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Immigrants assimilate as communities, not just as individuals

Timothy J. Hatton · Andrew Leigh

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Abstract The literature on the economic assimilation of immigrants generally treats them as atomistic individuals assimilating in a largely anonymous labour market. Here, we argue that immigrants assimilate as *communities*, not only as individuals. The longer the immigrant community has been established, the better adjusted it becomes, and the more the host society comes to accept that ethnic group. Using data from a 5% sample of the 1980, 1990 and 2000 US censuses, we find that the stronger is the tradition of immigration from a given source region, the better are the economic outcomes for subsequent immigrants from that source.

Keywords Immigrant assimilation · Ethnic origin · US labour market

JEL Classification F22 · J15 · J61

1 Introduction

Studies of immigrant assimilation have proliferated in the last three decades. This literature has focused on how rapidly after arrival (and to what extent) the

Responsible editor: Klaus F. Zimmermann

T. J. Hatton (✉)
Department of Economics, University of Essex, Colchester C04 3SQ, UK
e-mail: hatton@essex.ac.uk

T. J. Hatton · A. Leigh
Research School of Economics, Australian National University,
Canberra ACT 0200, Australia

earnings of immigrants catch up with those of natives. The ensuing debate has focused on cohort effects, on language acquisition and on assimilation in other economic dimensions. But for the most part, immigrant assimilation is viewed as individualistic rather than community-based. Not surprisingly, other social scientists look askance at what seems a rather narrow view taken by economists of the assimilation experience. Meanwhile, a large literature (mainly by non-economists) has developed which sees immigrants as communities, not merely as individuals.[1] This implies that the assimilation experience of particular ethnic origin groups must be viewed as just that: the assimilation of groups, rather than of individuals who happen to be part of such groups.

In recent years, economists have paid more attention to the role of the ethnic communities in conditioning patterns of assimilation among individuals within that group. These studies have examined the effects of ethnic concentration and immigrant ghettos on the economic outcomes of immigrants through processes such as the acquisition of language skills and mobility across occupations and localities. But this still treats the ethnic community itself as a given. A better approach is to regard the assimilation process as a two-way street. Assimilation depends not only on how immigrants fit into the host country's labour market and its wider culture but also on the degree to which the non-immigrant community accepts, accommodates and adapts to particular immigrant groups. If we adopt this view, then history matters: the more established is the tradition of immigration from a particular source, the more integrated that ethnic community will be, and the more easily new immigrants from that source will assimilate into the host labour market.

In this paper, we explore the evidence that history matters. The following sections provide a brief survey of the relevant literature and an outline of the changing relationship between the origins of immigrants and their performance in the labour market. We then turn to examining whether the earnings of first-generation immigrants are positively influenced by the history of immigration from the same source region. We find that—holding constant an immigrant's own characteristics—these immigration traditions do indeed have positive effects on immigrant earnings when analysed both at the national level and at the regional level. Finally, we examine some other indicators of the social acceptance of immigrants from different source regions, including intermarriage and opinion surveys. The evidence seems to suggest that immigrants from traditional sources have higher approval ratings. We conclude that the melting pot still works—but it works at the community level and with considerable historical lags.

[1]Major contributions include Lieberson and Waters (1990), Portes and Rumbaut (1996) and Rodriguez (1999).

2 Individual and group assimilation

The analysis of earnings and other economic outcomes for immigrants that was pioneered by Chiswick (1978) largely sees assimilation as a process of individual improvement in a largely anonymous labour market. The individual's earnings are a function of his/her education and other relevant human capital variables including the number of years since arrival in the host country. The effect of years since migration reflects the individual's adaptation to the host country labour market through the acquisition of relevant skills and experience. More recent studies start from the premise that, because the foreign-born have characteristics and skills that differ from those of the host community, there are potential gains from trade (Lazear 2000), but these differences can also act as barriers to communication and thus to trade. Chiswick and Miller (2005) argue that the larger is the ethnic group, the greater is the supply and consequently the lower is the price of 'ethnic goods'. Using city-level data, Cortes (2008) finds some evidence that unskilled immigration reduces the prices of immigrant-intensive goods and services. Hence, the larger is the ethnic concentration in a particular locality, the worse the labour market outcomes of immigrants in that community will be. In areas where there are relatively few co-ethnics, the price of ethnic goods will be higher and an individual has a greater incentive to invest in reducing the barriers, for example through language acquisition.

However, there are a variety of other possible effects on individuals' earnings arising from ethnic concentration. One is that there may be economies of scale or network effects in the production of ethnic goods; hence, incomes might be higher where there are greater agglomerations of co-ethnics. Similarly, if there is discrimination against immigrants in the wider community, either in jobs or in housing, then individuals will gain by staying within their ethnic communities. On the other hand, ethnic communities may involve crowding externalities, negative peer group effects and reduced opportunities for profitable trade. Hence, the effects of ethnic concentrations on immigrant outcomes could go either way, and the results may differ across ethnic groups and with the characteristics of the individual immigrant.[2]

Studies have also shown that there is persistence across the generations in the labour market performance of immigrants and their children. Borjas (1992) finds that the income, education and occupational prestige of second-generation immigrants are inherited partly from their parents and partly, as an ethnic capital externality, from the ethnic group as a whole. The results suggest

[2] A number of studies have addressed the endogeneity issue that arises from migration across localities. Those that choose to migrate away from the ghetto may have superior characteristics and hence the measured effect of ethnic concentration may be partly due to self-selection. For various treatments of this issue, see for example Bertrand et al. (2000), Borjas (2006), Cutler and Glaeser (1997), Cutler et al. (2005) and Edin et al. (2003).

that there is considerable persistence in performance from one generation to the next, much of it arising from the transmission of ethnic capital.[3] Hence, "ethnic capital effectively lowers the flame under the melting pot from a full boil to a slow simmer" (Borjas 1999b, p. 14). This ethnic capital effect might be equally important for first-generation immigrants: the higher the ethnic capital of a particular origin group, the better the performance of new immigrants from that origin. In a study of Mexican immigrants, Munshi (2003) shows that a network of longer-established immigrants increases the employment probability for new immigrants.

Recent research on ethnic identity analyses the degree to which an immigrant is committed to the culture of the origin and the host country. Constant and Zimmermann (2008) classify those who identify strongly with the host country culture as assimilated and those who identify strongly with both origin country and host country cultures as integrated. Using data on immigrants to Germany, Constant et al. (2009) find that migrants who are culturally assimilated have higher employment probabilities and higher earnings than those who are not. Interestingly, they also find that those who are integrated do equally well in employment and have higher earnings than those who are assimilated. This suggests that retaining a degree of identification with the origin country may not lead to disadvantage in the labour market, and it may confer positive economic benefits for immigrants who also adapt to the host country culture.

