*The Economic Journal*, **115** (*November*), F300–F323. © Royal Economic Society 2005. Published by Blackwell Publishing, 9600 Garsington Road, Oxford OX4 2DQ, UK and 350 Main Street, Malden, MA 02148, USA.

# IS THE NEW IMMIGRATION REALLY SO BAD?*

*David Card*

This article reviews the recent evidence on US immigration, focusing on two key questions: (1) Does immigration reduce the labour market opportunities of less skilled natives? (2) Have immigrants who arrived after the 1965 Immigration Reform Act been successfully assimilated? Overall, evidence that immigrants have harmed the opportunities of less educated natives is scant. On the question of assimilation, the success of the US-born children of immigrants is a key yardstick. By this metric, post-1965 immigrants are doing reasonably well. Even children of the least educated immigrant origin groups have closed most of the education gap with the children of natives.

Over the past two decades economists' perceptions of US immigrants have shifted. In the 1970s, immigrants were viewed in a mainly positive light. Chiswick (1978) found that immigrant men earned as much as natives, despite having less education, and concluded that investments in on-the-job training made up for the gap in formal schooling. Grossman (1982) examined the impact of immigration on native wages and concluded that the effects were small. Subsequent research – most notably by Borjas (1985, 1995, 1999, 2003) – has chipped away at both conclusions and gradually led to a more negative picture of US immigration. The shift in perceptions has closely tracked changes in the national origin of US immigrants, often attributed to the 1965 Immigration Reform Act, and a widening gap between the language and culture of natives and immigrants (Borjas, 1999; Lazear, 1999). Concerns over immigration have also been heightened by the decline in low skilled wages in the US and the belief that some of this may be due to immigrant competition (Borjas *et al.*, 1997).

This article presents an overview and update of the US immigration literature, focusing on two central questions:

(1) Do immigrants harm the labour market opportunities of less skilled natives?
(2) How do today's immigrants perform in the US labour market, and are they successfully being 'assimilated'?

These questions are at the heart of the debate about immigration in many other countries – including most European nations – and insights from the recent US literature may prove useful in answering the questions elsewhere. My conclusion is that the 'revisionist' view of recent US immigration is overly pessimistic. The evidence that immigrants harm native opportunities is slight, while the fear that post-1965 immigrants will never assimilate is belied by the rather surprising educational success of their children.

* I am grateful to Christian Dustmann, Thomas Lemieux, Ethan Lewis, Stephen Machin and two anonymous referees for helpful suggestions, and to Florence Neymotin for outstanding research assistance. Partial funding for this work was provided by the NICHD.

## 1. The Characteristics of Immigrants

Most of the immigrants in Chiswick's (1978) landmark study had entered the US under the provisions of the Immigrant and Nationality Acts of 1924, which established national origin quotas with a strong bias in favour of Northern Europeans.[1] In the 1970 data analysed by Chiswick, 63% of immigrants were born in Europe or Canada (Card *et al.*, 2000, Table 6.3). The vast majority of working age immigrants in the US today arrived after the 1965 Immigration Act, which relaxed the quota system and established preferences for people with family members already in the country. The new law, coupled with declining supplies of potential immigrants from traditional source countries such as Britain, Germany and Italy, and increasing potential supplies from Mexico, Central America and Asia, have led to a shift in the ethnic composition of immigrants.[2] In 2000, only 13.6% of adult immigrants in the US were born in Europe, while 32% were born in Mexico, 16% in Central America or the Carribean, and 26.6% in Asia.

As emphasised by Borjas (1985, 1995), the skill characteristics of immigrants in the US are strongly related to their country of origin. For example, country of origin dummies explain 30% of the variation in average education levels among immigrants in the 2000 Census.[3] Reflecting the high fraction of immigrants from countries like Mexico, the Philippines, Vietnam and El Salvador (all of which supply relatively low education immigrants) immigrants as a whole have lower average schooling than natives. Table 1 compares the education distributions of natives and two subgroups of immigrants – those who had been in the US at least 5 years at the time of the 2000 Census, and those who had arrived more recently. The recent arrival group is not very different from the earlier arrivals, reflecting the relative stability of immigrant inflow composition since the late 1970s. Nevertheless, both groups have a much higher fraction of people with very low schooling than natives. The excess concentration of immigrants in the 'less than high school' category is balanced by relative shortfalls in the number who completed high school but have no further formal schooling (24% of immigrants versus 39% of natives) and the number with 1–3 years of college (about 15% of immigrants versus 24% of natives). At the upper end of the education distribution immigrants and natives are very similar, though immigrants are slightly more likely than natives to hold an advanced degree.

The patterns in Table 1 point to two important conclusions. First, labour market competition from immigrants is most intense for natives with the lowest levels of

[1] The law was influenced by research of Brigham (1923), who classified immigrants into four racial categories: 'Nordic', 'Alpine', 'Mediterranean' and 'Asian', and argued that members of the Alpine and Mediterranean races had lower intelligence than Nordics. The influence of Brigham's work is illustrated by a headline announcing the new law in the *Los Angeles Times* (13 April 1924): 'Nordic Victory is seen in Drastic Reduction'.

[2] The 2000 US Census has information on exact arrival year, and I used this information to examine changes in the fraction of immigrants from different countries before and after 1965. The fraction of Mexican immigrants, for example, is 20.1% for 1963–5 arrivals and 20.1% for 1966–8 arrivals. A sharp impact of the law is not discernable in these data, though there is a trend between 1950 and 1975.

[3] Education levels of immigrants are correlated with education levels in the home country but there are many interesting exceptions. For example, immigrants from India have the highest average education (average of 15.6 years of completed schooling). Immigrants from Russia are a very close second.

© Royal Economic Society 2005

Table 1

*Educational Attainment of Natives and Immigrants in the 2000 Census*

| | | | Immigrants: | | |
|---|---|---|---|---|---|
| Highest Education | All | Natives | All | In US 5+ yrs. | In US <5 yrs. |
| Dropouts | 17.8 | 14.7 | 38.2 | 37.6 | 40.3 |
| *Of which:* | | | | | |
| 1–8 Years completed schooling | 5.3 | 2.8 | 21.5 | 21.3 | 22.2 |
| 9–11 Years completed schooling | 12.6 | 11.9 | 16.7 | 16.3 | 18.1 |
| High school diploma | 37.2 | 39.2 | 24.0 | 24.3 | 23.1 |
| Some college (including Associates degree) | 22.6 | 23.7 | 15.5 | 16.3 | 12.5 |
| Bachelors degree | 14.8 | 15.0 | 13.2 | 12.9 | 14.0 |
| Advanced degree | 7.7 | 7.5 | 9.2 | 8.8 | 10.1 |
| *Of which:* | | | | | |
| Masters degree | 5.2 | 5.2 | 5.4 | 5.1 | 6.3 |
| Professional degree | 1.7 | 1.6 | 2.3 | 2.2 | 2.4 |
| Doctorate | 0.8 | 0.7 | 1.5 | 1.5 | 1.4 |

*Note.* Based on tabulations of individuals age 18–64 in the 2000 Census. High school diploma group includes people with less than 1 year of college (8% of the overall sample).

education. While immigrants comprised only 13% of the working age population in 2000, they made up 28% of the population with less than a high school diploma, and over half of all those with less than 8 years of schooling. For this reason, most studies of immigrant competition have focused on the impacts on very low skilled natives.[4] Second, the positive effect of immigrants on the relative supply of the people with the lowest levels of education is offset by negative effects on the relative supply of people in the middle of the education distribution, with no effect on the relative supply of those with a bachelor's degree or higher. Arguably, then, immigrant inflows have exerted *upward* pressure on the wage gap between high school graduates and dropouts, and *downward* pressure on the college–high school wage gap.

## 2. Immigrant Competition and the Labour Market Outcomes of Low Skilled Natives

### 2.1. *Conceptual Issues*

There are two main approaches in the literature to estimating the impact of immigration on native workers. The first – pioneered by Grossman (1982) – relates differences in the relative structure of wages in different local labour markets to differences in the relative supply of immigrants.[5] The advantage of this approach is that there are many local labour markets in the US with different fractions of immigrants and samples from the Decennial Censuses can be used to estimate relatively rich models of the local wage structure. The disadvantage is that cities are

[4] If immigrants had the same education and other skill characteristics as natives, and if capital is elastically supplied to the relevant labour market, then standard economic models would predict no impact on native wages – see Altonji and Card (1991).

[5] This approach is closely related to work on internal migration and local wage structures, including Sjaastad (1962), Topel (1986) and Dahl (2002).

© Royal Economic Society 2005

not isolated economies: people, goods and services all flow between cities, and depending on how sensitive these flows are to differences in local wages or prices, comparisons across cities may reveal a lot or little about the underlying parameters that theoretically determine the effects of immigration on native opportunities. The second approach is a time series method, relating changes over time in immigrant densities to economy-wide measures of relative labour market outcomes. The advantage of this approach is that it can potentially reveal the impact of immigration even when the local markets approach 'fails' because of intercity factor mobility or trade (Borjas *et al.*, 1996).[6] The disadvantage is the absence of a clear counterfactual. Inferences from the macro time series approach rely on assumptions about the trends in factors like the degree of skill bias in recent technological change.

