population growth has been a factor in its terrible economic performance over the past four decades. We will study the question in greater detail in Chapter 6, but one implication of high fertility rates for women's conditions follows at once.

In sub-Saharan Africa, extended breastfeeding has been a traditional practice for controlling pregnancies. Among the !Kung San nomads of the Kalahari Desert, children have been known to be breastfed until they are 4 years old. Even if we were to ignore such extreme cases, successful reproduction in Africa would involve two years of pregnancy and breastfeeding. This means that in societies where female life expectancy at birth is greater than 45 years and the fertility rate is 8, girls can expect to spend more than half their fecund life (say, 15–45) in pregnancy or nursing; and we have not allowed for unsuccessful pregnancies. Under these circumstances, women such as Desta's mother are unable ever to seek employment outside subsistence agriculture.

No economist has ever claimed that there is a single driving force behind economic growth. All would appear to agree that the accumulation of manufactured capital, human capital, and the production, diffusion, and use of new scientific and technological ideas go together, each contributing positively to the contributions of the others. In the contemporary world, an accumulation of, say, manufactured capital goods raises real GDP, other things being equal. This enables societies to set aside more of their incomes for education and health, triggering a reduction in both fertility and child mortality. Education increases GDP further, other things being equal, while reduced fertility and child mortality typically lower population growth; which, taken together, enable societies to

set aside more of their incomes for the production of new ideas. This raises the productivity of manufactured capital; which in turn brings forth further accumulation of manufactured capital; and so on, in a virtuous cycle of prosperity. The flip side of this is, of course, a vicious cycle of poverty. The polarization that separates the rich and poor worlds today is a manifestation of those two movements. Economists use the terms *virtuous* and *vicious* cycles to characterize polarization (a few of us refer to vicious cycles as *poverty traps*); mathematicians say instead that the poor and rich worlds are in two different *basins of attraction*.

It is possible to discover the relative importance of the various factors responsible for economic growth. No doubt the answer is different in different places and in different periods of history; but five decades ago, Robert Solow showed us how to investigate the question, by devising a way to decompose recorded changes in an economy's real GDP into their measurable sources. In contrast to the empirical exercise on *cross* country statistics that I described in the Prologue, the idea here is to measure *changes* in X, Y, Z over a period of time in a given country and estimate the relative importance of those changes for growth in real GDP there over that same period. Suppose that over an interval of time a country's real GDP has increased. Solow, and subsequently others, showed how to attribute that growth to increases in labour force participation (population growth; increases in women's employment in paid labour), the accumulation of human skills and manufactured capital, improvements in the quality of machinery and equipment, and so on. Now suppose that when we have added up all the contributions made by these factors of production, we find that the sum falls short of real GDP growth. We are entitled then to interpret that shortfall as an increase in the overall productivity of the economy's capital assets; by which we mean that more output can be produced now than earlier, even if the amounts of such factors of production as machines and equipment and skills had remained the same. This is a formal way of acknowledging that there has been a general rise in the efficiency with which goods are

produced. Economists call that rise growth in *total factor productivity*.

How does that latter growth come about? It comes about when people acquire knowledge and make use of it, or when people make better use of what they already know. Which is why economists often refer to growth in total factor productivity as *technological progress*. But there are other changes in an economy that could leave an imprint on total factor productivity, such as improvements in the workings of institutions. Growth in total factor productivity may be an ungainly way to convey an idea, but it reflects the unexplained bit of real GDP growth pretty well. In the economics literature the name has come to stay.

Since the Second World War, growth in total factor productivity in the rich world has been considerable. It has been estimated, for example, that during 1970–2000 the average annual rate of growth of total factor productivity in the United Kingdom (UK) was 0.7%. Economists have estimated that, in contrast, total factor productivity *declined* slightly in a number of countries in sub-Saharan Africa during that same period.

What do these figures mean? Take the case of the UK. The country's real GDP grew at an average annual rate of 2.4%, which means about 29% of that growth (that is, 0.7/2.4) could be attributed to increases in total factor productivity. At 2.4% growth rate, real GDP in year 2000 was twice the real GDP in 1970. Nearly one-third of that increase can be attributed to growth in total factor productivity. In contrast, the economies in sub-Saharan Africa where total factor productivity declined during that period became less efficient in their use of such factors of production as machines and equipment, skills and labour hours. It's hard to believe that people in those countries systematically forgot technical knowledge they had known in the past. So the decline in total factor productivity there must have been due to a deterioration in local institutions, precipitated by civil wars and bad governance.

These statistics raise a puzzle. Today's poor countries lie mainly in the tropics, whereas the rich countries are mostly in temperate zones. No doubt the tropics are a breeding ground for many diseases, but they also harbour vast quantities of natural resources (timber; minerals; and conditions suitable for the production of spices, fibres, coffee, and tea). During the past several centuries, the countries that are rich today have been importing those very resources and products to fuel their factories and mills, and to make their meals enjoyable. They accumulated machines, human capital, and also produced scientific and technological knowledge. Why didn't the poor world take advantage of their resource endowments to enrich themselves in the same way?

Colonization is a possible answer. Historians have shown that, from the 16th century, European powers have extracted natural resources from the colonies – including cheap (read, slave) labour – but have mostly invested the proceeds domestically. Of course, one should ask why it is that the Europeans managed to colonize the tropics; why colonization didn't take place the other way round. As noted earlier, Jared Diamond has offered an answer. That said, many of the most prominent of those ex-colonies have been politically independent for decades now. During that time real income per head in the rich world has increased over and over again. With the exception of a few striking examples in South and South East Asia, though, most of the ex-colonies have either remained poor or become poorer still. Why?

Institutions

Economic historians such as Robert Fogel, David Landes, and Douglass North have argued that the rich world is rich today because, over the centuries, it has devised institutions that have enabled people to improve their material conditions of life. This is a deeper explanation. It says that people in rich countries work with superior technologies, are healthier, live longer, are better educated, and produce many more productive ideas, *because* they

have been able to get on with their lives in societies whose institutions permit – even encourage – the economy-wide accumulation of such factors of production as machines, transport facilities, health, skills, ideas, and the fruits of those ideas. The accumulation of productive capital assets is only a proximate cause of prosperity, the real cause is progressive institutions.

One can peel away the conceptual onion some more, and ask how and why past people in today's rich countries were able to fashion their institutions in ways that enabled those proximate causes of prosperity to explode there. One can even ask whether institutions did it, or whether it was the enlightened policies of the rulers that were responsible for the explosion. But then, policies aren't plucked from air, they emerge from consultations and deliberations within institutions. Nor is it likely that a policy designed to bring prosperity to a country will actually work unless the institutions there are capable of implementing it.

These dilemmas are of enormous importance for today's poor countries. What institutions should they adopt and what policies should their governments be encouraged to follow? There is little point in embarking on grandiose projects (steel mills, petrochemical plants, land reform, public health programmes, free education) unless a country's institutions have the necessary checks and balances to limit corruption and wastage. This brings us back to our earlier question: how did those institutions that promoted economic growth in today's rich countries become established and flourish? Despite the attention the question has received from the world's most outstanding economic historians, the matter remains unsettled. In the next chapter I shall show why it is inherently so difficult to find a satisfactory answer (which, I guess, is itself a mark of increased understanding). In view of the difficulties, it is safest to regard institutions as the explanatory factor when we seek to understand why Becky's and Desta's worlds differ so much in terms of the standard of living.

The Oxford English Dictionary defines *institution* as 'an established law, custom, usage, practice, organization, or other element in the political or social life of a people'. We shall follow that lead, but recast it so as to stress the role of institutions in economic life. By institutions I shall mean, very loosely, the *arrangements* that govern collective undertakings. Those arrangements include not only legal entities, like the firm where Becky's father works, but also the *iddir* to which Desta's father belongs. They include the markets in which Becky's family purchase goods and services, and the rural networks Desta's household belongs to. They include the nuclear household in Becky's world and the extended kinship system of claims and obligations in Desta's world. And they include that overarching entity called *government* in both their worlds.

Institutions are defined in part by the rules and authority structure that govern collective undertakings, but in part also by the relationships they have with outsiders. The rules on the factory floor (who is expected to do which task, who has authority over whom, and so on) matter not only to members of the firm, they matter to others too. For example, rich countries have laws relating to working conditions in factories. Moreover, environmental regulations constrain what firms are able to do with their effluents. In every society there are layers of rules of varied coverage. Some rules come under other rules, many have legal force, while others are at best tacit understandings.

The effectiveness of an institution depends on the rules governing it and on whether its members obey the rules. The codes of conduct in the civil service of every country include honesty, but governments differ enormously as to its practice. Social scientists have constructed indices of corruption among public officials. One such index is based on the perception private firms have acquired, on the basis of their experience, of the bribes people have had to pay officials in order to do business. The index (see Table 1) – which is on a scale of 1 (highly corrupt) to 10 (highly clean) – is

less than 3.5 for most poor countries (African countries and Eastern Europe are among the worst) and greater than 7 for most rich countries (Scandinavian countries are among the best). It used to be argued that bribery of public officials helps to raise national income because it lubricates economic transactions. It does so in a corrupt world: if you don't pay up, you don't get to do business. But corruption isn't an inevitable evil. There are several poor countries where corruption is low. Having to pay bribes raises production costs; so less is produced. Citizens suffer, because the price they have to pay for products is that much higher.

Economists have speculated that government corruption is related to the delays people face in having the rule of law enforced. The thought is that delays are a way of eliciting bribes to hasten legal processes. To enforce a contract takes 415 days in the poor world, as against 280 days in the rich world. It may be that corruption is also related to government ineffectiveness. To register a business takes 66 days in the poor world, 27 days in the rich world. In poor countries, registering property takes 100 days on average, while in rich countries the figure is 50 days. Some economists have suggested that government officials in poor countries create lengthy queues (that's government ineffectiveness) so as to elicit bribes from applicants if they want to jump those queues (that's corruption).

How do government corruption, ineffectiveness, and indifference to the rule of law translate into the kind of macroeconomic statistics we have been studying here? They leave their imprint on total factor productivity. Other things being equal, a country whose government is corrupt or ineffective, or where the rule of law is not respected, is a country whose total factor productivity is lower than that of a country whose government suffers from fewer of those defects. Some scholars call these intangible but quantifiable factors *social infrastructure*, others call them *social capital*.

Institutions are overarching entities. People interact with one another *in* institutions. A more basic notion is that of *engagements* among people. The possibility of engagements gives rise to a fundamental problem in economic life. We study that next.

Chapter 2
Trust

Imagine that a group of people have discovered a mutually advantageous course of actions. At the grandest level, it could be that citizens see the benefits of adopting a constitution for their country. At a more local level, the undertaking could be to share the costs and benefits of maintaining a communal resource (irrigation system, grazing field, coastal fishery); construct a jointly useable asset (drainage channel in a watershed); collaborate in political activity (civic engagement, lobbying); do business when the purchase and delivery of goods can't be synchronized (credit, insurance, wage labour); enter marriage; create a rotating saving and credit association (*iddir*); initiate a reciprocal arrangement (I help you, now that you are in need, with the understanding that you will help me when I am in need); adopt a convention (send one another Christmas cards); create a partnership to produce goods for the market; enter into an instantaneous transaction (purchase something across the counter); and so on. Then there are mutually advantageous courses of action that involve being civil to one another. They range from such forms of civic behaviour as not disfiguring public spaces and obeying the law more generally, to respecting the rights of others.

Imagine next that the parties have agreed to share the benefits and costs in a certain way. Again, at the grandest level the agreement could be a social contract among citizens to observe their

constitution. Or it could be a tacit agreement to be civil to one another, such as respecting the rights of others to be heard, to get on with their lives, and so forth. Here we will be thinking of agreements over transactions in goods and services. There would be situations where the agreement was based on a take-it-or-leave-it offer one party made to another (as when Becky's mother accepts the terms and conditions set by the firm called in by her to fix the plumbing). In other contexts, bargaining may have been involved (as when Desta's mother purchases household fineries at the regional fair, which is not altogether different from a Middle Eastern bazaar). Later in this book (Chapter 4) we will study an idealized version of prices in the markets Becky's family visits, where both buyers and sellers face take-it-or-leave-it offers. But we will not study how agreements are reached when bargaining is involved in either Becky's or Desta's worlds, nor look for principles of equity that might have been invoked during negotiation. To do that would take us into bargaining theory, a beautiful but difficult branch of the theory of games. We ask instead a question that is pertinent in both Becky's and Desta's worlds: *under what circumstances would the parties who have reached agreement trust one another to keep their word?*

Because one's word must be credible if it is to be believed, mere promises wouldn't be enough. (Witness that we warn others – and ourselves too – not to trust people 'blindly'.) If the parties are to trust one another to keep their promise, matters must be so arranged that: (1) at every stage of the agreed course of actions, it would be in the interest of each party to plan to keep his or her word if all others were to plan to keep their word; and (2) at every stage of the agreed course of actions, each party would believe that all others would keep their word. If the two conditions are met, a system of beliefs that the agreement will be kept would be self-confirming.