These are significant advances that take the study of immigrant assimilation beyond the simple individualistic approach. But they still fail to capture the *interaction* between immigrant communities or ethnic groups and the host society. Such notions have been taken more seriously in the recent sociological literature on immigration which has moved beyond the so-called assimilationist approach, focusing more on "the process of interaction between host society institutions and structures and the characteristics of newcomers… While the assimilation perspective portrayed American society as a rather amorphous, homogenous entity, an absorbent sponge, the newer theories gave shape to this amorphous entity. They pointed out that the sponge is structured and that structure itself is subject to change" (Schmitter Heisler 2000, p. 79).

Since the pioneering work of Glazer and Moynihan (1963) and Gordon (1964), sociological research has focused on how immigrants from different origin countries and regions have evolved into distinct ethnic groups. These studies have increasingly brought the host society into the picture, focusing on the degree of receptivity towards immigrants at a number of levels. These include government policy, civil society and individual attitudes, all of which are seen as culturally conditioned. One implication is that the outcomes for

[3]Some studies estimate the intergenerational education correlation between second-generation immigrants and their 'synthetic fathers' (men from the same source country in an earlier census). Looking at fathers in the 1940 census and children in the 1970 census, Card et al. (2000) estimate an intergenerational education elasticity of 0.4–0.5. Analysing fathers in the 1980 census and sons in the 1995–2002 CPS, Card (2005) estimates the elasticity to be 0.3.

new immigrants depend largely on the degree of integration of the community as a whole and not just on the skills and motivation of the individual immigrant and the connections of his or her immediate friends and relatives.

Much of the emphasis in the sociological literature has been placed on the strategies of ethnic communities, stretching back to opportunities they faced when they first arrived (Portes and Rumbaut 1996). This is seen in terms of immigrants' access to different sectors and different occupational strata. As one study puts it, "in a race-conscious society such as ours, entire groups of people are ordered in terms of desirability for preferred jobs, with skill-relevant characteristics as additional weights" (Waldinger 1996, p. 18). As a result, the early arrivals from a given source tend to be highly concentrated in certain occupational niches or in specific lines of small business—often related to particular ethnic goods. Thus in New York, Chinese immigrants were initially concentrated in laundries, restaurants and the garment sector. Over time, the second-generation immigrants and their newly arrived co-ethnics diversified into a wider range of occupations, partly through the extension of ethnic networks, partly through the adaptation of the communities themselves to the norms of the host society and partly because they became less exceptional in the eyes of the host population. Even if they have somewhat different trajectories, ethnic groups with a deeper legacy should have a more positive effect on the assimilation experience of new immigrants—a theory that we seek to test in what follows.

The stage of development of the ethnic community and its acceptance by the wider community is one factor that affects the outcomes for new immigrants. The other is the characteristics of the new immigrants themselves. One key element is the level of skills or education that the immigrant possesses. Immigrants with low skills and education are likely to be most dependent on what Portes and Rumbaut (1996, p. 84) call the "context of reception", such that "the characteristics of the ethnic community acquire decisive importance in moulding their entry into the labour market and hence their prospects for future mobility" (Portes and Rumbaut 1996, p. 86). Those with relatively low education are the traditional labour migrants that have been the focus of much of the existing research. These are often seen as entering the 'ethnic economy' where their labour market outcomes depend to a considerable extent on the degree of integration of the ethnic group as a whole (Alba and Nee 2003, p. 252).

By contrast, where immigrants are highly educated, they are also likely to have good language skills and general human capital that is well adapted to the host country labour market. And they often enter the labour market directly from professional and graduate schools in the USA. These 'human capital' immigrants are more able to side-step the ethnic economy and hence their particular ethnicity matters less. One study shows that high-skilled immigrants suffer very little wage disadvantage in the US labour market and those that become self-employed outperform the native-born (Lofstrom 2001). Interestingly, differences in ethnicity seem to matter relatively little for the earnings of these immigrants. We investigate this hypothesis further below.

3 Immigrant groups in the USA

Until the late nineteenth century, the vast majority of immigrants to the USA were from Northwestern Europe. Immigrants from Britain, Ireland, Germany and Scandinavia accounted for 87% of the inflow from the 1820s up to 1880. From that time until the First World War, the sources of immigration widened to Southern and Eastern Europe with large inflows from countries such as Italy, Poland, Russia and Austria–Hungary. These 'new immigrants' came from poorer countries, and they were seen as distinctly different from the native-born and from previous immigrant groups. According to the US Immigration Commission (1911), the new immigration "was largely a movement of unskilled labouring men who have come, in large part temporarily, from the less progressive and advanced countries of Europe" and that, on the whole, they were "actuated by different ideals" and "far less intelligent" than the old immigrants. In addition, they "have almost entirely avoided agricultural pursuits, and in the cities and industrial communities have congregated together in sections apart from native Americans and older immigrants to such an extent that assimilation has been slow as compared to that of earlier non-English speaking races" (US Immigration Commission 1911, p. 14; see also Jenks and Lauck 1926).

These views and those of other observers say more about the prevailing attitudes towards these new and unfamiliar immigrants than they do about the immigrants themselves. Such attitudes added to the new immigrants' disadvantage relative to immigrants from more traditional sources. As one observer puts it:

> Northwestern European migrants arriving after 1880 enjoyed certain advantages over [Southern, Central and Eastern Europeans] arriving at the same time because relatively few of the early settlers in the United States were of Southeastern European origin. Due to the previous waves from Northwestern Europe, later migrants from these sources found relatives and townspeople who had arrived earlier and were in a position to offer some help; a generally more favourable attitude on the part of the earlier settlers; the availability of ethnic institutions that provided services ranging from medical to recreational; and added employment opportunities available from established ethnic compatriots. Hence the fact that many of the native whites were of the same ethnic origin as later immigrants from Northwestern Europe meant a generally easier situation for these immigrants around the turn of the century (Lieberson 1980, p. 26–27).

By the time the Immigration Commission reported, communities like the Italians and the Eastern European Jews had some 30 years of accumulated experience in the USA. Their growing social and economic integration is stressed in numerous accounts by social historians (Barton 1975; Kessner 1977; Bodnar 1985). According to such accounts, an important part of the process was individuals moving up the occupational ladder. But that process was also

facilitated by the adaptation of these ethnic groups as communities and by a growing familiarity with and acceptance of them by native-born Americans. Econometric analysis (some of which uses the Immigration Commission's own data) shows that the new immigrants suffered a substantial initial earnings disadvantage but they assimilated fairly rapidly towards the earnings levels of the native-born (Hatton 2000; Minns 2000).