Early studies using the local labour markets approach (Grossman, 1982; Borjas, 1987; Altonji and Card, 1991; Lalonde and Topel, 1991) treated 'immigrants' as one type of labour and distinguished between various subgroups of natives in the same city. While simple and intuitively appealing, there are two obvious problems with this framework. One is immigrant heterogeneity: in some cities immigrants are actually more highly skilled than natives, whereas in others the reverse is true.[7] Thus, it is important to classify the immigrant populations in different cities according to their skill levels. A second problem is that conventional economic models imply that immigrants should only affect relative wages to the extent that they distort the relative supplies of different skill groups. If inflows of unskilled immigrants cause unskilled natives to move out, for example, there may be little discernable effect of immigration on the local wage structure, even though relative demand curves at the local level are downward sloping.

A potentially better way to model the impact of immigration is to assign immigrants and natives to skill groups and to assume that within skill groups, immigrants and natives are perfect substitutes (Jaeger, 1996; Card, 2001).[8] Following this approach, the first step in evaluating the impact of immigration is to assess the effect of immigrants on the relative supplies of different skill groups in different cities. The second step is to then relate the relative wages for different skill groups to the relative supplies in the local labour market. The maintained assumption – that immigrants and natives are perfect substitutes within skill groups – can be tested by examining the stability of immigrant–native wage differences across different labour markets.[9]

[6] Of course the same arguments about intercity trade and factor mobility also apply across countries. Models of international trade often imply that relative wages in a country are independent of the relative supplies of different skill groups, at least in some range. See Kuhn and Wooten (1991).

[7] Card (2001, p. 23) notes that immigrant men earned more than native men in one third of the largest US cities in 1990.

[8] An alternative approach is to assume that workers with different characteristics sell 'bundles' of skills, where the number of latent skills is small. This approach has been suggested to study the structure of wages by age and education (Welch, 1969) but becomes complex once allowance is made for non-linear pricing of the bundles (Heckman and Scheinkman, 1987).

[9] Under the perfect substitutes assumption, for example, the wage gap between immigrants with less than 12 years of schooling and native high school dropouts should be constant (controlling for age, time in the US etc.). Even if the perfect substitutes assumption is true, the wage gap could vary across cities if immigrants in different cities possess different unobserved skills.

© Royal Economic Society 2005

### 2.2. *Effects of Immigration on Relative Supply of Low Skilled Labour*

Some indication of the impact of immigration on the relative size of the dropout labour force in different cities is presented in Table 2. The Table shows the fractions of immigrants in all cities and in 15 selected cities in 1980 and 2000, along with the fractions of immigrants and natives with less than 12 years of completed schooling, and the overall fractions of the working age population in each city with less than 12 years of schooling. The data for all cities in the first row of the Table reveals three interesting facts.[10] First, the fraction of immigrants in US cities has roughly doubled since 1980, from 9.5% to 18%. Second, in both 1980 and 2000, slightly more than one-third of immigrants had less than a high school education. Third, the fraction of natives with less than a high school education has fallen sharply, more than offsetting the inflow of less educated immigrants.[11] Thus, despite the upward pressure on the relative supply of dropouts caused by immigration, the overall fraction of dropouts in urban areas fell from 24.3% in 1980 to 17.7% in 2000.

There is a lot of cross-city variation in these patterns, however. The dramatic increase in the fraction of low education immigrants in Los Angeles, for example, led to a *rise* in the fraction of high school dropouts in the local population. In Pittsburgh and Cleveland, on the other hand, immigrant densities are low and have fallen over the past two decades, so the the trend in the overall fraction of dropouts closely parallels the trend among natives. Most high immigration cities, including New York, Houston, San Francisco and Miami, experienced relatively small declines in the fraction of dropouts between 1980 and 2000, whereas most low immigration cities, including Philadelphia, Detroit and Atlanta, experienced bigger reductions.

The question of whether inflows of unskilled immigration have systematically affected the relative supply of dropout labour in different cities is addressed in Figure 1. As motivation for this Figure, note that the share of dropouts in the local working age population in city $c$, $s^d(c)$, is the sum of the share of native dropouts $s^{dN}(c)$ and the share of immigrant dropouts, $s^{dI}(c)$. An interesting descriptive regression relates the overall dropout share in a city to the share of immigrant dropouts:

$$s^d(c) = \alpha + \beta s^{dI}(c) + e(c),$$

where $e(c)$ is a residual. If inflows of less educated immigrants are offset by outflows of native dropouts (or if less educated immigrants tend to move to cities where there is a bigger positive trend in the educational attainment of the native population), immigration will have little impact on the overall dropout share and the coefficient $\beta$ will be close to 0. If mobility flows of native dropouts (and trends in native educational attainment) are uncorrelated with the inflow rate of low skilled immigrants, the coefficient $\beta$ will be close to 1.

[10] The set of all cities includes 272 Standard Metropolitican Statistical Areas in 1980 and 325 Metropolitan Statistical Areas in 2000.

[11] This is largely a cohort effect, reflecting the steady rise across cohorts in the fraction of high school graduates until cohorts born in the 1950s. See Card and Lemieux (2000, 2001).

© Royal Economic Society 2005

Table 2

*Immigrant Densities and the Relative Fractions of Less Educated Workers, Selected Cities 1980 and 2000*

| | % Dropouts 1980 | | | | % Dropouts 2000 | | | |
|---|---|---|---|---|---|---|---|---|
| | % Immigrants in city | Among immigrants | Among natives | % Dropouts in city | % Immigrants in city | Among immigrants | Among natives | %Dropouts in city |
| All Cities | 9.5 | 38.9 | 23.0 | 24.3 | 18.0 | 37.8 | 13.0 | 17.7 |
| New York | 23.2 | 39.6 | 26.4 | 29.5 | 41.8 | 32.0 | 17.5 | 23.6 |
| Los Angeles | 25.3 | 49.2 | 19.5 | 27.0 | 47.8 | 47.2 | 14.4 | 30.1 |
| Chicago | 11.8 | 44.0 | 23.7 | 26.1 | 21.2 | 37.7 | 11.8 | 17.3 |
| Philadelphia | 4.9 | 31.1 | 25.2 | 25.5 | 8.3 | 21.9 | 13.3 | 14.0 |
| Detroit | 6.3 | 34.3 | 25.8 | 26.4 | 8.6 | 26.2 | 14.4 | 15.5 |
| Houston | 9.4 | 46.1 | 25.1 | 27.1 | 26.0 | 51.6 | 15.5 | 24.9 |
| Dallas | 5.1 | 43.7 | 24.3 | 25.3 | 19.7 | 54.2 | 13.6 | 21.6 |
| Washington DC | 9.6 | 18.3 | 16.8 | 16.9 | 20.6 | 25.8 | 9.9 | 13.2 |
| Boston | 10.3 | 35.6 | 15.6 | 17.6 | 17.8 | 24.0 | 7.9 | 10.7 |
| San Francisco | 17.0 | 28.4 | 14.3 | 16.7 | 36.4 | 26.6 | 6.9 | 14.0 |
| Miami | 41.1 | 38.5 | 23.3 | 29.6 | 61.2 | 33.3 | 18.6 | 27.6 |
| Atlanta | 3.1 | 14.8 | 24.9 | 24.6 | 12.1 | 34.0 | 13.6 | 16.1 |
| Pittsburgh | 2.6 | 28.1 | 21.5 | 21.7 | 2.6 | 12.5 | 10.4 | 10.5 |
| Cleveland | 5.8 | 34.5 | 24.0 | 24.6 | 5.6 | 19.7 | 14.2 | 14.5 |

*Note.* Based on tabulations of 1980 and 2000 Census public use files. 'All cities' includes 272 Standard Metropolitan Areas in 1980 and 325 Metropolitan Statistical Areas in 2000. Boundaries of some cities change between 1980 and 2000. Samples include individuals age 18–64 only.