Notice that condition (2) on its own wouldn't do. Beliefs need to be justified. Condition (1) provides the justification. It offers the basis on which everyone could in principle believe that the agreement

will be kept. A course of actions, one per party, satisfying condition (1) is called a *Nash equilibrium*, in honour of the mathematician John Nash – he of *The Beautiful Mind* – who proved that it is not a vacuous concept. (Nash showed that the condition can be met in realistic situations.) The way I have stated condition (1) isn't due to Nash, though, but to John Harsanyi, Thomas Schelling, and Reinhard Selten, three social scientists who refined the concept of Nash equilibrium so that it could be applied to situations where Nash's own formulation is not adequate.

Notice that condition (1) on its own wouldn't do either. It could be that it is in each one's interest to behave opportunistically if everyone believed that everyone else would behave opportunistically. In that case non-cooperation is also a Nash equilibrium, meaning that a set of mutual beliefs that the agreement will not be kept would also be self-confirming. Stated somewhat informally, a Nash equilibrium is a course of actions (*strategy*, in economic parlance) per party, such that no party would have any reason to deviate from his or her course of actions if all other parties were to pursue their courses of actions. As a general rule, societies harbour more than one Nash equilibrium. Some yield desirable outcomes, others do not. The fundamental problem every society faces is to create institutions where conditions (1) and (2) apply to engagements that protect and promote its members' interests. When we come to study what economics has to say about the ideal role of the state (Chapter 8), we will have much to add about those interests.

Conditions (1) and (2), taken together, require an awful lot of coordination among the parties. In order to probe the question of which Nash equilibrium can be expected to be reached – if a Nash equilibrium is expected to be reached at all – economists study human behaviour that are *not* Nash equilibria. The idea is to model the way people form beliefs about the way the world works, the way people behave, and the way they revise their beliefs on the basis of what they observe. The idea is to track the consequences

of those patterns of belief formation so as to check whether the model moves toward a Nash equilibrium over time, or whether it moves about in some fashion or other but not toward an equilibrium.

This research enterprise has yielded a general conclusion. Suppose the economic environment in a certain place harbours more than one Nash equilibrium. Which equilibrium should be expected to be approached – if the economy approaches an equilibrium at all – will depend on the beliefs that people held at some point in the past. It also depends on the way people have revised their beliefs on the basis of observations since that past date. But this is another way of saying that history matters. The narrative style of empirical economics that I spoke of earlier becomes necessary at this point. Model-building, statistical tests on data relating to the models, and historical narratives have to work together synergistically if we are to make progress in understanding our social world. Unfortunately, the study of disequilibrium behaviour would lengthen this monograph greatly. So I shall only allude to it from time to time. We will discover that, fortunately, a study of equilibrium behaviour takes us a long way.

We started this chapter by observing that mutual trust is the basis of cooperation. In view of what we have learned about the multiplicity of Nash equilibria, we are now led to ask what kinds of institution are capable of supporting cooperation. To answer that, it will prove useful to classify the contexts in which the promises people make to one another are credible.

Mutual affection

Consider the situation where the people involved care about one another and it is commonly known that they care about one another. The household is the most obvious example of an institution based on affection. To break a promise we have made to someone we care about is to feel bad. So we try not to do it. From

time to time, though, even household members are tempted to misbehave. As people who live together can observe one another closely, the risk of being caught misbehaving is high. This restrains household members even when the temptation to misbehave is great.

That said, the household can't engage in enterprises that require people of many and varied talents. So households need to find ways to do business with others. The problem of trust reappears at the interhousehold level. This leads us to search for other contexts in which people can trust one another to keep their word.

Pro-social disposition

One such situation is where people are trustworthy, or where they reciprocate if others have behaved well towards them. Evolutionary psychologists have suggested that we are adapted to have a general disposition to reciprocate. Development psychologists have found that pro-social disposition can be formed by communal living, role-modelling, education, and receiving rewards and punishments (be it here or in the afterlife).

We don't have to choose between the two viewpoints; they are not mutually exclusive. Our capacity to have such feelings as shame, guilt, fear, affection, anger, elation, reciprocity, benevolence, jealousy, and our sense of fairness and justice have emerged under selection pressure. Culture helps to shape preferences, expectations, and our notion of what constitutes fairness. Those in turn influence behaviour, which are known to differ among societies. But cultural coordinates enable us to identify the situations *in* which shame, guilt, fear, affection, anger, elation, reciprocity, benevolence, and jealousy arise; they don't displace the centrality of those feelings in the human makeup. The thought I am exploring here is that, as adults, we not only have a disposition for such behaviour as paying our dues, helping others at some cost to ourselves, and returning a favour, we also ease our hurt by punishing people who have hurt us

intentionally; and shun people who break agreements, frown on those who socialize with people who have broken agreements, and so on. By internalizing norms of behaviour, a person enables the springs of his actions to include them. In short, he has a disposition to obey the norm, be it personal or social. When he does violate it, neither guilt nor shame would typically be absent, but frequently the act will have been rationalized by him. Making a promise is a commitment for that person; and it is essential for him that others recognize it to be so.

People are trustworthy to varying degrees. When we refrain from breaking the law, it isn't always because of a fear of being caught. The problem is that although pro-social disposition isn't foreign to human nature, no society could rely exclusively on it. How is one to tell to what extent someone is trustworthy? If the personal benefits from betraying one's conscience are large enough, almost all of us would betray it. Most people have a price, but it's hard to tell who comes at what price.

Societies everywhere have tried to establish institutions where people have the incentives to do business with one another. The incentives differ in their details, but they have one thing in common: *those who break agreements without cause are punished*. Let us see how that is achieved.

Laws and norms

There are two ways. One is to rely on an external enforcer, the other on mutual enforcement. Each gives rise to a particular type of institution. Depending on the nature of the business they would like to enter into, people invoke one or the other. The coded term for one is the *rule of law*; for the other, it is *social norm*. People in the rich world rely heavily on the former, while in the poor world people depend greatly on the latter. Subsequently we will study the claim that it is *because* they have been able to depend extensively on the former for centuries that people in the rich world are now rich.

I shall illustrate the two methods of enforcement with the help of a numerical example of bilateral agreement. The numbers will allow us to draw insights without fuss. The example itself is based on the 'putting-out system' of production, widely practised in Europe in the 17th and 18th centuries and prevalent in poor countries today in the crafts. The system amounted to a patron–client relationship, but for our purposes here it can also be thought of as a partnership.

Imagine that person *A* owns some working capital (raw material, say), worth $4,000 to him. *A* knows *B*, who has the skills to use that capital to produce goods worth $8,000 in the market. *A* doesn't have those skills. However, *A* has access to the market, which *B* doesn't. *A* proposes to advance his capital to her, with the understanding that he will sell the goods once *B* produces them and share the proceeds with her. If *B* was not to work for *A*, she would use her time to produce goods for her home, worth $2,000 to her. In order to get her to accept his offer, *A* proposes a sharing rule that is hallowed by their tradition: the $8,000 would be used first to compensate both parties fully – $4,000 for *A* (the amount *A* would enjoy from the best alternative use of his working capital, which economists call the working capital's *opportunity cost*) and $2,000 for *B* (which is the opportunity cost of *B*'s time and effort); the remaining $2,000 would then be divided equally between the two. *A* would receive $5,000 and *B* $3,000. Each would gain $1,000 from the arrangement.

B regards the proposal as fair, but is worried about one thing: why should she trust *A* not to renege on the agreement by keeping the entire $8,000 for himself?

External enforcement

Here is one possible way to ensure that *B* could trust *A*: the agreement is enforced by an established structure of power and authority. In many societies, tribal chieftains, village or clan elders, and warlords enforce agreements and rule on disputes. Here we imagine that the external enforcer is the state and that the

agreement is drawn up as a legal contract. We include on this list the implicit 'social contract' among citizens not to break the law. However, if contracts are to offer a viable means of doing things, breaches must be *verifiable*; otherwise, the external enforcer would have nothing to go by if asked to rule on it. To be sure, lawyers, like Becky's father, make a handsome living precisely because verification is fraught with difficulties. Rough estimates suggest that in the US, expenditure on the legal profession (lawyers, judges, investigators), on people who work in insurance (loss adjusters, insurance agents), and on those in law enforcement (the police) make up $245 billion a year, which is about 2% of the US's GDP; and I haven't included the defensive measures people take against possible litigations, burglary, and theft.

We leave aside the problems that arise in verifying breach of contract (but see Chapters 4–5) and note that if the punishment the state imposes for a violation is known to be severe relative to the temptation *A* faces to violate, *A* will be deterred from going that route. If *B* is aware of the force of that deterrence, she will trust *A* not to renege. And *A* will trust *B* not to renege, because he knows *B* doesn't fear that he will renege. In Becky's world, the rules governing transactions in the market place are embodied in the law of contracts. Becky's father's firm is a legal entity, as are the financial institutions through which he is able to accumulate his retirement pension, save for Becky's and Sam's education, and so on. He has an employment contract with his firm. The agreements he has reached with the saving and pension institutions are legal contracts. Even when someone in the family goes to the grocery store, the purchases (paid in cash or by card) involve the law, which provides protection for both parties (the grocer, in case the cash is counterfeit or the card is void; the purchaser, in case the product turns out on inspection to be substandard). Formal markets, from which people enter and exit when they need to or wish to, are able to function only because there is an elaborate legal structure that enforces the agreements known as 'purchases' and 'sales'. Moreover, it is because Becky's family, the grocery store's owner, and the credit card

company are confident that the government has the ability and willingness to enforce contracts that they do business together.

Given that enforcing contracts involves resources, what is the basis of that confidence? After all, the contemporary world has shown that there are states and there are states. One answer – in a functioning democracy – is that the government worries about its reputation. A free and inquisitive press helps to sober the government into believing that incompetence or corruption would mean an end to its rule, come the next election. Notice how this involves a system of interlocking beliefs about one another's abilities and intentions. The millions of households in Becky's country trust their government (more or less!) to enforce contracts, because they know that government leaders know that not to enforce contracts efficiently would mean being thrown out of office. In their turn, each side of a contract trusts the other not to renege (again, more or less!), because each knows that the other knows that the government can be trusted to enforce contracts. And so on. Trust is maintained by the threat of punishment (a fine, a jail term, dismissal, or whatever) for anyone who breaks a contract, be the contract legal (Becky's father's employment contract) or social (the contract between the voters and the government in Becky's world to maintain law and order). We are in the realm of beliefs that are held together by their own bootstraps (our earlier condition (2)).

What I have presented is only the sketch of an argument. The complete argument is similar to the one which shows that social norms also offer a way to enforce agreements. So I turn to that for details.

Mutual enforcement

Although the law of contracts exists in Desta's country, her family can't depend on it. The nearest courts are far away and there are no lawyers in sight. As transport is very costly, her village is something of an enclave. Economic life is shaped outside a formal legal system. Nevertheless, Desta's parents do business with others. Saving for

funerals involves saying, 'I accept the terms and conditions of the *iddir*'. As there are no formal credit markets where they live, villagers practise reciprocity so as to smooth consumption. A recent study has found that in a sample of villages in Nigeria nearly all credit transactions were either between relatives or between households in the same village. No written contracts were involved, nor did the agreements specify the date of repayment or the amount repaid. Social codes were implicitly followed. Less than 10% of the loans were in default.

Why do the villagers trust one another? They do, because agreements are mutually enforced: a threat by members of a community that stiff sanctions will be imposed on anyone breaking an agreement would deter everyone from breaking it. This is a common basis for doing business in the poor world. Among the Kofyar farmers in Nigeria, for example, agricultural land is privatized, but free-range grazing is permitted once the crops have been harvested. Like Desta's household, Kofyar households are engaged in subsistence farming, so labour isn't paid a wage. However, unlike Desta's village, where household farms manage on their own labour, the Kofyars have instituted communal work on individual farms. Although some of this is organized in clubs of eight to ten individuals, there are also community-wide work parties. A household that doesn't provide the required quota of labour without good excuse is fined (as it happens, in jars of beer). If fines aren't paid, errant households are punished by being denied communal labour and subjected to social ostracism. In a different context, systems of codes have served to protect fisheries in coastal villages of northern Brazil. Violations are met with a range of sanctions that include both shunning and sabotaging fishing equipment. And so on.