In the years before the First World War, new immigrant communities expanded. On the one hand, they became better integrated and more widely accepted, but on the other hand, inflows grew rapidly, embracing a widening range of source countries. Those trends slowed during the First World War and then with the imposition of country of origin quotas, which were first introduced in 1921. Since the quotas were related to the historical stock of foreign-born, they bore down heavily on new immigrant countries. As a result, the ratio of inflows to the existing stock fell to much lower levels right through until the 1960s. By that time, the ethnic groups of Italians, Greeks, Poles, Russians and Romanians had become part of the fabric of American society.

The 1965 Amendments to the Immigration Act (effective in 1968) abolished the country of origin quotas in favour of quotas by hemisphere and subsequently a worldwide quota. As a result, the opportunities for migration from non-traditional sources expanded dramatically. The share of new immigrants coming from Europe fell from 53% in the 1950s to 15% in the 1990s, while over the same period the share coming from Asia rose from 6% to 31% (Hatton and Williamson 2005, p. 208). The share from Central and South America also increased in the 1950s and 1960s when there were no quotas for western hemisphere countries. Particularly notable is the share from Mexico, which rose from 12% of the inflow in the 1950s to 25% in the 1990s. The effects of these trends on the stock of immigrants can be seen at a more disaggregated level in Table 1. This changing composition was accompanied by a gradual increase in the volume of the inflow from 2.5 million in the 1950s to nine million in the 1990s, which raised the foreign-born share to 11% of the population in 2000 from 6.9% in 1950 and from only 4.7% in 1970.

The new immigrants of the late twentieth century shared many of the characteristics of the previous wave: they came from unfamiliar places, with unfamiliar languages and customs, and they were received with circumspection by the host community. Echoing the critics of immigration a century earlier, Huntington has argued that American national identity is in a state of crisis because the latest waves are failing to assimilate:

> [S]ustained high-level immigration retards and can even obstruct assimilation.... The decline in the immigration of Irish and Germans after the Civil War and the drastic reduction in immigration of southern and eastern Europeans after 1924 facilitated their assimilation into American society. If current levels of immigration are sustained, no such transfer of loyalties, convictions, and identities can be expected with Mexican immigrants, and the great American assimilation success story of the past will not necessarily be duplicated for Mexicans. (Huntington 2004, p. 229)

Table 1 Source composition of US immigrant stock (percent of foreign-born)

Source region	1950	1960	1970	1980	1990	2000
Mexico	7.0	6.7	9.5	17.0	23.4	30.3
Central America	0.4	0.7	1.3	2.9	5.8	6.5
Caribbean	1.4	2.2	7.5	9.8	9.3	9.1
South America	0.5	1.0	3.0	4.6	5.5	6.0
Scandinavia	6.5	6.0	3.7	1.7	1.0	0.5
UK and Ireland	13.7	13.3	11.3	7.2	5.0	3.2
Western Europe	3.4	3.9	4.0	2.7	1.9	1.3
Southern Europe	20.9	17.9	15.5	10.8	6.0	3.6
Central/Eastern Europe	31.1	31.9	26.6	16.6	10.9	7.6
Russian Empire	11.1	10.1	6.3	3.9	2.0	2.8
East Asia	1.4	2.6	4.8	8.3	10.1	9.1
Southeast Asia	0.6	1.3	2.3	7.4	10.7	10.0
India/Southwest Asia	0.1	0.4	1.2	3.1	4.2	5.4
Middle East/Asia Minor	1.4	1.3	1.6	2.1	2.1	1.8
Africa	0.2	0.3	0.9	1.6	1.7	2.6
Australia and N. Zealand	0.3	0.3	0.4	0.4	0.3	0.3
Total (sources listed)	100.0	100.0	100.0	100.0	100.0	100.0

Source: Calculated from census birthplace statistics taken from IPUMS at: http://www.ipums.umn.edu/usa/person.html#pethnicity. Totals exclude those born in Canada, in Puerto Rico, and where birthplace is not known or is too broadly defined.

Like the earlier wave, the new immigrants of the late twentieth century came from much poorer countries with lower average skills and education. In the 1950s the average immigrant came from a country with a GDP per capita income 49% that of the USA, whereas in the 1990s the average immigrant came from a country with a GDP per capita only 22% that of the USA (Hatton and Williamson 2006, p. 27). Just as in the late nineteenth century, these trends were accompanied by a decline in the labour market performance of immigrants relative to the native-born.[4] Borjas (1999a, p. 1724) found that while immigrant males earned 4.1% more than native-born men in 1960, they earned 16.3% *less* in 1990. Some of this was due to the decline in immigrant educational attainment, but when this effect is eliminated, the adjusted relative wage still fell by 13.3 percentage points over these 30 years.

These general findings are replicated in Table 2, which shows a sharp decline, especially in the 1970s and 1980s, in the ratio of the annual, weekly and hourly earnings of male immigrants relative to those of native-born men. The first line of the respective panels shows that between 1960 and 2000, these three relative earnings measure each decline by about 12 percentage points. But the second line in each panel shows what a difference the shift in composition makes. Here, the average earnings of the 16 immigrant groups

[4]Between the 1860s and the 1900s, the source-country GDP per capita of the average immigrant fell from 95% to 49% of US GDP per capita. As in the post-1950 period, this was driven largely by the shift in origin-country composition, and it was accompanied by a decline in the average literacy rate of immigrants (despite rising literacy in source countries) and by a decline in their relative wage, which fell by five percentage points between 1873 and 1913 (Hatton 2000, p. 520).

Table 2 Immigrant/native-born earnings ratios, males 1960–2000

Year	1960	1970	1980	1990	2000
Annual earnings ratio (immigrant/native-born)					
Actual immigrant weights	96.1	96.9	89.3	85.2	83.8
Fixed 1980 weights	83.2	89.8	89.3	90.8	93.5
Weekly earnings ratio (immigrant/native-born)					
Actual immigrant weights	98.6	99.4	91.5	88.4	86.9
Fixed 1980 weights	87.0	93.0	91.5	93.4	95.8
Hourly wages ratio (immigrant/native-born)					
Actual immigrant weights	101.7	102.6	94.0	90.5	89.7
Fixed 1980 weights	93.5	96.8	94.0	95.3	97.3

These are based on annual wage and salary income for males aged 25–64 for whom income is non-zero. Weekly earnings are derived as annual earnings divided by weeks worked in the past year, and hourly wages are derived as weekly earnings divided by usual hours for 1980, 1990 and 2000 and by hours last week for 1960 and 1970.

listed in Table 1 are combined with fixed 1980 weights. The fixed weight ratios show no evidence of relative decline. In the absence of changes in the mix of immigrant origins, relative annual earnings increase by more than 10 percentage points and relative hourly wages by nearly four percentage points.[5] On these measures, the economic performance of individual immigrant groups has been improving on average, even though it has worsened in aggregate. This and the foregoing discussion suggest that two forces have been at work. Looking at immigrants group by group, the newer immigrant groups have become better established and better accepted. But looking at all immigrants together, earnings assimilation has slowed due to compositional shifts (in particular the significant increase in the share of immigrants coming from Mexico).