© Royal Economic Society 2005

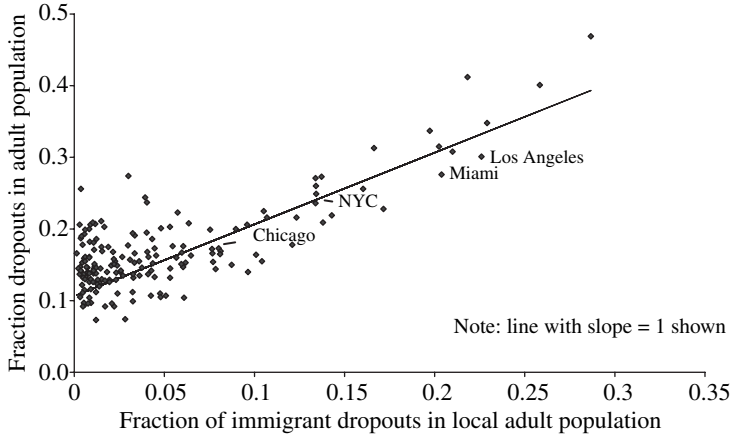


Fig. 1. *Fraction of Immigrant Dropouts and Overall Fraction of Dropouts*

As suggested by the data in Table 2, the scatter of points in Figure 1 is more consistent with a value of $\beta = 1$ than $\beta = 0$. For reference, the graph shows a restricted regression line in which the slope is set to 1. This benchmark provides a reasonable fit, although it tends to under-predict the fraction of dropouts in cities with few immigrant dropouts. In fact, a univariate regression across 325 cities yields an estimate of $\beta$ equal to 0.79 (with a standard error of 0.03). When controls are added for city size and the fraction of blacks in the city population, the estimate of $\beta$ rises to 1.01 (with a standard error of 0.03).[12]

Findings similar to those in Figure 1 are reported in Card (2001), using data for 175 cities from the 1990 Census, and defining low skilled workers as those who are predicted to work in low wage occupations based on their age, education, gender, race, ethnicity, and country of origin. In that paper I looked specifically at mobility responses of natives to recent immigrant inflows, and concluded that each new immigrant in the lowest skill group adds about 1 to the net supply of low skilled workers in a city. Focusing on longer term mobility, Card and DiNardo (2000) use a three skill group taxonomy to examine the effect of immigrant inflows on native migration rates between 1980 and 1990. Again, the conclusion is that native mobility has virtually no offsetting effect on the relative supply shocks created by immigration. Indeed, once controls are introduced for city-specific trends in native population growth, the data suggest that native mobility responses may slightly reinforce the relative supply effects of immigration (Card and DiNardo, 2000, Table 2).

A concern with the interpretation of the data in Figure 1 is that unskilled immigrants may be drawn to cities where the relative demand for dropout labour is increasing. One way to address this concern partially is to use historical immigration patterns as instruments for current inflows (Altonji and Card, 1991; Card, 2001). For example, Card and DiNardo (2000, Table 2) report models in which

[12] The size controls are the log of the adult population and its square. The regressions are estimated by weighted least squares using the size of the population as weights.

© Royal Economic Society 2005

low skilled immigration inflows between 1980 and 1990 are instrumented by the fraction of Mexican immigrants in the city in 1970. These models give no indication that the OLS estimates are biased by local demand shocks.

Although the results in Figure 1 suggest that immigration has a powerful effect on local labour markets, some researchers have argued the opposite. Borjas *et al.* (1997), for example, claim that native mobility effectively undoes any local impact of immigrant inflows.[13] Importantly, however, Borjas *et al.* (1997) focus only on total population, not on the relative size of different skill groups. Looking at the California and Texas cities in Table 2 it is very hard to argue that immigration has not had some impact on the fraction of less educated people in the local labour market. To the best of my knowledge, in fact, all studies that have looked at the *relative* supply impacts of immigration find very large effects on local labour markets.

### 2.3. *Impacts on Less Skilled Natives*

Once it is established that low skilled immigration increases the relative supply of unskilled workers in local labour markets, the next step is to measure the effects on the relative labour market outcomes of less skilled workers. A simple theoretical framework for this analysis consists of a local production function and a set of per capita labour supply functions for members of each skill group.[14] Such a model implies that the relative wages and relative employment rates of workers in any two skill groups depend on the relative fractions of the groups in the local population. For example, comparing high school graduates to dropouts, a relative supply/demand model implies that

$$\log(w^d/w^H) = a_1 + b_1 \log(s^d/s^H) + u_1 \tag{1a}$$

$$\log(E^d/E^H) = a_2 + b_2 \log(s^d/s^H) + u_2, \tag{1b}$$

where $w^d$ and $w^H$ are the mean wages of dropouts and high school graduates in a city, $E^d$ and $E^H$ are the mean employment-population rates of the two groups, and $s^d$ and $s^H$ are the shares of dropouts and high school graduates in the local population. The coefficients $b_1$ and $b_2$ depend on the elasticity of substitution between skill groups ($\sigma$) and on the elasticity of the per-capita labour supply functions ($\varepsilon$):

[13] Likewise Frey (1995, 1996) reports a strong correlation between immigrant inflows and native outflows. Wright *et al.* (1997) re-examine Frey's specifications and show that his results disappear once controls for city size are added to the model.

[14] See e.g., Card (2001). Specifically, consider a production function for local output $y = [\Sigma_j (e^j N^j)^{(\sigma-1)/\sigma}]^{\sigma/(\sigma-1)}$ and supply functions $\log(N^j/P^j) = \varepsilon \log w^j + \varphi^j$, where $N^j$ is the number of people employed in skill group $j$, $w^j$ is the wage of group $j$, $e^j$ is a relative demand shock, $P^j$ is the population of skill group $j$, and $\varphi^j$ is a local supply shock. These equations imply a relative labour demand curve

$$\log(N^d/N^H) = -\sigma \log(w^d/w^H) + (\sigma - 1)\log(e^d/e^H),$$

and a relative labour supply curve

$$\log(N^d/N^H) = \log(P^d/P^H) + \varepsilon \log(w^d/w^H) + \varphi^d - \varphi^H.$$

© Royal Economic Society 2005

$$b_1 = -1/(\sigma + \varepsilon), b_2 = -\varepsilon/(\sigma + \varepsilon).$$

If local labour supplies are perfectly inelastic ($\varepsilon = 0$) then (1*a*) reduces to the familiar model used in studies of education-based wage gaps (Katz and Murphy, 1992).

Apart from the potential problem posed by unobserved relative demand and supply shocks, the key problem for interpreting estimates based on (1*a*) and (1*b*) is that the slope of the local relative demand curve may be uninformative about the degree of substitutability between skill groups. In particular, a Hecksher-Olin style model of local economies suggests that relative wages may be uncorrelated with relative labour supplies, even though at the national level relative wages are negatively related to relative supplies. I return to this point below.

Some simple reduced form evidence on the impact of unskilled immigration on relative wages and relative employment of low skilled natives is presented in Figures 2 and 3. Figure 2 shows the gap in mean log wages between native male high school graduates and native male dropouts in each of the 175 largest US cities in 2000, plotted against the fraction of immigrant dropouts in the local labour market.[15] Figure 3 shows the log of the ratio of the employment-population rates of high school graduates and dropouts, also plotted against the fraction of immigrant dropouts.[16] The graph for relative wages shows little connection between native wages and the fraction of immigrant dropouts, while the graph for relative employment suggests a slightly positive correlation. Estimated regression models fitted over all 325 cities confirm this impression: the estimated regression slope for wages is statistically insignificant (slope = −0.06; standard error = 0.06) while the estimated slope for relative employment is significantly positive (slope = 0.07, standard error = 0.02), suggesting a small negative impact of more unskilled immigrants on native dropout employment.

Formal estimation results for the local demand/supply system are presented in Table 3, which shows both ordinary least squares (OLS) estimates and instrumental variables (IV) estimates using the fraction of immigrant dropouts as an instrument for the relative supply of high school versus dropout labour. The IV results are quite similar to the OLS results, and nearly as precise, reflecting the strong first stage.[17] The estimates suggest there is no relationship between the relative supply of high school dropouts and their relative wages, but point to a small negative impact of relative supply on relative employment. These findings

[15] The wage gaps were estimated as follows. First, separate models were estimated for mean log wages of native male dropouts and high school graduates, including unrestricted city dummies (for 325 MSAs) a quartic function of age, dummies for black race and Hispanic ethnicity, and interactions of the black and Hispanic dummies with age and ages squared. The wage gaps are estimated as the differences in the city dummies from these two models (re-normalised to have the same mean as the raw data).

[16] The local employment population rates of the two groups were estimated as the city dummies in separate linear probability models for the event of working in the previous year, in models with the same control variables as the first stage wage models.

[17] The coefficient of the fraction of immigrant dropouts in a model for the log relative supply of high school versus dropout labour is −6.10, with a standard error of 0.20 (F-statistic = 902). The fraction of immigrant dropouts explains 74% of the variation in the relative supply variable across the 325 MSAs in the 2000 Census.