How is mutual enforcement able to support agreements? It is all well and good to say that sanctions will be imposed on opportunists, but why should the threats be believed? They would be believed if sanctions were an aspect of social norms of behaviour. To see why,

assume for the moment that whether an agreement has been kept by each party is *observable* by all parties. No doubt this is a strong assumption, but as with 'verifiability', it is a useful starting point. Once we draw conclusions from it, we will be able to infer how communities could modify their institutions in situations where the assumption doesn't hold even approximately. That said, anyone who has visited villages in poor countries will know that privacy is not a fundamental right there. In tropical villages that I have visited, cottages are designed and clustered in such a fashion that it must be hard for anyone to prevent others from observing what they are about.

By a social norm we mean an accepted rule of behaviour. A rule of behaviour reads like: 'I will do *X* if you do *Y*'; 'I will do *P* if *Q* happens'; and so forth. For a rule of behaviour to *be* a social norm, it must be in the interest of each person to act in accordance with the rule if all others act in accordance with it; that is, the rule should correspond to a Nash equilibrium. To see how social norms work, let us return to our numerical example to study whether cooperation based on a *long-term relationship* can be sustained between *A* (we now call him the patron) and *B* (we now call her the client).

Imagine that the opportunity for *A* and *B* to do business with each other is expected to arise over and over again; say, annually. The time taken for *B* to produce her output is assumed to be well within a year. Let *t* denote time. So *t* assumes the values 0, 1, 2, . . . , and so on, *ad infinitum*; with 0 standing for the current year, 1 standing for the following year, 2 standing for the year following that, and so on, *ad infinitum*. Although the future benefits from cooperation are important to both *A* and *B*, they will typically be less important than present benefits. After all, there is always the chance that one of the parties will not be around in the future to continue the relationship, or that circumstances may change in such ways that *A* does not have access to his capital flow. To formalize this idea, we introduce a positive number *r*, which measures the rate at which either party

discounts the future benefits from cooperation. (We will see that in the present example, it doesn't matter what *B*'s discount rate is. For expositional ease, though, I assume that both individuals discount their future costs and benefits at the rate *r*.) The assumption is that, when making calculations in the current year (which is $t = 0$), each divides his or her benefits in any future year t by a factor $(1 + r)^t$. (The term $(1 + r)^t$ denotes $(1 + r)$ multiplied to itself t times.) So, if r is positive, $(1 + r)^t$ exceeds unity for all future t; and since benefits in year t are divided by $(1 + r)^t$ when making calculations in the current year, the importance of those benefits decays by a fixed percentage r each year when viewed from today. The smaller is r, the greater is the weight placed on the benefits of future cooperation. We now show that, provided r is small, the pair could in principle enter a successful long-term relationship, where each year *A* advances \$4,000 to *B*, sells the goods *B* has produced for \$8,000, and pays her \$3,000. The formal theory of long-term relationships was developed by the mathematicians Robert Aumann and Lloyd Shapley, and extended by the economists Drew Fudenberg, Eric Maskin, Ariel Rubinstein, and others. What I present here is an illustration of how the theory works.

Consider the following rule of behaviour that *A* might adopt: (i) begin by advancing \$4,000 to *B*, (ii) sell the goods if she produces them during the year, (iii) share the proceeds according to the agreement, and (iv) continue doing so every year so long as neither party has broken the agreement; but (v) end the relationship permanently the year following the first defection by either party. Similarly, consider the following rule of behaviour that *B* might adopt: so long as neither party has reneged on the agreement, work faithfully for *A* each year; but refuse ever to work for him the year following the first violation of the agreement by either party.

The two rules embody a common idea: begin by cooperating and continue to cooperate so long as neither party has broken their word, but withdraw cooperation permanently following the first defection from the agreement by either party. Withdrawal of

cooperation is the sanction. Game theorists have christened this most unforgiving of rules the 'grim strategy', or simply *grim*. We show next that grim is capable of supporting the long-term relationship if r is not too large.

First consider B. Suppose A has adopted grim and B believes that he has. He will advance her the capital at the beginning of year 0. B's best course of action is clear: keep to the agreement. For suppose she reneges on the agreement. She would lose \$1,000 (her share of \$3,000 minus the \$2,000 she would earn producing home goods), but gain nothing in any future year (remember, A has adopted grim). This means that no matter what B's discount rate is, she couldn't do better than to adopt grim if A has adopted grim.

The harder piece of reasoning is A's. Suppose B has adopted grim and A believes she has. If he has advanced the working capital to her, she will have worked faithfully for him in year 0. A now wonders what to do. If he reneges on the agreement, he would make a \$4,000 profit (\$8,000 minus the \$4,000 he could have earned with his capital even if he had not entered into the relationship with B). But since he believes B to have adopted grim; he must also believe that B will retaliate by never working for him again. So, set against a single year's gain of \$4,000 is a net loss of \$1,000 (the forgone profit from the partnership) every year, starting in year 1. That loss, calculated in year 0, is the sum, $\$(1{,}000/(1+r) + 1{,}000/(1+r)^2 + 1{,}000/(1+r)^3 + \ldots$ *ad infinitum*), which can be shown to add up to $\$1{,}000/r$. If $\$1{,}000/r$ exceeds \$4,000, it isn't in A's interest to break the agreement, which means that he can't do better than to adopt grim himself. But $\$1{,}000/r$ exceeds \$4,000 if and only if r is less than ¼, or 25% (per year). We have therefore proved that if r is less than 25%, it is in each party's interest to adopt grim if the other party adopts grim. But if both adopt grim, neither would be the first to defect, which implies that the agreement would be kept. We have therefore proved that grim can serve as a social norm to maintain a long-term relationship between the patron (A) and the client (B).

Economists have found evidence of grim in social interchanges, but it would appear to be in force mostly where people also have access to formal markets. In Desta's world, though, grim is not in evidence. Sanctions are graduated, the first misdemeanour being met by a small punishment, subsequent ones by a stiffer punishment, persistent ones by a punishment that is stiffer still, and so forth. How are we to explain this?

Where formal markets and long-term relationships co-exist, grim could be expected to be in operation. Grim involves permanent sanctions, which is a needed device for preventing people from engaging in opportunistic behaviour when good short-term opportunities appear nearby from time to time. But if, as in Desta's village, there are few alternatives to long-term relationships, communitarian arrangements would be of high value to all. Adopting grim would be an overkill in a world where people discount the future benefits from cooperation at a low rate. For that reason, the norms that are adopted involve less draconian sanctions than grim. A single misdemeanour is interpreted as an error on the part of the defector, or as 'testing the water' (to check if others were watching). This is why graduated sanctions are frequently observed.

Here then is our general finding: social norms of behaviour are able to sustain cooperation if people care sufficiently about the future benefits of cooperation. The precise terms and conditions will be expected to vary across time and place; what is common to them all is that cooperation is mutually enforced, it isn't based on external enforcement.

There is, however, a piece of bad news: people could end up not cooperating even if they care a lot about the future benefits of cooperation. To see how, imagine that each party believes that all others will renege on the agreement. It would then be in each one's interest to renege at once, meaning that there would be no cooperation. Even if r is less than 25% in our numerical example, behaviour amounting to non-cooperation is also a Nash

equilibrium: *A* doesn't advance the $4,000 worth of raw material to *B*, because he knows that *B* won't work for him; she would refuse because of the fear that *A* won't keep his promise to share the proceeds; a fear that is justified, given that *A* intends not to share the $8,000 with her once she has produced those goods; and so on. Failure to cooperate could be due simply to an unfortunate pair of self-confirming beliefs, nothing else. No doubt it is mutual suspicion that ruins their chance to cooperate, but the suspicions are internally self-consistent. In short, even when appropriate institutions are in place to enable people to cooperate, they may not do so. Whether they cooperate depends on mutual beliefs, nothing more. I have known this result for many years, but still find it a surprising and disturbing fact about social life.

Could the pair form a partnership if *r* exceeds 25%? The answer is 'no'. As grim is totally unforgiving, no other rule could inflict a heavier sanction for a single misdemeanour. The temptation *A* faces to defect is less if *B* adopts grim than if she were to adopt any other rule of behaviour; which implies that no rule of behaviour could support a partnership if *r* exceeds 25%. Studying grim is useful, because it allows us in many examples, such as the present one, to determine the largest value of *r* for which cooperation is possible.

We now have in hand a tool to explain how a community can skid from cooperation to non-cooperation. Ecological stress – caused, for example, by increasing population and prolonged droughts – often results in people fighting over land and natural resources (Chapter 7). Political instability – in the extreme, civil war – could in turn be a reason why both *A* and *B* become concerned that *A*'s source of capital will be destroyed or confiscated. *A* would now discount the future benefits of cooperation with *B* at a higher rate. Similarly, if the two fear that their government is now more than ever bent on destroying communitarian institutions in order to strengthen its own authority, *r* would rise. For whatever reason, if *r* were to rise beyond 25%, the relationship would break down.

Mathematicians call the points at which those switches occur *bifurcations*. Sociologists call them *tipping points*. Social norms work only when people have reasons to value the future benefits of cooperation.

Contemporary examples illustrate this. Local institutions have been observed to deteriorate in the unsettled regions of sub-Saharan Africa. Communal management systems that once protected Sahelian forests from unsustainable use were destroyed by governments keen to establish their authority over rural people. But Sahelian officials had no expertise at forestry, nor did they have the resources to observe who took what from the forests. Many were corrupt. Rural communities were unable to switch from communal governance to governance based on the law: the former was destroyed and the latter didn't really get going. The collective vacuum has had a terrible impact on people whose lives had been built round their forests and woodlands.

Ominously, there are subtler pathways by which societies can tip from a state of mutual trust to one of mutual distrust. Our model of the partnership between A and B has shown that when r is less than 25%, both cooperation and non-cooperation are equilibrium outcomes. The example therefore tells us that a society could tip over from cooperation to non-cooperation owing merely to a change in beliefs. The tipping may have nothing to do with any discernible change in circumstances; the entire shift in behaviour could be triggered in people's minds. The switch could occur quickly and unexpectedly, which is why it would be impossible to predict and why it would cause surprise and dismay. People who woke up in the morning as friends would discover at noon that they are at war with one another. Of course, in practice there are usually cues to be found. False rumours and propaganda create pathways by which people's beliefs can so alter that they tip a society where people trust one another to one where they don't.

The reverse can happen too, but it takes a lot longer. Rebuilding a

community that was previously racked by civil strife involves building trust. Non-cooperation doesn't require as much coordination as cooperation does. Not to cooperate usually means to withdraw. To cooperate, people must not only trust one another to do so, they also have to coordinate on a social norm that everyone understands. That is why it's a lot easier to destroy a society than to build it.

How does an increase or decrease in cooperation translate into macroeconomic statistics? Our numerical example captured a salient point, that an increase in cooperation raises incomes by permitting a more efficient allocation of resources: *A*'s working capital was put to better use under cooperation, as was *B*'s labour. Consider now two communities that are identical in all respects, excepting that in one people have coordinated at an equilibrium where they trust one another, while people in the other have coordinated at an equilibrium where they don't trust one another. The difference between the two economies would be reflected in their total factor productivity, which would be higher in the community where people trust one another than in the one where they don't. Enjoying greater income, individuals in the former economy are able to put aside more of their income to accumulate capital assets, other things being equal. So GDP growth there is higher. Mutual trust would be interpreted from the statistics as a driver of economic growth.

Communities and markets

How did people who now interact with one another get to connect in the first place? In Desta's village the answer is simple: mostly they have known one another from birth. People engaged in long-term relationships based on social norms – *communities*, for short – have to know one another, at least indirectly, through people they know personally. Desta's father, for example, knows most members of the *iddir* to which he belongs. The family know all those with whom they share the local commons. Communities are *personal*

and *exclusive*. Members have names, personalities, and attributes. An outsider's word isn't so good as an insider's.

In contrast, the hallmark of transactions enforced by the law of contracts is that they can take place among people who don't know one another. In Becky's world, people are mobile, a pattern of behaviour not unrelated to the fact that they are able to do business even with people they don't know. Becky frequently doesn't know the salespersons in the department stores of her town's shopping mall, nor do they know Becky. When Becky's parents borrow from their bank, the funds made available to them come from unknown depositors. Literally millions of transactions take place each day among people who have never met and will never meet. Often, the exchanges take place only once, unlike exchanges based on long-term relationships. *Markets* are prime examples of institutions offering such opportunities. In contrast to communities, markets are *impersonal* and *inclusive*. Witness the oft-used phrase: 'My money is as good as yours'.