Clearly, immigrants from different parts of the world bring different levels of skills and education with them as well as different cultures. But Fig. 1 provides some indication that history might matter. It plots relative annual earnings for the 16 source region groups in Table 1 against the past stock of immigrants from that source divided by the current stock, for the three census years from 1980 to 2000. Here, the past stock is the average number born in the source region as a share of the total population in the decennial censuses conducted over the previous 120 years, stretching back to the middle of the nineteenth century. The relationship is upward sloping although it is not a very good fit. The origin groups with long histories, including those that were the new immigrants of the late nineteenth century, have a rather better earnings performance than those with short histories. For those with relatively short histories but with much larger recent numbers, the relative wage is low. But

[5]This is despite the increase over the period in the return to skills, which would tend to reduce the earnings of immigrants relative to the native-born (Smith 2006, p. 213). In addition, the average years since migration, a variable normally associated with higher relative earnings, declined slightly between 1970 and 2000 for males with positive annual earnings.

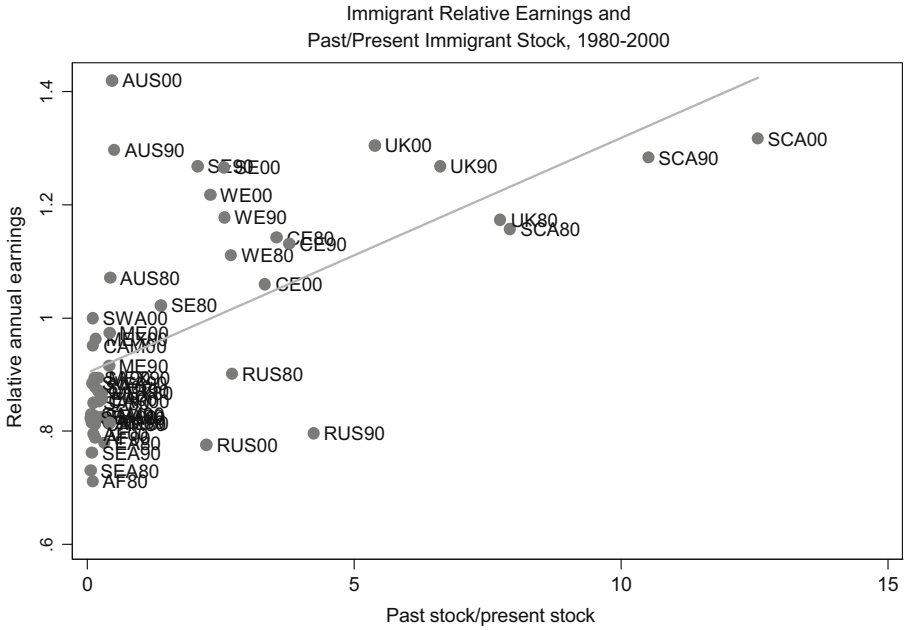

Fig. 1 Immigrant relative earnings and past/present immigrant stock, 1980–2000. The *vertical axis* denotes the ratio of immigrant to native-born annual earnings for males aged 25–64 for 16 origin groups and three census years. The *horizontal axis* is the ratio of the average share of population over the previous 120 years to the current share of population (e.g. when looking at 1980 census outcomes, the 'past stock/present stock' variable is a group's population share in 1860–1970 divided by its population share in 1980). Origin groups are Mexico (*MEX*), Central America (*CAM*), Caribbean (*CAR*), South America (*SA*), Scandinavia (*SCA*), UK/Ireland (*UK*), Western Europe (*WE*), Southern Europe (*SE*), Central/Eastern Europe (*CE*), Russian Empire (*RUS*), East Asia (*EA*), Southeast Asia (*SEA*), India/Southwest Asia (*SWA*), Middle East/Asia Minor (*ME*), Africa (*AF*) and Australia and New Zealand (*AUS*). Census years 1980, 1990 and 2000 are denoted 80, 90 and 00, respectively

such comparisons are crude, and to see if history really matters, we need to analyse the data more formally.

4 A model of immigrant earnings

Here, we set out a simple model of demand for and supply of ethnic goods (or, alternatively, ethnic labour). We define the supply of ethnic goods, or direct labour services, for ethnic origin group g as:

$$S_g = \alpha P_g + M_g + \mu_g \tag{1}$$

where P_g can be thought of as the relative price of goods and services of a given quality supplied by ethnic origin group g to the rest of the community, M_g is

the share of labour force represented by group g and μ_g is a group-specific component. The demand for the goods or services of ethnic origin group g is:

$$D_g = -\beta_1 P_g + \beta_2 Y_g + \beta_3 Z_g + \nu_g \tag{2}$$

where Y_g is the average years since migration in the ethnic origin group, Z_g is a demand shifter for the goods and services of ethnic origin group g, and ν_g is a group-specific component. The average number of years since migration for the ethnic origin group as a whole is a measure of ethnic capital, for example the acquired ability to market ethnic labour services. The variable Z_g captures the demand effect of the host society's familiarity with and acceptance of the services offered by ethnic group g (for example, Z_g might be the extent of labour market discrimination against workers in group g). Hence, the price of ethnic goods is:

$$P_g = -\frac{1}{\alpha + \beta_1} M_g + \frac{\beta_2}{\alpha + \beta_1} Y_g + \frac{\beta_3}{\alpha + \beta_1} Z_g + \frac{\nu_g - \mu_g}{\alpha + \beta_1} \tag{3}$$