© Royal Economic Society 2005

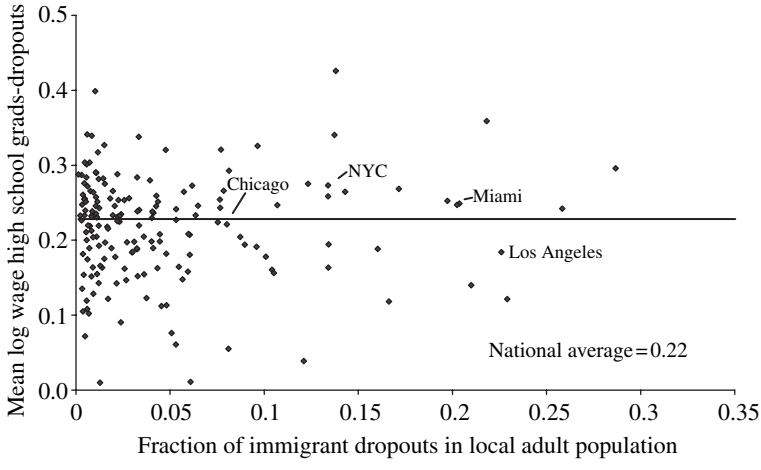


Fig. 2. *Relative Wage of High School Graduates and Dropouts vs. Fraction Low Education Immigrants*

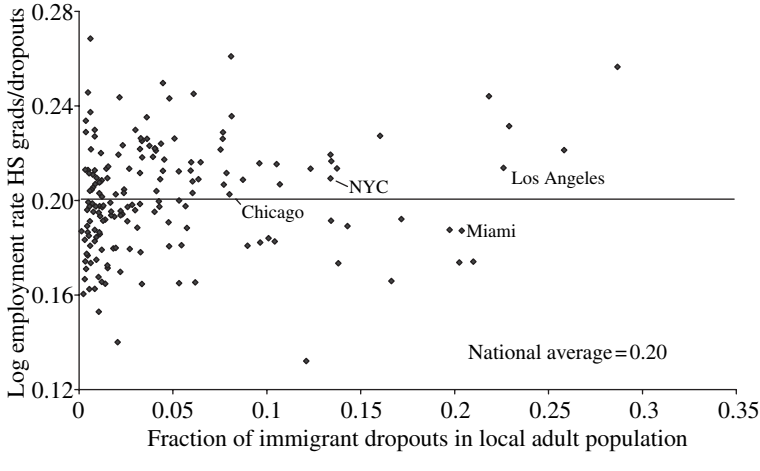


Fig. 3. *Relative Employment of High School Graduates and Dropouts vs. Fraction Low Education Dropouts*

are quite similar to the results in Card (2001) using data for 1990 and occupation-based skill groupings.[18] As in most of the previous work looking at local labour market impacts of immigration, there is a surprisingly weak relationship between immigration and less skilled native wages (Friedberg and Hunt, 1995; Borjas, 1994). This pattern has persisted despite steady inflows of relatively unskilled immigrants that have created ever greater differences across cities in the relative supply of dropouts over the past two decades.

[18] In my 2001 study I presented estimates for 6 occupation groups in 175 cities. Interestingly, the estimated relative supply effects were typically smaller when the sample was restricted to low skilled occupations.

© Royal Economic Society 2005

Table 3

*Effects of Relative Supply on the Relative Wages and Employment of Native Male Dropouts*

| | Relative outcomes of native male dropouts: | | | |
|---|---|---|---|---|
| | Fraction employed last year | | Mean log hourly wage | |
| | OLS | IV | OLS | IV |
| Log relative supply of dropouts vs. high school graduates | −0.013 | −0.012 | 0.006 | 0.010 |
| | (0.003) | (0.003) | (0.009) | (0.010) |
| R-squared | 0.056 | 0.035 | 0.001 | 0.003 |

*Note.* Standard errors in parentheses. All models fit to sample of 325 Metropolitan Statistical Areas using weighted least squares. City data are derived from the 2000 Census public use files and pertain to individuals aged 18–64. Outcomes are adjusted differences in employment-population or mean log wages between high school dropouts and high school graduates – see text. Instrument is fraction of low education immigrants in city.

### 2.4. *Explaining the Absence of Local Labour Market Impacts*

A variety of explanations have been offered for the finding that wages of less skilled natives are insensitive to the relative supply pressure created by unskilled immigrants. The first is unobserved relative demand shocks, which enter the relative wage and employment equations and are potentially correlated with the relative share of low skilled workers.[19] The leading solution to this problem is to instrument relative supply (or the relative number of low skilled immigrants) with information on historical immigration patterns. Immigrants from a given source country tend to go to the same places they went many years ago, and relative skill levels of the immigrants from a country are highly correlated over time, so instruments based on historical immigration patterns have reasonable predictive power. My reading of the evidence is that instrumenting sometimes moves the coefficients in the 'right direction', but does not change the conclusion that immigrant impacts are small; see for example, Lewis (2003) who analyses changes in relative wages in major cities between 1980 and 1990 using OLS and IV methods.

A second explanation is that, as predicted by a Hecksher-Ohlin (HO) model, variation in the relative supply of unskilled labour across local labour markets is absorbed by changing industry structure. As pointed out by Lewis (2003), the magnitude of any HO-style adjustments can be calculated by looking at data on industry shares across cities. To illustrate this point, start with an identity that expresses the overall fraction of dropouts employed in a given city, $s^d(c)$, as a weighted sum of the industry shares in the city, times the dropout intensity in each industry:

[19] For example, using the model outlined in footnote 14, the residual in the relative wage equation is

$$u_1 = (\sigma - 1)/(\sigma + \varepsilon)\log(e^d/e^H) - (\varphi^d - \varphi^H)/(\sigma + \varepsilon).$$

© Royal Economic Society 2005

$$\begin{aligned} s^d(c) &= 1/N(c)\sum_i N_i^d(c) \\ &= \sum_i [N_i(c)/N(c)][N_i^d(c)/N_i(c)] \\ &= \sum_i \lambda_i(c) s_i^d(c), \end{aligned} \tag{2}$$

where $N(c)$ is total employment in city c, $N_i^d(c)$ is the number of dropouts employed in industry $i$ in city $c$, $N_i(c)$ is total employment in industry $i$ in city $c$, $\lambda_i(c) \equiv N_i(c)/N(c)$ is the employment share of industry $i$ in city $c$, and $s_i^d(c) = N_i^d(c)/N_i(c)$ is the share of dropout workers in industry $i$ in city $c$. It follows that the gap between $s^d(c)$ and the national average fraction of dropouts, $s^d$, can be written as the sum of a 'between industry component' $B$ representing shifts in the relative fractions of different industries in the city, a 'within industry component' $W$, representing shifts in the relative fraction of dropout workers in each industry, and an interaction component $I$:

$$s^d(c) - s^d = B(c) + W(c) + I(c), \tag{3}$$

where

$$\begin{aligned} B(c) &= \sum_i s_i^d[\lambda_i(c) - \lambda_i] \\ W(c) &= \sum_i \lambda_i[s_i^d(c) - s_i^d] \\ I(c) &= \sum_i [\lambda_i(c) - \lambda_i][s_i^d(c) - s_i^d]. \end{aligned}$$

The HO theorem states that under certain conditions *all* of the variation in the share of dropout labour across cities can be absorbed by expansion or contraction of high-dropout-intensity industries (i.e., via the $B(c)$ term), with no city-level variation in relative wages or the dropout intensity of any particular industry.[20]

In Card and Lewis (2005), we used data on employment classified by 3 digit industry from the 2000 Census to compute the terms in (2) for each of 150 larger cities. We then performed a series of regressions:

$$B(c) = a_B + b_B[s^d(c) - s^d] + e_B(c) \tag{4a}$$

$$W(c) = a_w + b_w[s^d(c) - s^d] + e_w(c) \tag{4b}$$

$$I(c) = a_I + b_I[s^d(c) - s^d] + e_I(c). \tag{4c}$$

Since (3) is an identity, $b_w + b_B + b_I = 1$. A strict version of HO implies $b_B = 1$.

Figure 4 plots the between-industry component $B(c)$ against the excess fraction of dropouts in each of the 150 larger MSAs. For reference, the Figure also shows a

[20] These conditions would include infinitely elastic supplies of capital, perfectly integrated product markets, and the existence of at least one industry that produces a tradeable good or service that has a dropout intensity that exceeds the maximum dropout share in any city.

© Royal Economic Society 2005

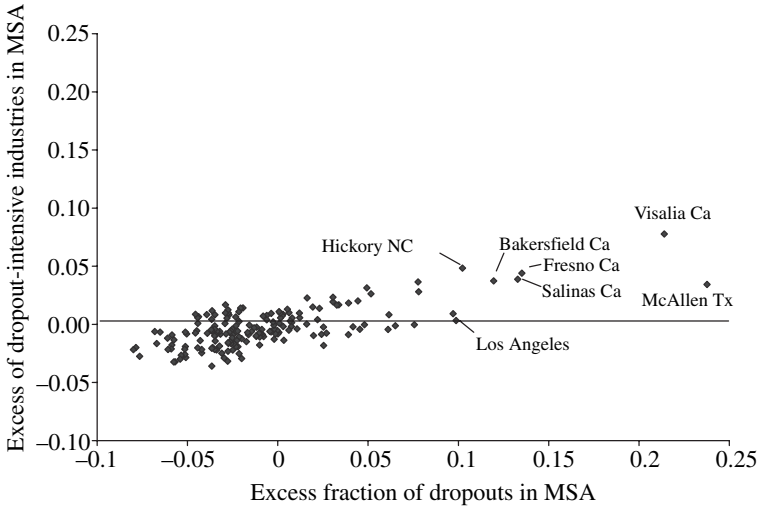


Fig. 4. *Contribution of Between-Industry Component to Absorption of Dropouts*

horizontal line: if changing industry structure accounted for none of the absorption of immigrants the points would lie along this line. Although the points suggest an upward-sloping relationship, the slope is relatively modest, suggesting that changing industry structure accounts for only a small share of the absorption of dropouts. Indeed, the OLS estimate, reported in the first column of Table 4, is 0.22, and is significantly different from 1. By contrast, Figure 5 plots the within-industry component $W(C)$ against the excess fraction of dropouts in each city. This component is more highly correlated with the dropout share: as shown in column 2 of Table 4, the estimate of $b_w$ is 0.76. Though not shown in a Figure, the interaction terms are relatively small and essentially uncorrelated with differences across cities in the share of dropout workers. The estimate of $b_I$ in column 3 of Table 4 is 0.02 (with a very small R-squared, 0.03).