Property rights

Property rights to a commodity are the rights, restrictions, and privileges regarding its use. The subject is central to economics because it is closely related to the incentives people have to use goods and services in one way rather than another. Ill-defined property rights to a commodity usually spell bad news, because no one is fully able to capture the benefits that can be obtained from it; which is another way of saying that, all things considered, no one has an incentive to put the commodity to its most efficient use. For brevity, we will assume that ownership of a commodity includes (i) the right to use it in the way the owner chooses and (ii) the right to exchange it for some other commodity (by selling or leasing it) or to offer it as a gift.

In talking of property rights, we shouldn't only mean *private* property. There are a number of commodities in Desta's village that

5. Children gathering fuelwood from the local commons

are *communally* owned. Desta's community has historical rights to them. They are called 'common property resources' (*CPRs*), or simply the 'local commons'. CPRs are frequently natural resources (grazing fields, ponds, woodlands, coastal fisheries, mangrove swamps). But produced goods can be CPRs too. For example, villagers in the microwatersheds of poor countries have been known to build catchments that serve both as irrigation tanks and as fisheries. The tanks were built and are maintained by collective effort. They are regarded by villagers as CPRs. Where they are communally managed, CPRs aren't open to all, but only to those having historical rights. As the transactions involving them are typically not mediated by market prices, their fate can go unreported in national economic accounts (Chapter 7).

There is, however, a bad piece of news about institutions that regulate the use of CPRs. Entitlements to products from CPRs are frequently based on private land holdings: richer households

enjoy a greater proportion of the benefits from the local commons. Access to the more productive bits of CPRs in India are not infrequently restricted to caste Hindus. That women are sometimes excluded has also been recorded – for example, from communal forestry. Communities can be as ruthless as markets.

CPRs are to be distinguished from goods to which there is *open access*. The latter category consists of commodities that belong to everyone, meaning that they belong to no one. Except for the case of knowledge about 'facts of nature' (Chapter 5), it is unusual for someone to produce something and then allow free access to it; which is why commodities to which there is open access are typically unconfined natural resources, such as the atmosphere and the open seas.

Even when ownership isn't in dispute, it can be that a property is managed badly. This can happen if, for example, those who own it are unable to cooperate (an unmanaged CPR), or if those who manage the property resort to corrupt practices (inflating a firm's profits by dubious accounting practices), or if directors of companies make decisions that are not in the interest of shareholders. So long as community members don't discount the future benefits of cooperation at too high a rate, collective agreements over the use of CPRs can be made credible by recourse to social norms of behaviour. Why then do people typically fail to reach agreement on the use of open access resources? The answer is that cooperation would involve too many people with differing needs and intentions. Moreover, as cheaper ways for extracting natural resources are discovered and economic growth is accompanied by ever increasing waste material that must find room somewhere, the extraction rate under open access increases. These factors explain why fisheries in the open seas and the atmosphere as a sink for carbon emissions are under severe stress today. Open access resources are overused, because no one has to pay for the right to use them.

Whether ownership is private, communal, or whether it is 'open access' depends in part on the commodity's characteristics. Mobile resources are difficult to privatize, but some can be prevented from becoming open to free access. Communities have been known to share river water, and coastal fisheries are often CPRs. Agreements are kept either by an external enforcer or by mutual enforcement. The context matters.

It is no accident that as much as 20% of Desta's household income is from the local commons, whereas the CPR in Becky's neighbourhood provides households there with the opportunity at best to picnic. Historical studies tell us that CPRs decline in importance as economies grow. They decline because the relative scarcities of goods and services change with economic growth. Compared to manufactured capital and human capital, land is pretty much fixed in size. Moreover, scientific and technological advances make available more and more productive uses for land. Some people want to develop the land for one set of purposes, others for other purposes. As it becomes ever harder for communities to reach agreement over the use of land-based CPRs, the urge to privatize grows.

Goods and services: classifications

It is good practice to distinguish one object from another if they happen to be distinct. Goods and services are commonly distinguished from one another by their physical and chemical properties (for example, potable water is different from wheat). People generally acknowledge that goods and services should be distinguished from one another also by their location, as is implicit in the disparagement that someone is 'bringing coals to Newcastle'. Thus, potable water in the Sahara is a different commodity from potable water in Alaska. The economist Erik Lindahl showed many years ago that to make sense of borrowing, saving, lending, and investing (Chapter 6), we should distinguish goods and services from one another also by the date of their appearance. As potable

water today is a different commodity from potable water tomorrow, we should acknowledge the difference. It follows from Lindahl's account that a durable commodity should be regarded as the stream of services it is expected to provide over time.

The economist Kenneth Arrow showed that commodities should be distinguished from one another even more finely. He argued that in order to make sense of insurance and the stock market, we should distinguish goods and services from one another also by the uncertain contingencies in which they appear. It follows from Arrow's account that potable water tomorrow in case the weather will be cold is a different commodity from potable water tomorrow in case it will be hot.

Planning for the future requires that we make provisions of goods and services at future dates. When a trader in Becky's world buys wheat forward – that is, he pays now for a bushel, to be delivered in six weeks' time, say – he buys wheat of a certain composition (kernel size, moisture content, and so forth), to be delivered in six weeks' time, no matter what. By storing maize in their home, Desta's parents try to ensure that the household is able to consume maize until near the next harvest, no matter what. In terms of Lindahl's classification, both the trader and Desta's parents are purchasing 'dated commodities'. But the future is inevitably uncertain. By paying an annual insurance premium on their home, Becky's parents purchase a replacement for their home during the following year *if and only if* their home is damaged. (They don't get the premium refunded should their home remain undamaged at the end of the year.) The commodity they are buying is a home that replaces the present one during the following year if and only if their present home is damaged. In Arrow's terminology, they are purchasing a 'contingent commodity'.

Private goods, public goods, and externalities

By a *private good* economists mean a commodity whose use is both rivalrous and excludable. Food is a quintessential private good. If

someone consumes an additional unit of food from a given amount, all others taken together will have a unit less to consume (that's 'rivalrous'); and so long as the rights to the food someone possesses are protected, he or she can exclude others from consuming any of it (that's 'excludable'). Most of the goods we consume or use are, in this sense, private. In sharp contrast, a *public good* is a commodity whose use is *non*-rivalrous and *non*-excludable. National defence comes readily to mind. If a nation has the equipment to protect itself against attack, it not only protects all who live there, it would cost nothing more to protect anyone else who comes to live there (that's 'non-rivalrous'); moreover, it wouldn't be possible to exclude anyone who comes to live there from that protection (that's 'non-excludable'). There are public 'bads' as well. Effluence from paper mills is a ready example.

Public goods are the mirror image of resources to which access is open. In contrast to open access resources, which are overused, public goods are undersupplied if people are left to their own devices. The economists Knut Wicksell and Paul Samuelson traced the reason for that undersupply to the incentives people have to *free-ride* on the provisions others happen to make. The point is that once a public good is supplied, it is a commodity to which access is open. But the private incentive to supply the good won't take that benefit into account. Wicksell and Samuelson argued that the problem can be overcome only by collective action. That action can take one of two forms: (i) public provision; (ii) publicly subsidized private provision. Where the geographical reach of a public good is confined (forest cover in microwatersheds; local sewage systems), 'public' may mean the community or the local government. In either case we are in the realm of local politics. In Desta's world, local public goods are usually supplied by the community; in Becky's, they are the responsibility of local government. In neither world does the market take the lead. Where the public good is confined within a national boundary (national defence), collective action means state involvement, and so, national politics. When the public good is unconfined (the global circulation system governing

climate), collective action can only mean involvement of the international community, and so, international politics.

The private provision of public goods confers an extreme form of an effect known as *externalities*. By an externality, we mean the effects that decisions have on people who have not been party to the decisions. In some cases the effects are beneficial (they are known as *positive* externalities); in other cases they are detrimental (*negative* externalities). Primary education and public health measures confer positive externalities. If I become literate, I benefit; but so do others who are literate, because they can now communicate with me via non-oral means. Similarly, if I get inoculated against an infectious disease, I benefit; but so do others who are susceptible to the disease, because they are no longer in danger from me. Imagine now that education and inoculation are institutionalized as private goods. Each household would underinvest in both, because none would take into account the benefits they would be conferring on others.

In contrast, crowding on highways and sulphur oxides in a city's airshed involve negative externalities. If you drive your car on the highway, presumably you benefit; but you add to congestion and so cause others to suffer on the highway. Similarly, when your car emits sulphur oxides, others living under the airshed suffer a loss. Each such case involves the free-rider problem, much referred to by political commentators today. The idea that free-riding and externalities are related is old. The economist A. C. Pigou noted the problem in the 1920s and advocated the use of taxes and subsidies, respectively, for reducing the private supply of negative externalities and increasing the private supply of positive externalities.

Money

By subsistence agriculture, economists mean self-sufficient agrarian households. Desta's household isn't quite like that, but it is close enough. Becky's household is very different. Her parents' income is used to obtain the goods and services her household consumes. The

household does that by trading in the market. If you were to itemize the number of transactions Becky's household makes each year, the vast majority – consisting mostly of very small items, such as groceries – are for immediate consumption. Payments in Becky's world are made in money, expressed in US dollars. The notes and coins that form a part of what goes by the name 'money' possess no intrinsic worth. So why do people hold them? Why do we need a medium of exchange in the first place?

Imagine a world where everyone is known to be utterly trustworthy; where people don't incur any cost in computing, remembering, and recognizing people; and where every transaction – whether here and now, or across time, space, and uncertain contingencies – can be carried out costlessly. In that world people would be able to do business with one another merely on the basis of their word. There would be no need for money.

We don't live in that world. To see why money is a necessary medium of exchange in the world we live in, imagine that person *A* possesses wheat, person *B* rice, and person *C* maize. Let us suppose also that *A* likes rice, *B* maize, and *C* wheat. Bilateral exchanges of goods (more commonly known as 'barter') would be impossible because of an absence of what economists call a 'double-coincidence of wants': *A* wants *B*'s rice but can't barter with *B* because *B* doesn't care for *A*'s wheat; and so on. The example is stark, but the problem it poses is very general. The use of money as a medium of exchange enables people to do business with one another even in the absence of a double-coincidence of wants. Money is a legal tender in both Becky's and Desta's worlds because the governments in their countries say it is a legal tender and back that statement with the power of their authority. Paul Samuelson constructed a model not dissimilar to the one we studied earlier (of a partnership between persons *A* and *B*) to show that, although money is intrinsically valueless, people hold money because they want to be able to purchase goods and services without possessing goods and services with which to barter. So money is not only a medium of exchange,

but also a store of value. Becky's household wouldn't be able to survive if it didn't live in a monetary economy. Desta's household, being nearly self-sufficient, could just about survive. However, we should avoid imputing causality when there is none. If Becky's household lived in a place where markets were absent, it too would try to be self-sufficient. The family would be destitute if her father tried to live on his skills as a lawyer. Of course, even Desta's parents need money to purchase the goods available in the few markets that exist in their village environment. They accept money in exchange for the liquor Desta's mother brews and the teff her father grows.

Notes and coins issued by the government are not the only kind of money in Becky's world. Business transactions most often use cheques drawn from one bank to another. As current account balances also serve as a medium of exchange, they are also money. When signing a contract, the relevant parties entertain certain beliefs about the dollar's future value, by which I mean beliefs concerning the bundles of goods and services a dollar will purchase in the future. Those beliefs are based in part on their trust – more accurately, *confidence* – in the US government to manage the value of the dollar. Of course, the beliefs are based on many other things besides, but the important point remains that money's value is maintained only because people believe it will be maintained. Similarly if, for whatever reason, people fear that the value will not be maintained, then it won't be maintained. Currency crashes, such as the one that occurred in Weimar Germany in 1922–3, are an illustration of how a loss in confidence can be self-confirming. Bank runs share that feature, as do stock market bubbles and crashes. There are multiple social equilibria, each supported by a set of self-confirming beliefs. One of the most important purposes of monetary policy is to maintain the value of money.

Money enables transactions to be anonymous. Those anonymous transactions are concluded in one go, as when Becky buys CDs in the department store of her town's shopping mall and pays for the purchases in cash. Millions of transactions take place each day

between people who have never met and will never meet. The problem of trust is in great part solved in Becky's world by building confidence in the medium of exchange: money.