Following the standard earnings function, the log wage of the individual immigrant of education type i from ethnic group g depends on that individual's characteristics as well as on the valuation of the services of the ethnic group as a whole:

$$w_{ig} = \gamma_0 + \gamma_{11} X_{ig} + \gamma_2 Y_{ig} + \gamma_3 P_g + \varepsilon_{ig} \tag{4}$$

where X_{ig} is the individual's education, Y_{ig} is a function of the individual's years since migration and ε_{ig} is a random component. For non-immigrant workers, the human capital earnings function (assuming the same underlying return to education) is:[6]

$$w_{in} = \delta_0 + \gamma_{11} X_{in} + \eta_{in} \tag{5}$$

Thus, the wage difference between immigrants and natives in education cell X_i can be expressed as:

$$w_{ig} - w_{in} = (\gamma_0 - \delta_0) + \gamma_2 Y_{ig} + \frac{\gamma_3 \beta_2}{\alpha + \beta_1} Y_g - \frac{\gamma_3}{\alpha + \beta_1} M_g + \frac{\gamma_3 \beta_3}{\alpha + \beta_1} Z_g + \frac{\gamma_3 \left(\nu_g - \mu_g\right)}{\alpha + \beta_1} + \varepsilon_{ig} - \eta_{ig} \tag{6}$$

The wage gap between immigrants and natives in a given education group should be a positive function of the immigrant's years since migration ($\gamma_2 > 0$) and of years since migration for the group as a whole ($\gamma_3 \beta_2 / (\alpha + \beta_1) > 0$). It should be a negative function of the total number of immigrants from the ethnic origin group ($\gamma_3 / (\alpha + \beta_1) > 0$) and a positive function of the familiarity

[6]Using data on immigrants and non-immigrants working in the US labour market, Akee and Yuksel (2008) find very similar wage returns to a year of US education and a year of foreign education.

of the native population with that particular ethnic group ($\gamma_3\beta_3/(\alpha+\beta_1) > 0$). There are both group-specific and individual-specific error terms.

5 Estimates of earnings and hours from the US Census

We use the 5% US census samples for 1980, 1990 and 2000 to estimate equations for annual hours and earnings for males.[7] The estimating equation is:

$$\ln\left[\frac{W_{ijgt}}{W_{ijnt}}\right] = a_0 + a_1 Y_{ijgt} + a_2 Y_{ijgt}^2 + a_3 Y_{gt} + a_4 M_{gt} + a_5 Z_{gt} + a_6 U_{gt} + d_t + d_i + d_j + e_{ijgt} \quad (7)$$

Due to computing power limitations (and because the census does not permit us to follow the same individuals over time), we instead collapse the data into 'pseudo-persons', defined by education, age, ethnic origin and cohort. To be precise, we define variables for the 'pseudo-person' as the mean for a given education group (i) by age group (j) by ethnic origin (g) at each census (t). There are four education groups, eight age groups and 16 different ethnic origin groups, defined by regions of the world (see Appendix for definitions). The left-hand side of the equation is the ratio of an outcome variable for immigrants from a given origin (g) relative to that for native-born workers (n) of the same education/age group in the same year. Y_{ijgt} is the pseudo-person's years since migration and Y_{gt} is the average years since migration for other individuals in the same ethnic origin group (excluding those in the same age-education cell). M_{gt} is the total number of foreign-born from the origin region at time t, as a proportion of the total population. The variable Z_{gt} is our measure of the historical presence of an origin group. For this we calculate from previous censuses stretching back 120 years the average percentage of the US population born in the ethnic origin region. This is a measure of how embedded the traditions of immigrants from each origin region are in American society.

The measure of immigration history could also capture the fact that early immigrants came from countries that were (and still are) relatively developed. Thus, we also include in U_{gt} origin-region characteristics that influence the selection and performance of immigrants in the USA. We include the ratio of GDP per capita in the origin region relative to the USA lagged 10 years and the ratio of average years of education in the origin region relative to the USA lagged 10 years (the 10-year lag aims to capture the conditions in the migrant's home country at the time he migrated to the USA). Higher source-region GDP for a given level of education reflects specific skills and technology

[7] We opt not to use the samples for 1970 and earlier because (a) they are only a 1% sample, and (b) the hours worked per week variable is defined differently than in the 1980–2000 samples, raising possible issues of consistency.

in the source population that are not fully captured in average education and that appear as higher unobserved labour market quality. Since the relevant variable is productivity net of education, we expect a positive sign on the GDP per capita ratio and a negative sign on the education years ratio. The selection process of immigrants from a given origin has been analysed using the Roy model (Borjas 1987, 1999a); the greater the return to skill in the source country relative to the destination country, the more immigrants will be negatively selected. We proxy the relative return to skill by the ratio of origin region inequality to US inequality, and we expect the sign to be negative.[8] Selection is also likely to be more positive the higher are migration costs, and we attempt to capture this effect by the log of the distance between Chicago and the most important city in the origin region. Sources of these data are detailed in the Appendix. Finally, we also include dummies d_i, d_j, d_t for education group, age group and year, although these are not reported in the tables of results.[9] Given that most of the variation in the origin-specific variables Z_{gt} and U_{gt} is in the cross section, we do not include origin fixed effects.

The results of this basic specification are shown in Table 3. In the first column the outcome variable is the log ratio of annual earnings. The number of years since migration and its square give positive and negative coefficients, respectively, consistent with the results from studies of individual-level data. The second and third columns show that years since migration has smaller and weaker effects for hourly wages and for hours worked. By contrast the coefficient on origin-specific average years since migration is not significant. This suggests that ethnic capital or network effects are not captured by the current duration of the ethnic community. Origin-region characteristics turn out to be important in all three regressions. The coefficients on the foreign to US GDP ratio are positive and those on the education ratio are negative as expected. This strongly supports the view that high origin income relative to education captures source-specific labour market quality. The ratio of the average gini coefficient in the origin region relative to that of the USA takes a negative coefficient, consistent with the predictions of the Roy model. The effect of distance turns out to be unimportant in the presence of these other origin-region variables.

As predicted, the current stock of immigrants has a negative impact on relative annual earnings, due to the crowding effect. But we also find that this effect is non-linear—becoming less negative at higher levels of the origin-specific immigrant stock. Most important for our purposes is the average stock

[8]The gini coefficient is used as a proxy for the return to skills as there is no consistent series for wage differentials across countries and over time. However, the gini gives similar results to a measure based on wage differentials when explaining immigrant selection by education in a cross-section of source countries for the year 2000 (Belot and Hatton 2008).

[9]Results are similar if a separate dummy is included for each education group × age group × year combination.