The MSAs with relatively high dropout shares are labelled in Figures 4 and 5. Interestingly, most of these MSAs are comprised of counties in California and Texas with substantial agricultural employment. Since agriculture relies on the availability

Table 4

*Regression Models Measuring Cross-City Absorption of Excess Dropout Workers*

| | Effect across all industries: | | | Industry-specific expansion: | | |
|---|---|---|---|---|---|---|
| | Between industry (1) | Within industry (2) | Interaction (3) | Agric. (4) | Apparel & textiles (5) | Low skill services (6) |
| Excess fraction of dropout employment in city | 0.22 (0.02) | 0.76 (0.03) | 0.02 (0.01) | 0.09 (0.02) | 0.05 (0.01) | 0.03 (0.01) |
| R-squared | 0.37 | 0.84 | 0.03 | 0.17 | 0.24 | 0.33 |

*Note.* All models estimated on sample of 150 larger MSAs, using 264 industry cells per city in columns 1–3. Regressions are weighted by city size. See text for definitions of industries used in columns 4–6.

© Royal Economic Society 2005

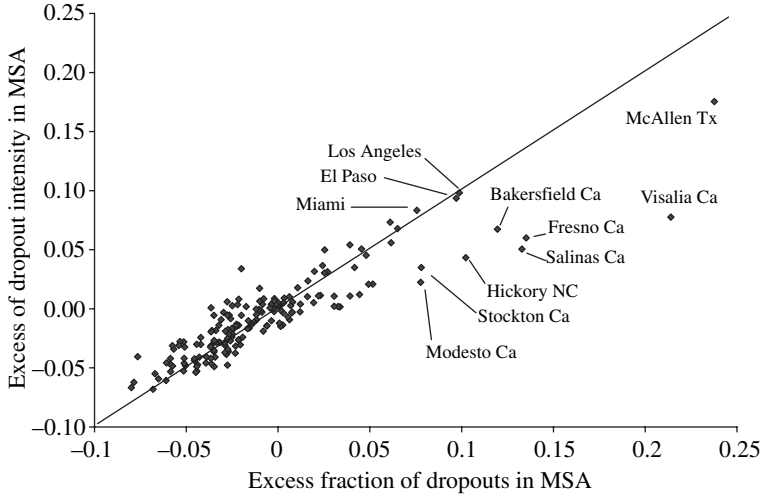


Fig. 5. *Contribution of Within-Industry Component to Absorption of Dropouts*

of land resources, it is debatable whether the high employment shares of agriculture in these MSAs represents a *reaction* to abundant supplies of less-educated labour. Rather, it seems more likely that the relative supplies of less-educated labour in these MSAs are driven by the availability of farm jobs.

The framework of (3) can be used to examine the contribution of the changing scale of specific industries to the absorption of local supplies of dropout labour. For example, the contribution of industry $i$ is $s_i^d[\lambda_i(c) - \lambda_i]$, which is excess employment share of the industry in city $c$ relative to its national average share, multiplied by the average dropout intensity of the industry. Columns 4–6 of Table 4 show estimates of models similar to (4*a*), focusing on the absorption contributions of agriculture, textiles apparel and footwear industries, and a set of low-skilled service industries.[21] These 3 industry clusters together account for most of the total between industry effect: agriculture alone accounts for nearly one-half. Overall, though there is some evidence that textiles and apparel manufacturing tends to cluster in cities with high dropout shares, these results suggest that most of the absorption of unskilled labour across cities occurs within very narrow industries. Apart from a few small sectors it is difficult to find much evidence of HO-style industry adjustment across cities.

Similar conclusions were reached by Lewis (2003), who examined changes in the relative absorption of 4 education groups over the 1980–90 period. Lewis used Census data to estimate first-differenced versions of (4*b*) for each skill group.[22] He

[21] We include textiles, apparel, knitting mills, footwear, and leather industries as apparel, and the following as 'low skilled services': building services, landscaping services, carwashes, landscaping, dry cleaning and laundry services, private household services, and other personal services.

[22] One difference is that Lewis regresses the between-industry effects on the population share of the skill group in the local labour market, rather than the employment share. An advantage of a first differenced approach is that it eliminates the confounding caused by permanent factors like differences in the amount of agricultural land in an MSA.

© Royal Economic Society 2005

also compared OLS estimates to IV estimates that used immigrant inflows based on historical immigration patterns as instruments for the changes in the relative shares of each skill group. As in the 2000 cross-section, the industry composition effects over the 1980–90 period are only weakly related to local skill-group-specific population growth. Lewis' estimates of $b_B$ for manufacturing industries (which are arguably best able to respond to local factor availability) are very close to 0, while his estimates for all industries range from 0 to 0.08. He also reports parallel specifications in which the dependent variable is the within-industry relative employment term. These are much more strongly correlated with relative population growth, accounting for 90% of the adjustment to skill-group specific relative supply shocks.

The evidence suggests that HO-style changes in industry structure play relatively little role in explaining how cities like Los Angeles were able to absorb massive inflows of relatively uneducated immigrant workers over the past two decades. Instead, most of the less-educated labour was absorbed by city-specific within-industry increases in dropout intensity, which took place despite any corresponding changes in the relative wages of dropout workers.

One possible explanation for this pattern is that local relative demand shocks for dropout workers are 'caused' by the presence of low skilled immigrants. For example, Acemoglu's (1998) model of endogenous technological change suggests that firms will innovate in a direction to take advantage of more readily available factors, even in the absence of relative wage changes. Beaudry and Green's (2003) model of technological adoption has a similar flavour. Lewis (2004) presents some of the first direct evidence for this mechanism, using data on the number of advanced technologies adopted by manufacturing plants in the late 1980s and early 1990s. He finds that controlling for very detailed (4 digit) industry effects, the adoption of advanced technologies by individual plants is significantly reduced by the presence of a greater relative supply of unskilled labour in the local labour market. These results are potentially consistent with the evidence on within-industry absorption in Table 4. More work is clearly needed to understand better how firms choose which technologies to use and whether the choice is influenced by the relative availability of different skill groups.

### 2.5. *Aggregate Evidence on Relative Wages of Dropouts*

My reading of the evidence is that the two main mechanisms that economists have proposed to explain the adjustment of local labour markets to immigration-based supply shocks – selective mobility and HO-style realignment of local industry structure – are relatively unimportant, and that the bulk of the absorption occurs within industries. In view of the weak correlation between local wages and local immigrant supplies, some researchers – notably Borjas *et al.* (1996, 1997) and Borjas (2003) – have argued that aggregate time series analyses are required to measure the full impacts of immigration on native wages. A complete analysis of aggregate trends is beyond the scope of this article. However, in light of the data in

© Royal Economic Society 2005

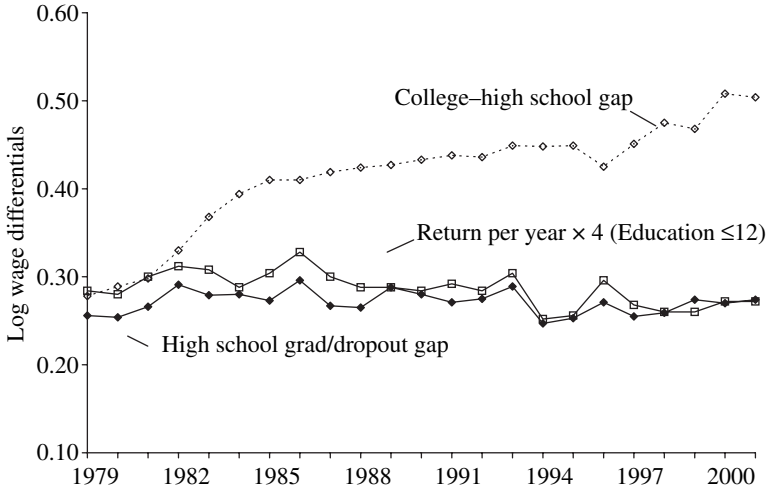


Fig. 6. *College/High School and High-School/DropoutWage Gaps*

Table 1 showing the relative education distribution of immigrants, it is useful to briefly examine trends in the relative wages of high school dropouts.