Because of an absence of good roads, electricity, and running water, markets are unable to penetrate Desta's village. Becky's suburban town, in contrast, is embedded in a gigantic world economy. Becky's father is able to specialize as a lawyer only because he is assured that his income can be used to purchase food in the supermarket, water from the tap, and heat from cooking ovens and radiators. Specialization enables people to produce more in total than they would be able to if they were each required to diversify their activities. Adam Smith famously remarked that the division of labour is limited by the extent of the market. Earlier we noted that Desta's household doesn't specialize, but produces pretty much all daily requirements from a raw state. Moreover, the many transactions it enters into with others, being supported by social norms, are of necessity personalized, thus limited. There is a world of a difference between markets and communities as the basis of economic activities because there is a world of a difference between laws and social norms.

Culture

The models we have been studying capture those all-too-familiar situations where cooperation requires institutions (arrangements for implementing agreements, which specify who is to keep an eye on whom, who is to report to whom, and so forth), but where non-cooperation is a possible outcome even when those institutions are in place. We know that certain institutions work smoothly in some places, but not in others. A nation may adopt an enlightened constitution, but whether its citizens can bring themselves to work within it is a different matter. What people choose to do depends, among other things, on their beliefs about one another. The theory I am developing here doesn't explain those beliefs; what it does is to identify those that are self-confirming. Economists call them

rational beliefs. Nothing philosophically deep is meant by the term 'rational' here: rational beliefs are beliefs that are self-confirming, nothing more. The models have also told us that, in a wide variety of everyday situations, rational beliefs are not unique. Some give rise to outcomes that protect and promote human well-being, others thwart it. What gives rise to one set of rational beliefs rather than another? Could it be culture?

In his famous work on the influence of culture on economic development, the sociologist Max Weber took a community's culture to be its shared values and dispositions, not just beliefs. Studies as widely cast as Weber's can't easily be summarized, but the causal mechanism Weber himself would seem to have favoured in his work on the Protestant ethic and the spirit of capitalism leads from religion, through personal practices and political culture, to institutions, and thereby to economic outcomes.

Using culture to explain economic performance hasn't been popular among social scientists in recent decades; but there has been a revival. For example, economists have constructed a measure of trust in societies from the World Values Survey, which in the early 1980s and 1990s surveyed 1,000 randomly selected individuals in each of 40 countries and asked them if, generally speaking, they would say that most people could be trusted or that they could not be too careful in dealing with people. Trust was measured by the percentage who replied that most people could be trusted (the percentages were found to be pretty much the same in the two surveys). The investigators controlled for differences in GDP per head among the countries that were surveyed. The data revealed that trust, on the one hand, and judicial efficiency, tax compliance, bureaucratic quality, civic participation, infant survival rate, educational achievement, the performance of large firms, and growth in GDP per head, on the other hand, moved together. In statistical jargon, they were positively (and significantly) correlated. Not surprisingly, the data also revealed that trust and government corruption moved together, but in

opposite directions. The two variables were negatively (and significantly) correlated.

We could conclude from the World Values Survey that trust is good for economic growth and several other good things besides. But the survey didn't identify the reasons why the degree of trust in each of the countries sampled was what it was. Nor *could* it identify the reasons. This poses a problem. As trust doesn't get created in a vacuum, its presence cries out for explanation. Which means that the presence of trust shouldn't be used to explain the presence of something else. What the statistical findings tell us is that such emergent features of an economy as the degree of trust people have in one another go hand in hand with economic progress, they tell us nothing more. Statisticians remind the rest of us repeatedly that correlation isn't the same as causation. It is an instruction social commentators have all too often ignored.

That said, to have observed a positive correlation between trust and economic progress is informative because the theory we have been developing here predicts positive correlation. If the correlation had been *negative*, we would have been utterly surprised. We would have questioned the finding and gone back to the drawing board, either by redoing the survey, or by trying to identify hidden variables in the data that could account for it.

All this is in line with a train of thought regarding institutions that I have been exploring here, that long-term relationships are often *substitutes* for trust in government officials to deliver public services or for confidence in the ability of formal markets to function adequately. Perhaps people enter into long-term relationships when the other institutions that could serve similar purposes are unreliable.

In addition to questions on trust, the World Values Survey contained a list of character traits and practices, including thrift, saving money and objects, determination, obedience, and religious

faith. The survey asked people to identify the one they regarded as the most important. Based on their responses, political scientists have constructed an index of culture that reflects the personal motivation to achieve. Controlling for other factors, differences in economic growth and the index of personal motivation were found to go together – they were positively and significantly correlated.

This finding shouldn't be given a causal interpretation either. The motivation to advance oneself could depend on one's expectations regarding the chance that hard work pays off. Parents would instil personal ambition in their children only if they were sanguine that such ambition would not be thwarted by the social order. Women wouldn't rise beyond their station if they (rationally!) feared retaliation against them for their temerity. Even an attitude can be a determined rather than determining factor. When it's the former, an observed statistical link between the culture of, say, thrift and economic progress should be interpreted as a relationship, nothing more. I am using the term 'culture' here to denote differences in the beliefs people hold about one another. Culture in this view is a coordinating device.

Attitudes toward others and toward one's institutions are significant aspects of a society's culture. The models we have studied so far have focused on the latter. In what follows we look at the former, by studying socially influential behaviour.

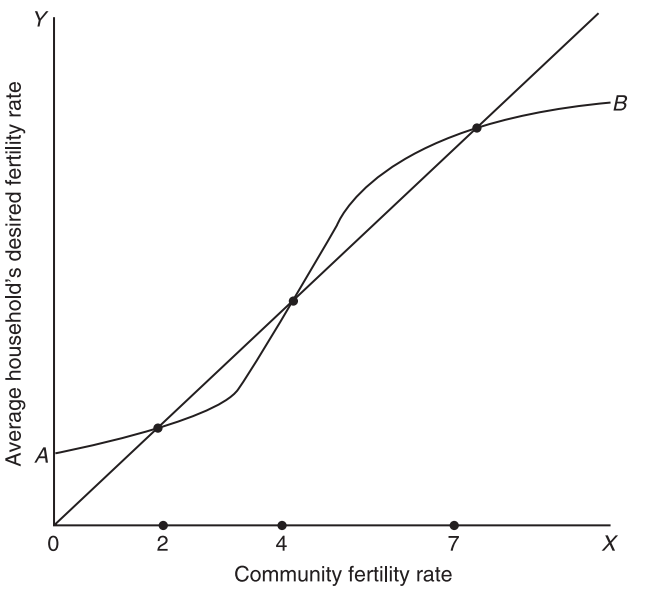
Socially influential behaviour

The fertility rate (TFR) in Desta's world is more than twice as high as in Becky's world (Table 1). What accounts for the huge difference?

In Chapter 6 we will explore such factors as the costs and benefits parents experience from having children and the relative ease with which households have access to modern reproductive technology and health care. Here we focus on socially influential behaviour as a possible factor. Conformity is one example. By conformity, I mean

imitative, or herd, behaviour. Reproductive behaviour is *conformist* if, other things being equal, each household's most desired size is larger, the greater is the average household size in the group with which it identifies.

In Figure 6, I have drawn a hypothetical curve, AB, which reflects the dependence of the average household's desired fertility rate (Y) on the community's fertility rate (X). It is upward-sloping, reflecting conformist behaviour. I have so drawn AB that it intersects the 45-degree line at three values of X: 2, 4, 7. The hypothetical community would be at a reproductive equilibrium at each intersection: as long as the community's fertility rate is 7, the average household would most desire 7; but if it is 2, the average household would desire 2. So, conformism can be the reason for the



6. The relationship between the average household's desired fertility rate and the community's fertility rate

existence of multiple reproductive equilibria. This means that communities that are separated from each other, but are otherwise identical, could behave very differently. In our example, it could be that the TFR in some communities is 2, while in others it is 7. (A TFR of 4 is also a reproductive equilibrium, but it is unstable, meaning that if a community's TFR were ever so slightly different from 4, it would diverge from 4 even more with time.)

People tend to identify with more than one group. Often, our food habits have been acquired from our parents, our work habits influenced by those in our profession, our leisure habits by our class, and our reproductive goals by our religion or ethnic background. It may be that we conform because we care about our status, and our actions signal our willingness to be a part of our group. No matter what the basis of conformism happens to be, there would be practices encouraging high fertility rates that no household would unilaterally wish to break. Those practices could have had a rationale in the past, when mortality rates were high, rural population densities were low, the threat of extermination from outside attack was large, and mobility was restricted. But practices can survive even when their original purposes have disappeared, especially perhaps if people look over their shoulders at what others are doing before deciding what they themselves will do.

Conformist behaviour would change over time if the reference group on whose behaviour households base their own decisions changes. Even within a group there are those who experiment, take risks, and refrain from joining the crowd. They are the tradition-breakers, often leading the way. Demographers have noted that educated women are among the first to make the move towards smaller families. Middle-class behaviour can also be the trigger for change. A possibly even stronger pathway is the influence newspapers, radio, television, and the internet exert by transmitting information about lifestyles elsewhere. In other words, the media can be a vehicle by which conformism increasingly becomes based on the behaviour of a wider population than the local community:

the reference group widens. Increased conformity with the behaviour of people in distant lands can even be mistaken for growth in individualism. We now have the beginnings of a theory of *demographic transitions*, by which we mean a relatively brief period of time during which the TFR cascades down from a high figure to a relatively low figure. In recent years there have been signs of demographic transitions even in parts of sub-Saharan Africa, where the TFR has dropped from 7–8 to 4–5. But there remain parts of the continent where the TFR remains nearly 8.

In her study of demographic change in Western Europe over the period 1870–1960, Susan Cotts Watkins found that in 1870, before the large-scale declines in marital fertility had begun in most areas of Western Europe, demographic behaviour differed greatly within countries. The fertility rate among provinces (counties, cantons) differed considerably, even while differences within provinces were low. There were spatial clusters within each country, suggesting the importance of the influence of local communities on behaviour. By 1960, though, differences within each country were less than they had been in 1870. Watkins explained this convergence in behaviour in terms of increases in the geographical reach national governments enjoyed over the 90 years in question. The growth of national languages could have been the medium through which reproductive behaviour spread.

More transient forms of herd behaviour are fads and fashions. Imagine that each person can choose one of two actions, *P* and *Q*. Suppose that everyone has an intrinsic preference for *P*, but that people also like to conform. To model this, imagine that each person would choose *P* over *Q* if the proportion of people choosing *Q* is expected to be less than 65%, but that each person would choose *Q* over *P* if the proportion is expected to exceed 65%. The figure 65% is a *critical mass*. (Mathematicians would call the critical mass a *separatrix*.) Once again, simple herd behaviour could lead everyone to adopt *Q*, even though they would all have preferred that everyone had adopted *P*. A dynamics similar to the one I have just sketched to

describe demographic transitions shows that fads and fashions can disappear without much prior notice.

Competitiveness (trying to 'beat the Jones's') can also lead to socially influential behaviour. Surveys in which people in Desta's world were asked to report how happy they were as compared to the past have confirmed that income matters to the very poor: reported happiness was found on average to have increased with rising incomes. But similar surveys have found that income doesn't contribute to happiness among people who have a good deal more than the basic necessities of life. Those who are poorer in Becky's world are certainly less happy; but even though there was economic growth in the periods covered by the samples, the distribution of declared happiness remained pretty much the same.

A possible explanation is that, when income levels are reasonably high, the extent to which someone feels happy is influenced by his income *relative* to the average income of his reference group. In the presence of such a competitive urge, a 'rat race' ensues and resources are wasted. The multiple equilibria are of growth rates in incomes. In each equilibrium people grow richer on average and consume more, but don't feel any happier.

Chapter 3
Communities

People throughout history have been known to devise ingenious ways to cooperate. One way is to make the benefits and burdens in one engagement depend not only on what takes place there, but also on what happens in some other engagement. In Desta's village the same set of households share the local commons, offer one another loans, join the *iddir*, and help one another out in times of need. The interesting point isn't that the same group of people are in a number of long-term relationships (who else is there to form long-term relationships with?), but that the relationships are tied to one another.

Tied engagements

To see how ties can help, suppose that in the patron–client relationship we studied in the previous chapter, the discount rate *A* (the patron) uses to value the future benefits of cooperation with *B* (the client) exceeds 25% (or ¼) per year. We know that for want of trust, the pair would be unable to form a partnership. But now imagine that, in addition to the annual flow of $4,000 worth of working capital *A* has access to, he has access to an annual flow of a different type of working capital, worth $3,000 to him. *B* doesn't have the skills to work with that capital, but someone named *C* does. The time *C* would need to work *A*'s capital into a marketable product is worth $1,000 to her. Like *B*, person *C* doesn't have access

to the market for products. The product can fetch $6,000 in the market and *A* is in a position to procure it. *A* considers approaching *C* with a proposal to form a partnership: the $6,000 would be used first to compensate the pair; the surplus would then be divided equally between them. Each would enjoy a profit of $1,000 annually. For what values of *r* is a partnership between them viable?