Table 3 Estimates for annual earnings, hourly wages and hours worked

Dependent variable	Annual earnings	Hourly wage	Hours worked
Years since migration/100 (i,j,g,t)	0.243**	0.088	0.139*
	[0.090]	[0.087]	[0.069]
Years since migration squared/100 (i,j,g,t)	−0.028	−0.01	−0.023*
	[0.016]	[0.015]	[0.012]
Group years since migration/10 (g,t)	−0.004	0.034	−0.01
	[0.050]	[0.037]	[0.042]
Immigrant stock per 100 population (g,t)	−0.182***	−0.113**	−0.027
	[0.042]	[0.042]	[0.028]
Immigrant stock per 100 popn. squared (g,t)	0.042***	0.021*	0.011*
	[0.010]	[0.010]	[0.006]
Past stock per 100 population (g,t)	0.069***	0.021	0.022
	[0.017]	[0.015]	[0.013]
Past stock × high education (g,t)	−0.040**	−0.027	0.004
	[0.016]	[0.019]	[0.009]
GDP ratio (foreign/US) ($g,t-1$)	0.380***	0.153**	0.172***
	[0.054]	[0.059]	[0.053]
Education years ratio (foreign/US) ($g,t-1$)	−0.289*	−0.124	−0.172*
	[0.152]	[0.110]	[0.085]
Gini coefficient ratio (foreign/US) ($g,t-1$)	−0.171**	−0.158**	−0.051
	[0.078]	[0.065]	[0.054]
Log distance (g)	0.002	0.005	−0.003
	[0.021]	[0.015]	[0.022]
R^2	0.66	0.32	0.70
No. of observations	1,536	1,536	1,536

The dependent variables are the log of the migrant to native ratio (e.g. the log of the ratio of annual migrant earnings to annual native earnings). Robust standard errors in brackets, clustered at the ethnicity group level. Regressions include dummies (not reported) for eight age groups, four education groups and three census years. The data are weighted according to the number of migrants underlying each observation.

***$p = 0.01$, **$p = 0.05$ and *$p = 0.10$

of immigrants from the origin region over the previous 120 years.[10] This is a measure of the extent to which the past history of origin-specific immigration matters. Following the argument above that past history matters less for the most highly educated immigrants (since such immigrants are also likely to have good language skills and general human capital and, therefore, be less subject to the 'context of reception'), we also include an interaction of the past immigrant stock with a dummy for the high education group (those with four or more years in college). For annual earnings and hourly wages, the main effect is strongly positive while the interaction effect is negative with a slightly smaller

[10]Thus for an observation from 1980, the variable measures the average share of the immigrant group in the population at census years from 1860 to 1970, excluding 1890 for which the census records were destroyed, and 1930, which was missing when the paper was drafted. For a year 2000 observation, the variable measures the average stock over the census years 1880 to 1990.

coefficient for annual earnings.[11] This supports the view that past immigration history matters far less for highly educated immigrants because they are more able to transcend ethnic barriers.

The migrant stock effects can be illustrated by comparing one of the oldest immigrant sources, Britain and Ireland, with one of the newest, Mexico, in 1990. The contribution of the current stock is to reduce the annual earnings of Mexican immigrants by 12.7% relative to those from Britain and Ireland, while the past stock effect (including the interaction with high education) reduces the earnings of Mexicans by 12.4% relative to those of the British and Irish. Similarly, compared with immigrants from Southern Europe, the earnings of Mexicans are reduced by 11.6% through the current stock effect and by 3.4% through the past stock effect. These sizeable effects suggest that Mexicans suffer the double disadvantage of being very numerous in the present but much less numerous in the past. Borjas and Katz (2005) have noted that the share of Mexican immigrants in the US workforce declined steadily from the 1920s to the 1960s. Our results suggest that this decline may have had an adverse impact on the labour market outcomes of today's Mexican immigrants.

6 Alternative estimates

Here we examine two variants of the estimates in Table 3 in order to check the robustness of the results. Because the variables representing the past history of immigration and other origin-specific variables have relatively little time-series variation, Table 3 does not include origin-specific effects. Thus the immigrant stock effects may be capturing unobserved immigrant qualities that happen to be correlated with the timing and magnitude of past migrations but are not fully captured by origin-region variables like GDP per capita or education.

Estimates of annual earnings and hourly wages using GLS random effects and fixed effects regressions are presented in Table 4.[12] A Hausman test indicates that random effects is not rejected against fixed effects at the 5% level for relative annual earnings nor at the 10% level for relative hourly wages. The main difference in these results as compared with those in Table 3 is that the coefficients on the origin-region characteristics are altered in the fixed effects regression as compared with random effects. By contrast the effects of the current and past immigrant stocks are little changed. We conclude that the effect of the past immigrant stock is not simply a spurious result arising from the omission of origin-region fixed effects.

A second question is whether it is immigration in the recent past or in the distant past that influences the earnings assimilation of first-generation

[11] The main education effect is captured by the dummy for the highest education group (not shown) and hence the negative interaction does not imply lower relative earnings for immigrants in the highest education group. The coefficient on the main past immigrant stock effect is quite similar if the education interaction is omitted from the regression.

[12] Since distance varies only by origin region it is eliminated from these regressions.

Table 4 Random effects and fixed effects estimates of relative earnings

Dependent variable	Annual earnings		Hourly wage	
Estimating method	RE	FE	RE	FE
Years since migration/10 (i,j,g,t)	0.239***	0.216**	0.083	0.091
	[0.082]	[0.096]	[0.076]	[0.090]
Years since migration	−0.028*	−0.021	−0.008	−0.007
squared/100 (i,j,g,t)	[0.016]	[0.020]	[0.014]	[0.018]
Group years since migration/10 (g,t)	−0.005	0.101*	0.031	0.115**
	[0.055]	[0.055]	[0.061]	[0.044]
Immigrant stock per 100 population (g,t)	−0.183*	−0.181**	−0.112	−0.161**
	[0.106]	[0.072]	[0.087]	[0.079]
Immigrant stock per 100 popn.	0.042	0.029*	0.020	0.035**
squared (g,t)	[0.066]	[0.015]	[0.048]	[0.015]
Past stock per 100 population (g,t)	0.068***	0.048	0.021	0.034
	[0.023]	[0.048]	[0.018]	[0.029]
Past stock per 100 × high education (g,t)	−0.040***	−0.037***	−0.027	−0.027**
	[0.013]	[0.013]	[0.018]	[0.012]
GDP ratio (foreign/US) ($g,t-1$)	0.380***	−0.380**	0.152	−0.145
	[0.107]	[0.172]	[0.097]	[0.142]
Education years ratio	−0.282*	0.642***	−0.129	0.071
(foreign/US) ($g,t-1$)	[0.146]	[0.203]	[0.102]	[0.245]
Gini coefficient ratio	−0.178***	−0.079	−0.169***	0.095
(foreign/US) ($g,t-1$)	[0.066]	[0.062]	[0.055]	[0.079]
R^2 Within	0.47	0.32	0.18	0.06
Between	0.84	0.65	0.76	0.24
Overall	0.66	0.44	0.32	0.09
Hausman test (χ^2)	10.15		14.26	
No. of observations	1,536	1,536	1,536	1,536

The dependent variables are the log of the migrant to native ratio (e.g. the log of the ratio of annual migrant earnings to annual native earnings). Robust standard errors in brackets, clustered at the census year × ethnicity group level. Regressions include dummies (not reported) for eight age groups, four education groups and three census years. The data are weighted according to the number of migrants underlying each observation.