Figure 6 plots two measures of the wage gap between high school dropouts and high school graduates: the mean log wage differential between the groups, and the average return per year of schooling among those with 12 or fewer years of schooling, multiplied by 4. These wage gaps refer to the hourly earnings of men age 18–64 in the 1980–2002 March Current Populations Survey (CPS), and are estimated from models that include controls for a cubic in potential experience and dummies for black race and Hispanic ethnicity. For reference Figure 6 also plots the college–high school wage premium, estimated from samples of men with 12 or 16 years of schooling. Since 1979 the wage premium for high school graduates relative to dropouts has fluctuated in the range of 25% to 30%, with a modest rise in the early 1980s and more or less steady declines since then. The return per year of schooling for those with 0–12 years of school has fluctuated between 7% and 8%, and also increased slightly in the early 1980s. In contrast, the college–high school wage premium has varied a lot more, rising by about 12 log points in the early 1980s and nearly 22 log points over the past two decades.

Although immigration presumably exerts downward pressure on the relative wages of dropouts, the wage gap between dropouts and high school graduates has been nearly constant since 1980, and has fallen by more than 50% relative to the gap between high school graduates and holders of bachelor's degrees.[23] The

[23] According to the data in Table 1, the presence of immigrants increased the relative supply of dropouts in 2000 by about 21%, reduced the relative supply of high school graduates by about 5%, and had no net effect on the relative supply of people with a college degree or more. Assuming that the elasticity of substitution between education groups is −1.4 (Borjas, 2003; Katz and Murphy, 1992) and ignoring labour supply effects, the presence of immigrants in the US labour market should have raised the wage premium for high school graduates relative to dropouts by about 26/1.4 = 18 log points, in the absence of other factors.

© Royal Economic Society 2005

absence of an aggregate trend in the relative wages of high school dropouts is consistent with the remarkable stability of the relative wage of dropouts across different local labour markets. Of course, even taking account of unskilled immigrant inflows the relative supply of dropouts has declined over the past two decades, so depending on what is assumed about the rate of growth of relative demand for dropouts versus high school graduates, one can argue that immigration lowered the wages of the least educated natives relative to the counterfactual trend.[24] Without knowing the trend in relative demand for dropouts, however, the aggregate data are uninformative, so estimates of the effect on native wages amount to simply multiplying the relative share of dropouts attributable to immigration by some estimate of the elasticity of substitution (Johnson, 1980; Borjas, 2003).

## 3. Assimilation of Immigrants

While immigrant men in the 1970 Census earned about as much as natives, a wage gap opened up over the 1970s and has persisted. Currently, immigrant men's hourly wages are about 20% lower than natives', while immigrant women's wages are about 10% lower.[25] Given the gap in education between immigrants and natives, and the importance of education in the US wage structure, this is not too surprising. Moreover, the quality of education in many of the major immigrant sending countries is arguably below the quality in the US (Bratsberg and Terrell, 2002), and many immigrants have limited English skills, implying that immigrant human capital is even lower than observed education would suggest.

Following Chiswick (1978) there is an extensive literature on the question of whether the immigrant-native earnings gap narrows with time in the US. Such 'earnings assimilation' could be due to formal or informal training, acquisition of language skills, or a variety of other processes.[26] Borjas (1985, 1995) noted that a synthetic cohort analysis like Chiswick's will overstate earnings growth if more recent immigrant arrival cohorts have lower unmeasured skill characteristics than earlier arrivals, as seems to have been true in 1980 and 1990. Moreover, many immigrants return to their home country within a few years, and others move back and forth, further complicating inferences from cross-sectional data. Limited evidence from true longitudinal data (Lubotsky, 2000) suggests that immigrant earnings rise with time in the US, though the gains (about 10–15% in the first 20 years in the US) are not enough to offset the 35–40% immigrant–native earnings gap at arrival.

[24] In the 1980 Census, 26.3% of the population age 18–64 were dropouts, 39.2% had exactly 12 years of schooling, 19% had some college and 15.6% had a college degree or more. Comparing these numbers to those in Table 1 there was a 35% decline in the log relative supply of dropout versus high school labour between 1980 and 2000.

[25] These numbers come from an analysis of March CPS data from 1995 to 2002.

[26] Cortes (2004) shows that recent immigrant arrivals have relatively high rates of participation in schooling. She finds that 1975–80 immigrant arrivals show a gain in English proficiency between 1980 and 1990. Manning (2003, ch. 6) notes that some fraction of life cycle earnings growth is due to accumulated 'search capital'. Immigrants may start off with less efficient search and gradually catch up to natives.

© Royal Economic Society 2005

Although the precise magnitude of immigrant earnings assimilation will probably be debated for many years (see Duleep and Regets (2002) for a recent analysis), few of the 40% of immigrants who arrive in the US as adults without a high school credential will ever earn as much as average natives. Likewise, the 22% of immigrants with a college degree or more will earn more than average natives.[27] In my opinion, a more interesting question is how well the US-born children of immigrants are doing. Focusing on the status of immigrants' children is important for a number of reasons. Second generation immigrants are a growing fraction of the population, accounting for 10% of teenagers nationwide.[28] Nearly all of them will spend their entire lives in the US, and will pay taxes and receive income support payments. Thus, the success of immigrant children is an important component of the long-run costs and benefits of immigration. For these and other reasons the relative success of the second generation provides a key gauge of the extent to which their parents assimilated into the US.

Table 5 presents some simple descriptive regression models showing the relative status of immigrants and second generation immigrants in the 1995–2002 CPS. (I define second generation immigrants as people born in the US with at least one foreign-born parent.) The upper panel of the Table shows results for men, while the lower panel shows results for women. The first two columns shows models for years of schooling and the probability of working in the previous year, fitted over the entire population of 21–64 year olds, while columns 3–6 show models for log hourly wages, fitted to workers only.

Looking first at the education models, immigrants have about 1.2–1.4 fewer years of education then natives, standardising for their age. (The raw gaps are a little smaller.) On the other hand, second generation immigrants have 0.3–0.4 years *more* education than people whose parents were born in the US (the 'third and higher' generation). Among men, immigrants are only slightly less likely to work than members of third and higher generation, while second generation men are a little more likely to work. Among women there is a larger immigrant gap in the probability of working (a 13.6% lower annual employment rate than natives) but again second generation women are a little more likely to work than third and higher generation natives.

The models in columns 3 and 4 present wage models that control for age and geographic location but not for education. Among men, immigrants have 18–23% lower wages than third and higher generation natives, while second generation immigrants have 4–8% higher wages. The wage gaps for second generation women are about the same as for second generation men, but for immigrant women the wage gap is smaller than for immigrant men, perhaps reflecting the relative selectivity of labour force participation among immigrant women. When controls are added for education, the wage gap for immigrant men falls to about 11% while the gap for immigrant women falls to 7%. The wage gaps for second generation

[27] Using March CPS data for 1995–2002, I estimate that immigrants with at least a college degree earn about 30% more than average natives.

[28] Since 1994, the CPS has asked individuals where their parents were born. Using March 1995–2002 CPS files, I estimate that about 11% of people age 16–19 were born in the US with at least one immigrant parent.

© Royal Economic Society 2005

Table 5

*Education and Earnings Gaps Between Immigrants, Second Generation and Others*

| | Fitted to all individuals | | Fitted to workers only | | | |
|---|---|---|---|---|---|---|
| | Years of education | % Working | Models for log hourly wage (coefficients × 100) | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Estimates for men: | | | | | | |
| Immigrant | −1.24 | −0.6 | −18.3 | −23.4 | −11.1 | −8.0 |
| | (0.02) | (0.2) | (0.4) | (0.4) | (0.4) | (0.4) |
| Second generation | 0.45 | 0.8 | 8.0 | 3.6 | 1.5 | 2.3 |
| | (0.02) | (0.2) | (0.5) | (0.5) | (0.5) | (0.5) |
| Controls for age | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls for Region/urban | No | No | No | Yes | Yes | Yes |
| Control for education | No | No | No | No | Yes | Yes |
| Control for race/ethnicity | No | No | No | No | No | Yes |
| Estimates for women: | | | | | | |
| Immigrant | −1.37 | −13.6 | −11.8 | −18.6 | −7.1 | −5.4 |
| | (0.01) | (0.2) | (0.4) | (0.4) | (0.4) | (0.4) |
| Second generation | 0.31 | 0.5 | 8.3 | 3.0 | 1.2 | 1.9 |
| | (0.02) | (0.3) | (0.5) | (0.5) | (0.5) | (0.5) |
| Controls for age | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls for region/urban | No | No | No | Yes | Yes | Yes |
| Control for education | No | No | No | No | Yes | Yes |
| Control for race/ethnicity | No | No | No | No | No | Yes |

*Notes.* Standard errors in parentheses. Models estimated on pooled sample of 1995–2002 March Current Population Surveys. Samples include individuals age 21–64 only. Hourly wage is estimated from data on wage and salary earnings last year, weeks worked last year and usual hours per week last year. Wages are censored below at $2/hour (in 2002 dollars) are set to $2 and above at $200 per hour in 2002 dollars. Controls for Region/urban are 8 region dummies and dummy for living in Metropolitan Area. Control for education is linear term in years of education. Controls for race/ethnicity are dummies for black race and Hispanic ethnicity.

men and women also fall, to under 2% in each case. Thus, the higher wages of second generation immigrants are largely explained by their geographic location and their higher education.