As *C*'s motivations in the potential relationship are similar to *B*'s in the previous example, we needn't study them again. But we do need to work through *A*'s reasoning, because the numbers matter. So let us start in year 0. Suppose *C* has adopted grim. If *A* advances his capital to her but reneges on the agreement once she has produced the output, he gains $3,000 ($6,000 minus $3,000) that year. Set against it is the $1,000 he would lose every year, starting in year 1. That loss, calculated in year 0, is $1,000/*r*. If 1,000/*r* is less than 3,000, *A* will renege. If, on the other hand, 1,000/*r* exceeds 3,000, *A* can do no better than to adopt grim himself. Since 1,000/*r* exceeds 3,000 if and only if *r* is less than ⅓ (approximately 33%), the pair are able to form a long-term relationship if *A*'s discount rate is less than ⅓ per year. So suppose *r is* less than ⅓. Then *A* is able to form a relationship with *C*, but not with *B* (*r* exceeds ¼, remember; and ⅓ exceeds ¼).

We are now able to show that *A* could form a relationship with *B* if the three were to tie the pair of undertakings. Let the proposal be to create both partnerships, but with the understanding that if any party in any year was to act opportunistically, *both* relationships would be terminated. In order to formalize this, let the rule of behaviour adopted by *B* (respectively, *C*) now read: begin by cooperating with *A* and *C* (respectively, *B*) and continue to cooperate so long as *no one* has broken their agreement, but cease cooperating with everyone following the first defection by any one in either relationship. Similarly, let the rule of behaviour adopted by *A* now read: begin by cooperating with *B* and *C* and continue to cooperate so long as *no one* has broken their agreement, but cease cooperating with everyone following the first defection by any one

in either relationship. Each of the parties has adopted grim once again, but grim here comes with an added sting.

It's easy enough to confirm that *B* would adopt grim if *A* and *C* adopt grim and that *C* would adopt grim if *A* and *B* adopt grim. The interesting exercise is to determine *A*'s incentives to cooperate if *B* and *C* adopt grim. As both clients would terminate their relationship with him if he behaved opportunistically with either, *A* would defect from both relationships if he defects at all. What remains is to calculate *A*'s gains and losses if he defects from both relationships in year 0. If he does, he gains $7,000 now ($4,000 from his partnership with *B*; $3,000 from his partnership with *C*). Set against that is the value of all the future benefits from cooperation he will have to forgo. That loss is $(1,000 + 1,000)/r$. It follows that *A* can't do better than to adopt grim himself if $7,000 is less than $2,000/r$; which is to say, if r is less than $2/7$. Since $2/7$ exceeds $1/4$ (it lies between $1/4$ and $1/3$), the condition under which *A* and *B* are able to cooperate is weaker. Suppose r is less than $2/7$ (per year), but greater than $1/4$ (per year). By tying the relationships, both can be created; whereas, if they are kept separate, only the one between *A* and *C* can form. The intuition behind the finding is clear. *A* faces greater temptation to defect from his agreement with *B* than the one with *C*, which is why the circumstances under which a relationship could form with *B* are more restricted than they are with *C* ($1/4$ is less than $1/3$). By tying the two relationships, *A*'s temptation to break his relationship with *B* is reduced ($2/7$ exceeds $1/4$).

While *C* doesn't lose from the move to tie the partnerships, she doesn't gain either. Only *A* and *B* gain. So *B* has every reason to offer solidarity to *C*, whom she now regards as a professional comrade. *B* may even offer a small compensation to *C*, so as to give her a positive incentive to agree to having the two partnerships tied. In return, *C* promises to stick by *B* should *A* mistreat her. He doesn't do that, of course, but only because he is smart enough to know that *C* would break up their relationship if he did.

Further refinements are needed when people who wish to trade with one another are separated by distance. Community responsibility systems in Italy during the 12th and 13th centuries helped people to obtain credit and insurance. Transgressions by a party were met in a collective way: the group to which the injured party belonged imposed sanctions on the group of which the transgressor was a member. In such arrangements it is communities, not individuals, that acquire a reputation for honesty. Tying relationships in this manner creates incentives for members of a peer group to keep an eye on one another. The institution reduces the costs people incur in keeping an eye on one another.

The drawback of tied relationships among people having different interests is that they require further coordination. If, in our numerical example, *B* possessed not only her own skills but those of *C* as well, and if she had the time to work for *A* in both ventures, it would be simpler for *A* to offer both partnerships to *B*, with the proposal that *they* be tied. The relationship would involve only *A* and *B*, requiring less coordination.

Networks

The distinction between personal and impersonal transactions is not sharp. Even in a sophisticated market (modern banking), reputation plays a part (credit rating of the borrower). But the distinction is real. Meeting new people in Becky's world is often accidental, but people spend resources in order to make new acquaintances. Why? One reason is that new acquaintances may be in a position to provide *information*.

One can think of interpersonal networks as systems of communication channels linking people to one another. Networks include as tightly-woven a unit as a nuclear family or kinship group, and one as extensive as a voluntary organization, such as Amnesty International. We are born into certain networks and enter new

ones. Personal relationships, whether or not they are long-term, are emergent features within networks.

The clause 'personal relationships' in the notion of networks is central. It involves trust without recourse to an external enforcer of agreements. Scholars have argued that civic engagements in Becky's world and communal activities in Desta's world heighten the disposition to cooperate. The idea is that trust begets trust and that this gives rise to a positive feedback between civic and communal activities and a disposition to be so engaged. That positive feedback is, however, tempered by the cost of additional engagements (time), which, typically, rises with increasing engagements. The economist Albert Hirschman has observed that trust is a *moral good*, in that it grows with use but decays with disuse; which means that we don't need to 'economize' on trust, in the way we need to with 'bread and butter goods' like bread and butter. Trust shares this feature with skills: the more one practises a skill, the better one gets at it.

Weak ties

Relationships can be strong or weak. One can be misled by this into thinking that weak ties are not valuable. In fact they can be very valuable. While working at his previous job, Becky's father learnt through word of mouth that the firm he now works for was looking to hire someone with his qualifications. There is much empirical evidence that weak ties are useful because they connect people to a wide variety of other people, and so, to a large information base. Engagements among people with weak ties in Becky's world are untied. Becky's father has little to do with the Parent-Teacher Association (PTA), of which her mother is an active member. Similarly, Becky's mother has nothing to do with the association of lawyers to which Becky's father belongs. Moreover, neither the PTA nor the Bar Association play any role in their social life.

Strong ties

In Desta's world ties are mostly strong because they involve tied engagements in long-term relationships. As this sort of

arrangement sets limits on the range of people with whom people are able to do business, it offers few opportunities for material advancement. In Chapter 6 we will confirm that strong ties among kinship hinder economic progress in the contemporary world, by limiting the amount of insurance coverage households are able to obtain, by maintaining a low rate of return on investment, and by stimulating fertility. But if used wisely, strong ties can be of help in seeking economic opportunities in the outside world. Consider migration. One enterprising member of the rural community moves to the city, supported by those with whom he has strong ties at home while he searches for work. He is followed by others in a chain-like fashion, as information is sent home of job prospects. Migrant workers even recommend village relations to their bosses. Bosses in turn favour their employees' kin, because doing so reduces the risks involved in hiring people they don't know. This would explain why city mills in poor countries have been found to employ disproportionate numbers of workers from the same village. Markets and communities are capable of functioning in such ways as to offer mutual benefits.

Why do networks in Desta's world operate along ethnic or kinship lines and why are they multi-purpose and dense, unlike the specialized professional networks such as those of academic economists and psychotherapists in Becky's world? Our previous analysis offers an answer. As membership is defined by birth, entry into ethnic or kinship networks is impossible, nor is exit possible. Moreover, membership is easily verifiable. Proximity within the village enables individuals to know one another's characteristics and dispositions well. Consequently people there don't suffer much from a problem known in the insurance industry as *adverse selection*. In the insurance context, firms are said to face a problem of 'adverse selection' when people who are bad risks are indistinguishable from people who are good risks and are able to displace the latter. Proximity within the village also enables people to observe one another and see what they are about. Consequently people there don't suffer much from a problem known in the

insurance industry as *moral hazard*. In the insurance context, firms are said to face a problem of 'moral hazard' when insurees don't take those precautions against bad outcomes that may have been agreed upon. Tied long-term relationships make the networks multi-purpose and dense. In contrast, people enter and exit professional networks out of choice, with the result that the networks have sharp, limited goals. Membership doesn't impose constraints on what people can do with other aspects of their lives, such as where to shop, what to eat, which school to send their children.

We shouldn't be surprised that the networks people bequeath their children in Desta's world frequently amount to ethnic or kinship networks, for who else is there in rural societies with whom one can form links? However, even though it is true that exit from one's ethnicity or kinship is literally impossible, children do have a choice of not *using* the networks they have inherited. Why then do people

7. Teff threshing in Ethiopia

maintain so many inherited networks even in Becky's world? The reason they do is that one can't costlessly re-direct relationships once they have been established. Such investments are specific to the relationships. Moreover, as trust begets trust, the cost of maintaining a relationship declines with repeated use (witness that we often take our closest friends and relatives for granted). The benefits from creating new relationships are low if one has inherited a rich network of relationships, which is another way of saying that the cost of not using inherited networks is high. Outside opportunities have to be especially good before it is in someone's interest to cease making use of inherited links. This explains why we maintain so many of the relationships we have inherited from our family and kinship, and why norms of conduct pass down the generations. We are, so to speak, locked in from birth.

Chapter 4
Markets

Just as communities differ from one another, markets differ from one another. Markets come in so many varieties, that it makes good sense to determine their ideal form and examine why and how actual markets differ from the ideal.

Ideal markets

Economists refer to departures of markets from their ideal form as 'market failure'. Each kind of market failure offers society a reason to explore how other institutions, such as households, communities, and government, could improve matters. The argument works the other way too. Understanding ideal markets enables us to uncover clues as to how markets could improve matters in situations where households, communities, and government don't work so well. Of course, all this presupposes that ideal markets are a good thing. One of our tasks here is to explore the sense in which they are a good thing.

A single market

It helps to begin the formal study of markets by isolating a commodity and developing the account of an ideal market for it. Let us denote the commodity as X. For concreteness, we will suppose that X is a non-durable consumption good, meant for consumption now. As we are studying ideal markets, I assume that X is a private

good, implying that there are no externalities associated with its consumption or production. For convenience I will use X also to denote its quantity.

Imagine that there are many firms that could potentially supply X and many households that are potential consumers of X. Firms are owned by households. By a *market* for X we mean a clearing house for X. Firms bring their supplies of X to the market and households arrive there to make their purchases of X. As the markets for goods and services are interconnected (the demand for tea would be expected to increase if the price of coffee was to increase), we would be justified in studying the market for X in isolation only if (i) the resources devoted to the production of X are small compared to the resources devoted to the production of all the other goods and services in the economy, and (ii) the expenditure on X by each household is but a small fraction of its total budget. We make both assumptions here and suppose in addition that all other goods and services are transacted in their own markets. Assumptions (i) and (ii) imply that the prices of all other goods and services are pretty much uninfluenced by what happens in the market for X. That being so, we can value the remaining goods and services in the economy in terms of their prices and sum them so as to create an aggregate index in terms of which X is priced. Let us call that index *wealth*, expressed in, say, dollars. In the language of economics, wealth is our *numeraire*. Purchases and sales of X take place at the price quoted in the market for X.