***$p = 0.01$, **$p = 0.05$ and *$p = 0.10$

immigrants. Table 5 presents different versions of the annual earnings equation in which immigration history is captured by the migrant stock at different times in the past. For comparison with Table 3, these regressions do not include origin-specific effects. The first equation includes the immigrant stock 120 years previous to the current census (thus, for immigrants observed in 1980, the past stock is that in 1860). This produces a positive coefficient that is highly significant, while the interaction with high education is negative but much smaller. The coefficients on the stock 70 years ago in the second column and on the stock 30 years ago in the third column follow a similar pattern. It is notable that the main effect increases in size as the past stock becomes closer to the present, but the offsetting effect of high education becomes even greater. Thus, recent immigration history is more important than that of the distant past, especially for immigrants with less than college education.

We can only speculate about why the effects are more powerful for the recent past. It may simply be that individual and institutional memories fade

Table 5 Annual earnings estimates with different past stocks

Dependent variable	Annual earnings	Annual earnings	Annual earnings	Annual earnings
Years since migration/10 (i,j,g,t)	0.255**	0.251**	0.252***	0.229**
	[0.091]	[0.087]	[0.085]	[0.092]
Years since migration squared/100 (i,j,g,t)	−0.029*	−0.030*	−0.029*	−0.025
	[0.016]	[0.016]	[0.016]	[0.017]
Group years since migration/10 (g,t)	0.047	−0.022	−0.004	0.026
	[0.054]	[0.060]	[0.066]	[0.050]
Immigrant stock per 100 population (g,t)	−0.176***	−0.174***	−0.179***	−0.184***
	[0.043]	[0.043]	[0.043]	[0.045]
Immigrant stock per 100 popn. squared (g,t)	0.043***	0.040***	0.039***	0.041***
	[0.010]	[0.010]	[0.009]	[0.010]
Stock per 100 population 120 years ago (g,t)	0.025***			
	[0.008]			
Stock 120 years ago × high education (g,t)	−0.012			
	[0.012]			
Stock per 100 population 70 years ago (g,t)		0.049***		
		[0.016]		
Stock 70 years ago × high education (g,t)		−0.032**		
		[0.012]		
Stock per 100 population 30 years ago (g,t)			0.102**	
			[0.050]	
Stock 30 years ago × high education (g,t)			−0.117**	
			[0.040]	
Percent of population with group ancestry (g,t)				0.009***
				[0.003]
Group ancestry × high education (g,t)				−0.612**
				[0.003]
GDP ratio (foreign/US) ($g,t-1$)	0.299***	0.411***	0.365***	0.308***
	[0.069]	[0.085]	[0.115]	[0.060]
Education years ratio (foreign/US) ($g,t-1$)	−0.222	−0.283	−0.175	−0.214
	[0.140]	[0.189]	[0.201]	[0.144]
Gini coefficient ratio (foreign/US) ($g,t-1$)	−0.162*	−0.194**	−0.202**	−0.152*
	[0.090]	[0.078]	[0.088]	[0.083]
Log distance (g)	0.012	−0.005	−0.004	0.011
	[0.026]	[0.022]	[0.025]	[0.023]
R^2	0.66	0.66	0.66	0.66
No. of observations	1,536	1,536	1,536	1,536

The dependent variable is the log of the ratio of annual migrant earnings to annual native earnings. Robust standard errors in brackets, clustered at the ethnicity group level. Regressions include dummies (not reported) for eight age groups, four education groups and three census years. The data are weighted according to the number of migrants underlying each observation. In the last column, ancestry is instrumented using average past stock.

***$p = 0.01$, **$p = 0.05$ and *$p = 0.10$

over time. Or it may be the result of structural change; for example, the traditions established in rural communities in the mid-nineteenth century have been pushed into the background by a century of urbanization. Alternatively, cultural perceptions may be influenced by the structure of migration itself: traditions created by more recent immigrant streams eventually supplant those that were established much earlier. While we must be careful in attributing causality when the melting pot itself is evolving, the results provide an

interesting perspective on the progress of groups such as the Mexicans. They accounted for 1.0% of the population in 1980 and 3.2% in 2000. Our estimates suggest that over this period, the increase in the current stock reduced Mexican earnings by 3.5% while the past stock (30 years ago) increased their relative earnings by only 0.5%. But we can also speculate that the past stock effect will become more important in the future. On our estimates, the past stock (30 years earlier) would raise Mexican earnings between 2000 and 2020 by as much as 9.5%.[13]

An alternative measure of the degree of familiarity with certain ethnic origins is the proportion claiming ancestry from a particular source region. This is constructed from the first ancestry that was listed, with the base population being the native-born aged 15 and over who listed at least one country of ancestry. However, claiming certain ancestries is a choice that may depend on the individual's earnings or labour market status and we therefore instrument the ancestry variable using the past stock measure that appeared in Tables 3 and 4. The result in the last column of Table 5 shows that the main effect gives a highly significant positive coefficient for annual earnings while the interaction largely offsets this effect for the highly educated. This result provides further support for the idea that immigration traditions matter for the economic outcomes of current immigrants. To give an idea of the magnitudes, shifting from the proportion who claim British ancestry to the proportion who claim Mexican ancestry would reduce the relative annual earnings of an immigrant group in 1990 by about 13%.

7 Analysis by census division in the USA

The concentration of immigrants both past and present varies widely across different parts of the USA. For example, in 1990, Mexicans represented 68/1,000 of the population in the Pacific division but less than 1/1,000 of New England's population; by contrast, the figures for immigrants from Southern Europe were 4/1,000 in the Pacific division and 18/1,000 in New England. Thus, the labour market outcomes for an immigrant may depend on current and past immigrant concentrations in their particular location, but these effects will not necessarily be the same as those estimated at the national level. If the performance of immigrants is shaped by attitudes and norms that are formed at the national level, then estimates across US regions will not fully reflect these national effects.