The models in the final column of Table 5 add two additional controls for black race and Hispanic ethnicity. Reflecting the fact that many immigrants are Hispanic, and that third and higher generation Hispanics earn a little less than non-Hispanics, these added controls reduce the immigrant wage gaps slightly, to 8% for men and 5% for women, and slightly increase the wage advantage of second generation immigrants.

The results in Table 5 suggest a couple of conclusions. First, immigrant workers in the US labour market today (over 90% of whom arrived after 1965) earn less than natives but the magnitude of the wage gaps are not enormous. After controlling for education, which explains about an 11% gap in immigrant earnings for both men and women, the gaps are under 10% – comparable to the wage gaps for blacks or native Hispanics. Second, the children of immigrants do well, on average, with most of their wage advantage relative to natives attributable to higher education. Despite the lower education of their parents, children born to immigrant

© Royal Economic Society 2005

parents seem to catch up and even surpass the levels of children born to US natives.

An interesting perspective on this catch-up phenomenon is provided by examining differences across parental source countries (Borjas, 1993; Card *et al.*, 2000). Looking in the recent CPS data, one can identify second generation men and women whose parents were from different countries, and compare the earnings or educational attainment of each second generation group against the corresponding outcomes for their parents. This idea is illustrated in Figures 7*a* and 7*b*, which show mean education levels for second generation younger adults (age 21–40) in the 1995–2002 March CPS by country of origin of their father, plotted against mean levels of education for fathers of children age 0–15 from the same source country in the 1980 Census. For reference, I have also shown the point representing members of the third and higher generation, and the estimated regression line across the 39 country of origin groups shown in the Figures.[29]

The Figures suggest that there is a strong intergenerational correlation in education that is similar for sons and daughters. Indeed, the coefficient estimates and R-squared statistics are nearly identical for sons and daughters (slope = 0.30 for men, standard error = 0.03, R-squared = 0.77; slope = 0.29 for women, standard error = 0.03, R-squared = 0.77). Interestingly, the coefficient of 0.3 for the effect of fathers education on either sons or daughters is almost identical to the estimates obtained in a micro level regression using samples of men and women from the General Social Survey.[30] Thus, the intergenerational transmission of education is about the same for families of immigrants as for other families in the US. In particular, there is no evidence that second generation immigrants' education outcomes regress toward the mean more slowly than other children.

Even more interestingly, in both Figures 7*a* and 7*b* the fitted line for the second generation group over-predicts the outcomes for natives: by 0.71 years for men and by 0.77 years for women. This means, for example, that second generation sons whose fathers had as little as 10.4 years of schooling (2.3 years below the average for native fathers) ended up ahead of their third generation peers. Even sons of Mexican immigrants, whose fathers had 5.5 years of schooling less than native-born fathers in 1980 (7.3 years versus 12.8 years for native-born fathers) ended up with 12.2 years of schooling, closing 80% of the education gap faced by their fathers.[31]

Finally, it is interesting to compare the results in Figures 7*a* and 7*b* with similar results from an earlier generation of immigrant children. Card *et al.* (2000) conduct a parallel analysis using 1970 Census data for second generation immigrants,

[29] I selected countries of origin with at least 50 observations for second generation sons and daughters. The largest group is Mexico (4,998 second generation children). Italy, Canada, Cuba, Germany and the Philippines also have at least 500 second generation children. The smallest origin groups are Panama (54 observations), Austria (53 observations) and Israel (51 observations).

[30] I used the 1972–96 GSS. The sample has 6,667 men and 7,745 women between the ages of 21 and 45 with observed father's education. In a regression controlling for age and age-squared, the effect of father's education is 0.32 for men (standard error 0.01) and 0.30 for women (standard error 0.01).

[31] The mean level of education of third and higher generation sons is 13.29 (14.4 for daughters), while the mean level of education of second generation Mexican sons is 12.19 (12.41 for daughters).

© Royal Economic Society 2005

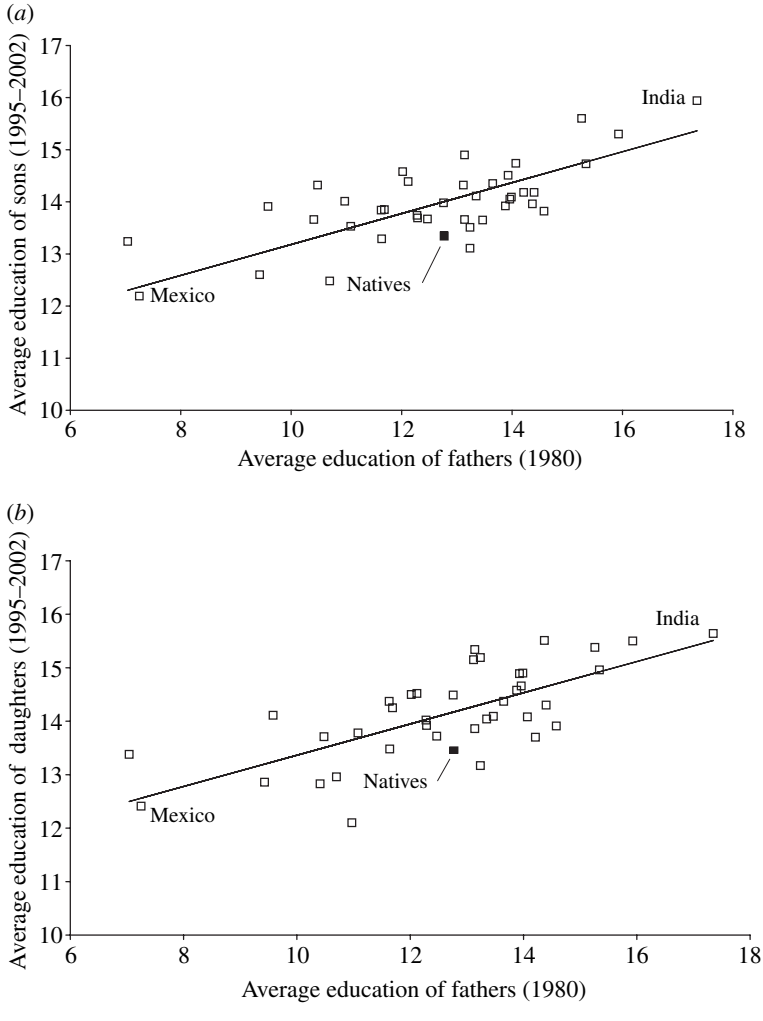


Fig. 7. (a) *Father–Son Intergenerational Correlation in Education.* (b) *Father–Daughter Intergenerational Correlation in Education*

and 1940 Census data for their parents. The estimated intergenerational coefficients in education are 0.41 (standard error 0.10) for men and 0.47 (standard error 0.08) for women. These point estimates are a little higher than the ones for more recent cohorts, though relatively imprecise. If anything, however, they suggest that the rate of assimilation (which is 1 minus the intergenerational correlation) is slightly *faster* for more recent cohorts than for older ones.

These results paint a relatively optimistic picture of the success of post-1965 immigrants. Conditional on their parents' human capital, the US-born children of these immigrants have done remarkably well. Indeed, of the 39 largest country-of-origin groups, sons from 33 groups and daughters from 32 groups have higher average educational attainment than the children of natives.

© Royal Economic Society 2005

## 4. Conclusions

Immigration is a major policy concern in many countries around the world. Two important questions that economic research can answer concern the impact of immigrants on the labour market opportunities of natives, and the relative success of immigrants in integrating into the domestic economy. Economists have struggled with both questions for the past couple of decades, with varying degrees of success, and the lessons from the US literature provide potentially valuable lessons to researchers in other contexts.

On the question of immigrant competition the US has a structural advantage, since there are many large US cities, with widely varying levels of immigration, and samples from the Decenniel Censuses can be used to develop detailed models of local labour market outcomes. New evidence from the 2000 Census reconfirms the main lesson of earlier studies: although immigration has a strong effect on relative supplies of different skill groups, local labour market outcomes of low skilled natives are not much affected by these relative supply shocks. Recent evidence on the response of local industry structure to immigration-induced supply shocks shows that the absorption of unskilled immigrants takes place within industries in high-immigrant cities, rather than between industries, as implied by simple trade models. It remains a fascinating question how firms in a given industry can adapt their production technology so closely to local supplies of different types of labour without substantial changes in relative wages.