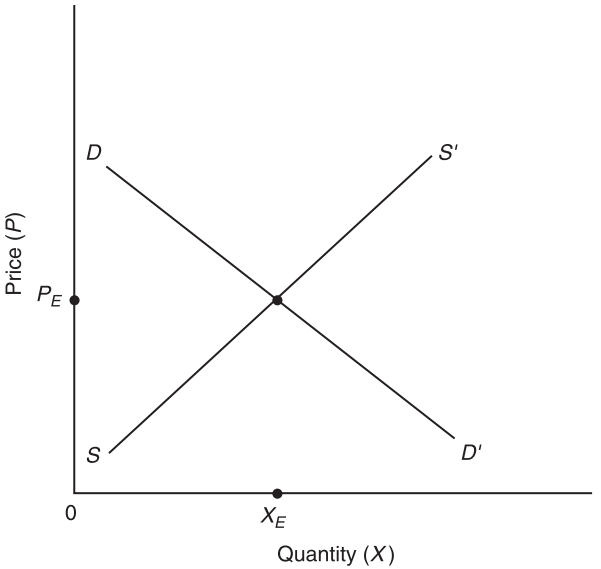
You will no doubt have noticed the circularity in the reasoning I have deployed here. How can we justify assuming in advance of any analysis of the market for X that the production and purchases of X involve, respectively, only a small proportion of the economy's resources and only a small proportion of each household's budget? By now though, you will have grown used to circular reasoning in economics (Chapter 2). Our previous discussions have shown us that it is a powerful method of analysis. Here we have begun by assuming (i) and (ii). If we now were to discover empirically that

near an equilibrium of the market for X (defined below) the assumptions are correct, the basis for the analysis will have been justified.

In an ideal market households and firms are all price-takers. We may imagine that an auctioneer cries out the price of X and that firms and households make their respective decisions on the basis of that price. The quantities purchased by each household and sold by each firm are assumed to be verifiable, as is the quality of X. Payments are enforced by an external agency (government). People neither steal X nor renege on their payments for X. If they tried to do either, they would be caught and punished by the enforcer (Chapter 2).

Suppose the price of X is P. By a household's *demand* for X we mean the quantity of the good it would wish to purchase at P. If a household's willingness to pay for each unit of X declines as the number of units it purchases increases, it would demand the good to the point where its willingness to pay for the marginal unit of X equals P. (If it demanded more, the household would have to pay more than it was willing to pay for the last unit demanded, meaning that the household would reduce its demand; whereas, if it demanded less, the household would be paying less than it was willing to pay for the last unit demanded, meaning that it would demand still more.) As X is a private good, the *market demand* for X at price P is the sum of all household demands at P. We have just argued that if P were 'high', market demand would be 'low'; if it were 'low', market demand would be 'high'. This feature gives rise to a downward sloping market demand curve, drawn hypothetically as DD' in Figure 8. Market demand for X is measured along the horizontal axis, while P is measured along the vertical axis.

It can be that firms own different technologies for producing X. We suppose, though, that all technologies display diminishing returns in production, by which I mean that the cost of producing an additional unit of X (the cost being computed at the prices that



8. Demand and supply curves

prevail for all the inputs required to produce *X*) increases if the quantity produced was to increase. As firms are owned by households, the objective of every firm is to maximize its profit in the market for *X*. By a firm's *supply* of *X* at *P* we mean the quantity it would be willing to sell at *P*. A firm would produce the good to the point where the cost it incurs for the last unit produced – its *marginal cost of production* – equals *P*. (If the firm produced more, it would make a loss on the last unit it produced, which means that it ought to reduce production; whereas, if it produced less, the firm could increase its profit by producing a bit more.) In short, each firm would plan to produce to the point where its marginal cost of production equals *P*. The *market supply* of *X* at *P* is the total quantity of *X* that all the firms in the economy are willing to supply at *P*. We have just argued that if *P* were 'high', market supply would be 'high'; if it were 'low', market supply would be 'low'. This feature gives rise to the upward sloping market supply curve, drawn

hypothetically as *SS'* in Figure 8. Market supply of X is measured along the horizontal axis, while P is measured along the vertical axis.

Figure 8, which was the creation of the economist Alfred Marshall, brings together what is probably the most famous pair of curves in all of economics: the demand and supply curves. The curves intersect at a unique point (X_E units of the good, at price P_E), which is an *equilibrium* of the market for X. It is an equilibrium, because at P_E, market demand equals market supply, implying that the market for X clears. Economists frequently add the adjective 'competitive' to the word 'equilibrium', because, as the market being studied involves many firms, they are all price-takers. Which is why we say that P_E supports a *competitive equilibrium* in the market for X.

Notice how closely the concept of a competitive equilibrium resembles the notion of an equilibrium in the communities we studied earlier. At P_E, those who wished to be active participants in the market for X – whether as suppliers or purchasers – discover that their intentions can be carried out. Those who chose not to enter the market at that price discover that they were right not to have entered: the market clears at P_E, leaving nothing over which anyone could bargain. P_E enables a set of expectations on the part of households and firms to be fulfilled. Notice too the parsimony of information that households and firms need to have in order to participate effectively in the market for X. A household needs to know its own 'mind' (that is, what it is willing to pay for the good) and the price P. It doesn't need to know anything about other households, nor about the cost conditions facing firms. Similarly, a firm needs only to know the technology available to it, the prices it has to pay for its inputs in production, and the price of X. It doesn't need to know anything about households' willingness to pay, nor anything about the technologies of rival firms. The equilibrium price, P_E, acts as a coordinating device for allocating X and the resources needed to produce X. P_E is an emergent feature of the market for X.

In what sense is the market I have just described 'ideal'? It is ideal in the sense that the equilibrium supplies and demands would have been chosen by a planner (or regulator), whose objective was to promote household interests by maximizing their joint wealth, and who proceeded to do just that by instructing each firm on how much X to produce and each household on how much X to consume. The proof requires a little bit of patience, but is worth rehearsing. Let us suppose first that the plan the regulator proposes is one in which the marginal costs of production of a pair of firms, 1 and 2, differ; say, the marginal cost for firm 1 exceeds that for firm 2. Total wealth could be increased by a slight change in the regulator's plan: reduce firm 1's output by one unit and raise firm 2's output by one unit. Total output would remain the same, but it would be produced more cheaply, thus increasing the total wealth of households. So, the regulator's best plan – we will call it the *efficient* plan – would involve equality in the marginal cost of production among all those firms that are instructed to produce X.

Turning to households, let us suppose that the plan the regulator proposes is one in which the willingness to pay for the marginal units to be purchased by a pair of households, say 1 and 2, differ. Imagine that household 1's willingness to pay for the marginal unit it is to consume exceeds that of household 2. Total wealth could be increased by a slight change in the regulator's plan: reduce household 2's consumption of X by one unit and raise household 1's consumption by one unit. No additional resources would be involved in this reassignment; but total wealth of households would increase, because household willingnesses to pay are measured in terms of wealth. So, we have proved that the efficient plan involves equality in the marginal willingness to pay among all households. A similar argument shows that the efficient plan also has the property that each household's marginal willingness to pay equals each firm's marginal cost of production. But the regulator would want to ensure that the total quantity produced equals the total quantity consumed. (Wealth would be

wasted if total production exceeded total consumption; and the whole purpose of the planner would be frustrated if total production fell short of total consumption.) It is simple to confirm that there is a unique plan satisfying each of the above requirements.

Let the common value of the marginal costs of production and the marginal willingnesses to pay be P. The regulator could implement the efficient plan by setting the price of X at P and requiring that households and firms transact on the basis of P. That P is, of course, the P_E of Figure 8. This completes the proof.

Although highly abstract, what I have sketched here was the basis of a far reaching debate that took place among economists during the 1930s: markets versus central planning. Advocates of the institution of central planning, such as Oscar Lange and Abba Lerner, argued that an enlightened planner could help to realize all the virtues of markets while avoiding the weaknesses of actual markets, such as lapses from competition. The term *market socialism* has been associated with the Lange-Lerner vision. Advocates of markets, such as Friedrich von Hayek, argued, on the other hand, that the equivalence in the *outcomes* achieved doesn't amount to an equivalence in the amounts of *information* required in the two systems for achieving the desired outcome. Von Hayek observed that enlightenment on the part of the central planner in market socialism amounts also to omniscience. If the planner is to implement the efficient outcome, he or she needs to know each household's demand curve and each firm's supply curve. That's a lot of information. How is the planner to obtain it? Perhaps by sending polite questionnaires to households and firms. But why should respondents tell the truth about themselves and their circumstances? Even if ingenious mechanisms could be devised for eliciting that information, there are costs involved in collating and transmitting the information. Markets are far more parsimonious in the use of information.

One can argue though that the job of the planner shouldn't be to mimic the market, but to select policy weapons (such as taxes and subsidies) that require less information than is available to an omniscient being. Even with limited knowledge, a planner could help to bring about states of affairs that are superior to those brought about by unbridled markets (Chapter 8).

Interdependent markets

Marshall's famous demand and supply curves mislead in one important way. Figure 8 could lead one to think that in an ideal market, the equilibrium price of X is unique. We confirmed that it is unique (it was P_E), but we had assumed the prices of all other goods and services in the economy to be given. If those prices were to be different, the demand and supply curves of X would be different, which in turn would imply that the equilibrium price would be different. But all those other prices depend on demand and supply in their respective markets. As markets are interdependent, we should study them together, not one by one, separately.

We continue to assume that transactions are verifiable, as is the quality of the goods produced, sold, and bought. In other words, ideal markets don't suffer from problems of adverse selection and moral hazard. Moreover, markets open *now* for *every* commodity, including primary factors of production, intermediate goods, and final consumption goods. Most commodities would be future goods, which means that contracts over their purchases and sales are signed in *forward* markets. Contracts in forward markets involve agreements over purchases and sales today for delivery at specified future dates. Saving and investing for the future and borrowing from the future would take place in those markets. Many of the commodities would be contingent goods. Contracts over their purchases and sales would be signed in *contingent* markets. Contracts in contingent markets involve agreements over their purchases and sales today for delivery at specified future dates, *if and only if* certain contingencies arise. The purchase and sale of insurance would take place in contingent markets. There is

uncertainty about future events, but in contingent markets people are able to purchase or sell goods and services at quoted prices that are tied to each and every eventuality. As payments have to be made now, no one faces uncertainty over their budget, nor do firms face any uncertainty over their profits.

What is the point of studying a world in which there is a market for every conceivable good? There are three reasons. First, studying it enables us to appreciate that certain features of economic life in the world we live in arise because of missing markets (such as bankruptcy; performance-related pay; limits imposed on you by firms on the amount of insurance or credit you can purchase even if you have the resources to buy more; unemployment (see below)). Second, we can gauge how much societies lose from the fact that there are missing markets. And third, we can explore policies and institutions that could partially compensate for the absence of certain markets. That is why it makes sense to begin the study of interdependent markets in our world by investigating a world where there is a competitive market for every commodity.

We are studying a private ownership economy here. Firms are owned by households. Firms' profits are distributed to households on the basis of the shares they own. Each household has a legal right also to a set of commodities (their human capital). Therefore, for any given set of prices, each household is able to compute its wealth. Households are price-takers and are obliged to purchase goods and services they can afford: their total expenditure must not exceed their wealth. Firms are price-takers and choose their production outlays so as to maximize their profits, which in the present context means the capitalized value of the flow of profits. (Traders can be thought of as firms too. Their purchases can be regarded as 'production' inputs, their sales as outputs.) A *market equilibrium* – economists call it a *competitive equilibrium* – is a set of prices quoted today for each and every commodity, such that the total demand for each equals its total supply. In equilibrium the information households and firms need to have in order to

participate effectively is parsimonious. A household needs to know its own 'mind', its endowment of goods and services, and the equilibrium prices – nothing else. Similarly, a firm needs only to know the technology available to it, the prices it has to pay for its inputs in production, and the prices of whatever it produces – nothing else. Equilibrium prices coordinate the production and allocation of all goods and services (who produces what and who consumes what).

Are there circumstances in which an equilibrium exists? Economists' search for an answer to the question has a history, dating back to the 19th century. The definitive answer was provided in the early 1950s, when several economists identified conditions (on households' and firms' characteristics) under which a competitive equilibrium exists. It was also shown that there is a close, but subtle, connection between the notion of a competitive equilibrium and that of an equilibrium agreement in a community (Chapters 2–3).

Excepting under very special circumstances, a competitive equilibrium is not unique. It isn't unique for much the same sort of reason as why equilibrium outcomes in communities are not unique (Chapter 2). Agreements in communities are mutually enforced by the use of social norms. The existence of more than one communitarian equilibrium reflects the fact that there is usually more than one set of self-confirming beliefs that people can harbour about one another's intentions. In ideal markets, agreements between buyers and sellers are enforced by the state exercising the rule of law. The existence of more than one competitive equilibrium reflects the fact that there is usually more than one set of prices at which demands for goods and services equal their supplies. Beliefs in communities and prices in markets are emergent features in two very different types of institutions. In Chapter 2, I explained the sense in which we don't yet have a satisfactory understanding of how beliefs form. You shouldn't be surprised that we don't yet have a satisfactory understanding of how prices would emerge in ideal markets.

The efficiency of ideal markets

Even though equilibrium in a market economy isn't unique, every competitive equilibrium is 'efficient'. As we are now studying all the markets together, the notion of efficiency is not as simple as in the market for a single commodity (X), but it can be stated in words.

By an *allocation* of goods and services we mean a complete specification of who produces what and who consumes what. We say that an allocation is *feasible* if, given the economy's endowments of assets, it can in principle be created in the economy. Let α be a feasible allocation. We say that α is *efficient* if there is no feasible allocation that *all* households would choose over α. The concept was introduced by the economist-sociologist Vilfredo Pareto, which is why efficiency in the above sense is widely known as *Pareto-efficiency*. It can be shown that a competitive equilibrium is Pareto-efficient.

As with households, so with nations. If there were no restrictions in international trade, competitive equilibria of the world economy would be Pareto-efficient. Details aside, this is at the heart of the theoretical case for free trade.

Market failure

Just as communities can fail to advance the interests of their members, markets can fail to allocate resources well. What households are able to achieve even in ideal markets depends on what they bring to the market place. Presumably, some households would be poorly endowed in goods and services, others richly so. Those endowments are inheritances from the past and they influence the outcome in the market place. Even though market allocations in competitive equilibrium are Pareto-efficient, they aren't necessarily equitable or just. It shouldn't be surprising that Pareto-efficiency is silent on distributive justice. Equity and efficiency are different ethical properties of allocations. An

allocation of goods and services where one self-regarding household is assigned everything is Pareto-efficient, whereas an allocation in which households have equal shares is more equal. An allocation could be at once egalitarian and not be Pareto-efficient; it could be both egalitarian and Pareto-efficient; and there are allocations that are neither egalitarian nor Pareto-efficient. It is this sort of reasoning, though abstract and technical, that lies at the heart of a widely accepted role for government (Chapter 8): devising and implementing policies that would be expected to bring about outcomes that are Pareto-efficient (for practical purposes, read 'tolerably non-wasteful') and egalitarian (for practical purposes, read 'free of hunger, ill-health, and illiteracy').

Even if we were to leave distributional issues aside, markets don't operate ideally in the world we know. Why? Three reasons stand out. First, as the production of public goods is vulnerable to the free-riding problem, markets are less than effective in supplying them. That said, there are deeper problems than 'free-riding' in the case of public goods. Take the rule of law, which is a public good. In the absence of the rule of law markets couldn't function (Chapter 2), which means that it would be absurd to allow it to be a marketable commodity. There are also cases involving environmental services (Chapter 7), where market transactions create externalities that can't be eliminated no matter how audaciously the state tries to redefine private property rights.

Monopoly

The second reason is that in some industries there is a single producer (monopoly) or at best only a few producers (oligopoly). Firms in an ideal market don't have anything left over after every production input has been paid for (wages, salaries, raw materials, repair and maintenance, charges imputed to machinery and equipment, interest payments on loans, and so on). Because a monopolist doesn't face competition from other firms, it's able to charge a price higher than P_E (Figure 8) and enjoy a profit.

Monopolists have a bad press in consequence. However, we need monopolists because profits from sales are the incentives firms must have if they are to spend resources in research and development (R&D), so as to create new products and invent cheaper ways of producing old products (which is a good thing). Moreover, monopolists try to maintain their leading position by engaging in R&D, thereby forestalling entry by rivals (a not-so-good thing). Unless they are curbed, though, monopolists would wish to more than just recoup those R&D expenses. In rich countries anti-trust laws have been legislated so as to prevent firms from doing that.

Monopolies are a necessary evil for another reason. There are commodities whose cost of production per unit produced declines with output. Economists call this phenomenon *economies of scale*.

9. A shopping mall in Becky's world

Infrastructure (road networks, rail tracks, power, sewage systems) provides examples. Communities can't afford to produce them because communities are small. In contrast, the market would produce them if its reach was large enough and the costs of collecting fees from users was small enough. A firm that produces infrastructure has to be large in order to enjoy low production costs. So private producers of infrastructure are often monopolies, or at best oligopolies. As Becky's world has grown richer and the reach of the market has widened, societies there have increasingly relied on private firms to supply infrastructure even as they have directed their governments to regulate producers in order that they don't earn monopoly profits. Transport networks are a case in point. Of course, when households make use of such infrastructure as a modern sewage system, they confer benefits on others (positive externalities), which may be why in Becky's world the local government usually provides the service. In Desta's world

10. A market in Desta's world

infrastructure, such as durable roads, are often absent because of a vicious causal circle: in the absence of a reliable network of roads, markets can't extend their reach; in the absence of markets, households are unable to engage in anonymous transactions; and because government corruption is rampant in the construction sector, roads that would last don't get built; so households remain in poverty.

Macroeconomic fluctuations

The third reason markets are far from ideal arises from a fact we noted earlier, that markets can support transactions only when transactions are verifiable. Markets for different qualities of a product, for example, can form only if quality can be verified. Moral hazard and adverse selection prevent markets from being formed, which is why few forward and contingent markets exist in the world we know. Households and firms are obliged to make decisions on the basis of the current value of their assets, the spot prices they face for goods and services, and the expectations they harbour about the prices (including wages) they will face when spot markets form in the future. As expectations can be held together by their own bootstraps, there can be more than one set of self-confirming expectations in the short run. Some lead to a reasonable utilization of the economy's productive capacity, others to slumps.

Analyses of slumps are the stuff of *macroeconomics*, which is concerned with the study of (national) economies considered in aggregate terms (Chapter 1). Historically, though, macroeconomics as a subject was devised to study *short-run* fluctuations in aggregate economic activity as measured in terms of such indices as output (GDP), employment, and the price level (which is the level of commodity prices, in the aggregate, in terms of money).

What are those fluctuations? Consider that since the Second World War, Becky's world has enjoyed improvements in the standard of living in a fairly uninterrupted way (Chapter 1). But GDP has been periodically less than potential GDP, which is the aggregate output

the economy would have produced if all the installed machinery, equipment, and all the available labour force at the time were to have been employed. During the Great Depression of the 1930s, the economic slump in Europe and the US was so deep that not only did factories and equipment lie idle, some 25–30% of the labour force couldn't find a job in the market place. What is the explanation behind slumps and the labour unemployment that can go with them?

Economists have offered many explanations. They are often seen as reflecting different schools of thought: Keynesian, new-Keynesian, Classical, new-Classical, Real Business Cycle theories, and so on; which is as it should be, because it would be most odd if all slumps were the same. Throughout the 1990s that post-war economic miracle, Japan, experienced an economic slump that has only now begun to show signs of ending. Over the past decade the official unemployment rate in France and that other post-war economic miracle, Germany, has been about 10%, while in the UK it has been 4–5%. The unemployment rate in the US has been in the region of 6% for a number of years. As you might expect, the countries differ in regard to labour laws, taxation, unemployment benefits, and social security; and Germany reunified at the beginning of the 1990s. Countries in Becky's world differ also in the mundane matter of what criteria to use for registering someone as unemployed. We should be astonished if one account could cover all slumps. Limitations of space forbid that we discuss macroeconomic fluctuations and the government's potential role in smoothing them at a high level of economic activity. That's a subject deserving of its own very short introduction. Nevertheless, it will be instructive to sketch a model that shows how that ubiquitous mental state, *expectations*, can play a role in bringing about slumps in the market place.

So consider a situation where, for one reason or other (perhaps because of rumours: Chapter 2), producers believe demand for their products will be low. It would then be in each producer's interest to

cut back production, run down inventories, and reduce the demand for labour. If the supply of labour is constant, there would be excess labour in the market place. If adjustments occur quickly, wages would fall. But if wages fall, then incomes fall, which then leads to a decline in the demand for goods and services at the level of prices with which we began our account. That decline in turn causes the price level to fall. But lower prices lead employers to lower their demand for labour, so that the original short-run expectations on the part of employers are confirmed. To put it another way, when producers expect prices and wages to move together, aggregate output doesn't respond much to a change in the price level. Each producer heaves a sigh of relief that he hadn't made a mistake in his (short-run) economic forecast, but would be justifiably anxious that times were bad.

In contrast, suppose for one reason or other producers believe demand for their products will be high. Then it would be in each producer's interest to maintain (even raise) production and build up inventories. An analogous piece of reasoning suggests that such beliefs could be self-confirming in the short run. Each producer would heave a sigh of relief that he hadn't made a mistake in his economic forecast, and would feel justifiably jubilant that times were good.

Problems are exacerbated if prices or wages are sticky. The economist Joseph Stiglitz has shown that the phenomena of moral hazard and adverse selection in the labour market can create conditions where real wages are rigid in the downward direction. If the real wage for a particular type of work is downwardly rigid and the demand for workers at that wage is less than the supply, obviously some workers will fail to get hired. Those who are fortunate to be hired are better off than those who are rejected. Economists call that state of affairs *involuntary unemployment*, to distinguish the situation from one where, say, someone is temporarily unemployed because he is searching for a better job than the one he had earlier. That wage rigidity will not bite if

producers, buoyed by high expectations, demand lots of labour. which is why exuberant expectations can lift an economy by their own bootstraps to full employment.

John Maynard Keynes, Michal Kalecki, and Bertil Ohlin were prominent among those economists who, in the 1930s, recommended active government engagement for reviving depressed economies. Their ideas were extended greatly by the economists James Meade, Paul Samuelson, and James Tobin, among others. One way to interpret the need for fiscal and monetary policies during severe slumps (taxes and subsidies, public investment, interest rates, credit facilities) is that they help to change the expectations people hold about the future. But finding the right combination of public policies can be a nightmare: different slumps require different palliatives, which is why macroeconomic stabilization continues to be a controversial subject.

Epilogue

I have used Becky's and Desta's experiences to show you how it can be that the lives of essentially very similar persons can become so different and remain so different. Desta's life is one of poverty. In her world people don't enjoy food security, don't own many assets, are stunted and wasted, don't live long, can't read or write, aren't empowered, can't insure themselves well against crop failure or household calamity, don't have control over their own lives, and live in unhealthy surroundings. Each deprivation reinforces the others, so that the productivity of labour effort, ideas, manufactured capital, and of land and natural resources are all very low and remain low. Desta's life is filled with *problems* each day.

Becky suffers from no such deprivation. She faces what her society calls *challenges*. In her world, the productivity of labour effort, ideas, manufactured capital, and of land and natural resources are all very high and continually increasing. Success in meeting each challenge reinforces the prospects of success in meeting further challenges.

We have seen, however, that despite the enormous differences between Becky's and Desta's lives, there is a unified way to view them, and that economics is an essential language for analysing them. It is no doubt tempting to pronounce that life's essentials can't be reduced to mere economics, but I hope I have convinced

you that economic reasoning is essential if we are to make sense of the bewildering variety of ways people everywhere try to make something of their lives. That some succeed while others fail is to be expected. What economics shows us is that neither personal failure nor personal success is entirely a matter of personal effort and luck. Success and failure lie at the intersection of the personal and the social. Of course, to say that is easy enough, but to uncover the pathways by which the personal and the social interact is immensely hard. I have tried to show you that it can nevertheless be done, and that without an understanding of those pathways, debates over national and international policies are unfruitful.

I am resisting the temptation to produce a list of the material things Desta needs, partly because they are all too obvious, but partly also because they serve only to satisfy proximate needs. That Becky's world shouldn't create roadblocks in Desta's (through trade restrictions, domestic agricultural subsidies, and so on) is also obvious and proximate. What is neither obvious nor proximate – the elusive bird we would all wish to catch for Desta – is for communities in her world to discover how to shape new avenues to do business with one another so as to increase their inclusive wealths.

In a moving discourse on the character of poverty at the 2001 Plenary Meeting of the Pontifical Academy of Social Sciences, Vatican, Justice Nicholas McNally of Zimbabwe urged us all to see poverty as a sense of fatalism to ever-increasing economic hardships in a changing, and elsewhere an often progressive, world. At that same meeting, the political scientist Wilfrido Villacorta suggested that the term 'poor' when applied to countries is perhaps no longer useful; that countries ought perhaps now to be classified in accordance with some such term as 'progressive', so that we may ask if they have the institutions, policies, and civic attitudes in place to enable people to improve their lot. Perhaps the best Becky's world can do for Desta's is to offer financial and technical assistance so as to promote and support local enterprises – including those

involving education and primary health care – that people there are all too keen to create even as they see from a distance how people elsewhere have been able to improve their conditions of living. And perhaps the best Desta's world can do for Becky's is to alert it to the enormous stresses economic growth there has put on Nature. There is, alas, no magic potion for bringing about economic progress in either world.