As the evidence has accumulated over the past two decades that local labour market outcomes are only weakly correlated with immigrant densities, some analysts have argued that the cross-city research design is inherently compromised by intercity mobility of people, goods, and services. Underlying this argument is the belief that labour market competition posed by immigration *has* to affect native opportunities, so if we do not find an impact, the research design *must* be flawed. The leading alternative to a local labour market approach is a time series analysis of aggregate relative wages. Surprisingly, such an analysis shows that the wages of native dropouts (people with less than a high school diploma) relative to native high school graduates have remained nearly constant since 1980, despite pressures from immigrant inflows that have increased the relative supply of dropout labour, and despite the rise in the wage gap between other education groups in the US economy. While the counterfactual is unknown, it is hard to argue that the aggregate time series evidence points to a negative impact of immigration unless one starts from that position *a priori*.

On the question of immigrant assimilation, a major constraint in the US literature has been the absence of true longitudinal data. Nevertheless, I believe that a narrow focus on immigrant earnings is misplaced. Few of the 40% of immigrants who come to the US without completed high school education will ever catch up with the average earnings of natives. Most of their US-born children, however, will catch up with the children of natives. Evidence on the intergenerational progress of immigrants' children is now becoming available and points to above-average levels of educational attainment, even for children whose fathers had much lower schooling than native-born fathers. The relatively strong educational progress of

© Royal Economic Society 2005

second generation immigrants, together with the limited evidence of adverse effects on less skilled natives, suggest that the new immigration may not be so bad after all.

*University of California Berkeley*

## References

Acemoglu, Daron (1998). 'Why do new technologies complement skills? Directed technical change and wage inequality', *Quarterly Journal of Economics*, vol. 114 (November), pp. 1055–89.

Altonji, Joseph G., and Card, David (1991). 'The effects of immigration on the labor market outcomes of less skilled natives', in (John M. Abowd and Richard B. Freeman, eds.), *Immigration, Trade, and the Labor Market*, pp. 201–31, Chicago: The University of Chicago Press.

Beaudry, Paul and Green, David (2003). 'Wages and employment in the United States and Germany: what explains the differences?', *American Economic Review*, vol. 93 (June): pp. 573–603.

Borjas, George (1985). 'Assimilation, changes in cohort quality, and the earnings of immigrants', *Journal of Labor Economics*, vol. 3, pp. 463–89.

Borjas, George (1987). 'Immigrants, minorities, and labor market competition', *Industrial and Labor Relations Review*, vol. 40, pp. 382–92.

Borjas, George (1993). 'The intergenerational mobility of immigrants', *Journal of Labor Economics*, vol. 11, pp. 113–35.

Borjas, George (1994). 'The economics of immigration', *Journal of Economic Literature*, vol. 32, pp. 1667–717.

Borjas, George (1995). 'Assimilation and changes in cohort quality revisited: what happened to immigrant earnings in the 1980s?', *Journal of Labor Economics*, vol. 13, pp. 201–45.

Borjas, George (1999). *Heaven's Door*, Princeton, NJ: Princeton University Press.

Borjas, George (2003). 'The labor demand curve is downward sloping: reexamining the impacts of immigration on the labor market', *Quarterly Journal of Economics*, vol. 118 (November), pp. 1335–74.

Borjas, George, Freeman, Richard B and Katz, Lawrence (1996). 'Searching for the effect of immigration on the labor market', *American Economic Review*, vol. 86 (May), pp. 246–51.

Borjas, George, Freeman, Richard B and Katz, Lawrence (1997). 'How much do immigration and trade affect labor market outcomes?', *Brookings Papers on Economic Activity*, vol. 1, pp. 1–67.

Bratsberg, Bernt., and Terrell, Dek (2002). 'School quality and returns to education of US immigrants', *Economic Inquiry*, vol. 40 (April), pp. 177–98.

Brigham, Carl C. (1923). *A Study of American Intelligence*, Princeton NJ: Princeton University Press.

Card, David (2001). 'Immigrant inflows, native outflows and the local labor market impacts of higher immigration', *Journal of Labor Economics*, vol. 19 (January), pp. 22–64.

Card, David and DiNardo, John E. (2000). 'Do immigrant inflows lead to native outflows?', *American Economic Review*, vol. 90 (May), pp. 360–67.

Card, David and DiNardo, John E (2002). 'Skill biased technical change and rising wage inequality: some problems and puzzles', *Journal of Labor Economics*, vol. 20 (October), pp. 733–83.

Card, David, DiNardo, John E., and Estes, Eugena (2000). 'The more things change: immigrants and the children of immigrants in the 1940s, the 1970s, and the 1990s', in (George Borjas, ed.), *Issues in the Economics of Immigration*, Chicago: University of Chicago Press for NBER.

Card, David and Lemieux, Thomas (2000). 'Dropout and enrollment trends in the post-war period: what went wrong in the 1970s?', in (Jonathan Gruber, ed.), *Risky Behavior Among Youth: An Economic Analysis*, Chicago: University of Chicago Press.

Card, David and Lemieux, Thomas (2001). 'Can falling supply explain the rising return to college for younger men? A cohort-based analysis', *Quarterly Journal of Economics*, vol. 116 (May), pp. 705–46.

Card, David and Lewis Ethan, G. (2005). 'The diffusion of Mexican immigrants in the 1990s: patterns and impacts', UC Berkeley Center for Labor Economics, unpublished working paper, February.

Chiswick, Barry R. (1978). 'The effects of Americanization on the earnings of foreign-born men', *Journal of Political Economy*, vol. 86, pp. 897–921.

Cortes, Kalena E (2004). 'Are refugees different from economic immigrants? Some empirical evidence on the heterogeneity of immigrant groups in the United States', *Review of Economics and Statistics*, forthcoming.

Dahl, Gordon B. (2002). 'Mobility and the return to education: testing a Roy model with multiple markets', *Econometrica*, vol. 70 (November), pp. 2367–420.

Duleep, Harriet and Regets, Mark C (2002). 'The elusive concept of immigrant "quality": evidence from 1970–1990', IZA Working Paper No. 631, November.

© Royal Economic Society 2005

Friedberg, Rachel M and Hunt, Jennifer (1995). 'The impact of immigration on host country wages, employment, and growth', *Journal of Economic Perspectives*, vol. 9 (Spring), pp. 23–44.

Frey, William H. (1995). 'Immigration and internal migration "flight" from US metropolitan areas: toward a new demographic balkanisation', *Urban Studies*, vol. 32, pp. 733–57.

Frey, William H. (1996). 'Immigration, domestic migration, and demographic balkanization in America: new evidence for the 1990s', *Population and Development Review*, vol. 22 (December), pp. 741–63.

Grossman, Jean, B. (1982). 'The substitutability of natives and immigrants in production', *Review of Economic and Statistics*, vol. 64, pp. 596–603.

Heckman, James J. and Scheinkman, Jose (1987). 'The importance of bundling in a Gorman-Lancaster model of earnings', *Review of Economic Studies*, vol. 54, pp. 243–55.

Jaeger, David (1996). 'Skill differences and the effect of immigrants on the wages of natives', US Bureau of Labor Statistics Working Paper No. 273, March.

Johnson, George E. (1980). 'The labor market effects of immigration', *Industrial and Labor Relations Review*, vol. 33 (April), pp. 331–41.

Katz, Lawrence and Murphy, Kevin M (1992). 'Changes in relative wages, 1963–1987: supply and demand factors', *Quarterly Journal of Economics*, vol. 107 (February), pp. 35–78.

Kuhn, Peter and Wooten, Ian (1991). 'Immigration, trade, and the wages of natives', in (John M. Abowd and Richard B. Freeman, eds.), *Immigration, Trade, and the Labor Market*, pp. 285–304, Chicago: The University of Chicago Press.

LaLonde Robert, J. and Topel Robert, H. (1991). 'Labor market adjustments to increased immigration', in (John M. Abowd and Richard B. Freeman, eds.), *Immigration, Trade, and The Labor Market*, pp. 167–200, Chicago: University of Chicago Press.

Lazear, Edward P. (1999). 'Culture and language', *Journal of Political Economy*, vol. 107(6), pp. S95–126.

Lewis, Ethan G. (2003). 'Local open economies within the US: how do industries respond to immigration?', Federal Reserve Bank of Philadelphia Working Paper No. 04-1, (December).

Lewis, Ethan G. (2004). 'The effect of local skill mix on new technology adoption in US manufacturing', mimeo, Federal Reserve Bank of Philadelphia (December).

Lubotsky, Darren (2000). 'Chutes or ladders? A longitudinal analysis of immigrant earnings', Princeton University Industrial Relations Section Working Paper No. 445, August.

Manning, Alan (2003). *Monopsony in Motion*, Princeton NJ: Princeton University Press.

Sjaastad, Larry A. (1962). 'The costs and returns of human migration', *Journal of Political Economy*, vol. 70(2) (October), pp. S80–93.

Topel, Robert H. (1986). 'Local labor markets', *Journal of Political Economy*, vol. 94(2) (June), pp. S111–43.

Welch, Finis (1969). 'Linear synthesis of skill distribution', *Journal of Human Resources*, vol. 4 (Summer), pp. 311–27.

Wright, Richard, Ellis, Mark and Reibel, M (1997). 'The linkage between immigration and internal migration in large metropolitan areas in the United States', *Economic Geography*, vol. 73, pp. 234–53.

© Royal Economic Society 2005