Here, we follow the same approach as previously, but we disaggregate the data into the nine census divisions that represent broad geographic regions in

[13]Borjas and Friedberg (2007) identify an upturn in the relative earnings of immigrants in the 1990s, part of which is attributed to the improved performance of Mexicans. They note that this would be consistent with improvements in information and job networks available to Mexicans—although it would be equally consistent with the argument put forward here.

the USA.[14] The estimating equation is rewritten (with subscript r for US census division) as:

$$\ln\left[\frac{W_{ijrgt}}{W_{ijrnt}}\right] = a_0 + a_1 Y_{ijrgt} + a_2 Y_{ijrgt}^2 + a_3 Y_{rgt} + a_4 M_{rgt} + a_5 Z_{rgt} + a_6 U_{rgt} + d_t + d_i + d_j + d_r + d_g + e_{ijgt} \quad (8)$$

Thus, allowing for missing cases, we have more than eight times as many observations, and we include fixed effects for US division and immigrant origin. The dependent variables and years since migration now vary across the four education groups (i), eight age groups (j), nine census divisions (r), 16 origin groups (g) and three census years (t). The immigrant stock variables and group years since migration vary across division, origin and year; and the distance variable is now calculated separately for each division.

This approach has advantages and disadvantages over the national-level data used previously. The advantage is that we can exploit geographic variation in the concentration of immigrants from different origins. One disadvantage is possible endogeneity due to migration across census divisions, an issue that has been raised in the context of measuring the effect of immigration on native wages (Borjas 2003). We minimise this problem by estimating across census divisions rather than across states or cities, thus reducing the cross-border effect.[15] Division-level analysis also avoids too much reduction in the cell sizes when calculating the current and past immigrant stocks. But, as noted above, if there is a national component to effects of current and past immigrant stocks then these will not be captured by division-level analysis.

The first two columns in Table 6 include dummies for origin region and exclude variables that have no variation across US census divisions. Not surprisingly, the effects of years since migration and its square, and origin-group average years since migration are similar to those in Tables 3 and 4. But the current and past stock effects are much smaller. For annual earnings, the main effect of the past immigrant stock is one third the size of that in Table 3 and the interaction with high education is reduced by about a half. This difference in the coefficients could arise either because the immigrant stock coefficients are biased upwards in the absence of origin-region fixed effects, or because division-level variables do not capture national-level effects. In order

[14]The US Census Bureau defines the nine census divisions as the New England Division (CT, ME, MA, NH, RI, VT), the Middle Atlantic Division (NJ, NY, PA), the East North Central Division (IL, IN, MI, OH, WI), the West North Central Division (IA, KS, MN, MO, NE, ND, SD), the South Atlantic Division (DE, DC, FL, GA, MD, NC, SC, VA, WV), the East South Central Division (AL, KY, MS, TN), the West South Central Division (AR, LA, OK, TX), the Mountain Division (AZ, CO, ID, MT, NV, NM, UT, WY) and the Pacific Division (AK, CA, HI, OR, WA).

[15]Note that if immigrants' location decisions depend on their relative wage, then the endogeneity relates principally to the current immigrant stock M rather than to the past stock Z which can be reasonably assumed to be exogenous. While Z might be a natural instrument for M, we cannot use it here because it appears directly in the structural equation.

Table 6 Estimates at census division level with and without origin-region effects

Dependent variable	Annual earnings	Hourly wage	Annual earnings	Hourly wage
Years since migration/10 (i,j,r,g,t)	0.256***	0.105**	0.270***	0.096**
	[0.056]	[0.050]	[0.054]	[0.045]
Years since migration squared/100 (i,j,r,g,t)	−0.028**	−0.007	−0.031***	−0.009
	[0.012]	[0.009]	[0.012]	[0.009]
Group years since migration/10 (r,g,t)	0.049*	0.019	−0.003	0.031
	[0.025]	[0.029]	[0.030]	[0.026]
Immigrant stock per 100 population (r,g,t)	−0.023	−0.017*	−0.042***	−0.013*
	[0.016]	[0.010]	[0.014]	[0.008]
Immigrant stock per 100 popn. squared (r,g,t)	0.002	0.002*	0.003**	0.001
	[0.001]	[0.001]	[0.001]	[0.001]
Past stock per 100 population (r,g,t)	0.023***	0.012**	0.025***	0.011**
	[0.005]	[0.005]	[0.005]	[0.005]
Past stock per 100 × high education (r,g,t)	−0.018**	−0.018**	−0.021**	−0.018**
	[0.009]	[0.008]	[0.010]	[0.008]
GDP ratio (foreign/US) ($g,t-1$)			0.383***	0.186***
			[0.067]	[0.052]
Education years ratio (foreign/US) ($g,t-1$)			−0.235**	−0.194***
			[0.106]	[0.063]
Gini coefficient ratio (foreign/US) ($g,t-1$)			−0.202***	−0.192***
			[0.066]	[0.050]
Log distance (r,g)	0.029	−0.081**	−0.005	−0.000
	[0.045]	[0.031]	[0.021]	[0.015]
Dummies for region of origin	Yes	Yes	No	No
R^2	0.42	0.17	0.45	0.19
No. of observations	12,542	12,541	12,542	12,541

The dependent variables are the log of the migrant to native ratio (e.g. the log of the ratio of annual migrant earnings to annual native earnings). Robust standard errors in brackets, clustered at the census year × ethnicity group level. Regressions include dummies (not reported) for eight age groups, four education groups, 16 regions of origin (first two columns only), nine census divisions and three census years. The data are weighted according to the number of migrants underlying each observation.

***$p = 0.01$, **$p = 0.05$ and *$p = 0.10$

to investigate this, the third and fourth columns of Table 6 include the GDP per capita ratio, the education years ratio and the gini coefficient ratio but exclude the origin-region dummies. These additional variables give coefficients that are very similar in magnitude to those in the national-level regression in Table 3. But the coefficients on the current and past immigrant stock variables change very little in this alternative specification, as compared with the first two columns. We therefore conclude that there is a distinct difference between the immigrant stock effects at the national and division levels which is not simply due to the presence or absence of origin-region fixed effects.

The immigrant stock variables now explain less of the annual earnings difference in 1990 between immigrants from Mexico and those from Britain and Ireland. Using the weighted means across divisions, the current stock effect lowers Mexican earnings relative to the British and Irish by 1.6%, and the past stock effect lowers them by a further 3.8%. More appropriately, we

can examine the spatial differences. For Mexicans in 1990, relative earnings are predicted to be 5.4% lower in the Pacific division than in the Mid-Atlantic due to the current stock effect, but 3.2% higher due to the past stock effect. For other groups that are more evenly distributed, the interregional effects are smaller. For Southern Europeans between the Pacific and the Mid-Atlantic divisions, the current stock effect is +1.7% while the past stock effect is −1.7%; for the British and Irish, these effects are +0.1% and −1.4%, respectively.

Table 7 shows the effect of different measures of past immigration history. Again, the coefficients on the past immigrant stock and its interaction with high education are considerably smaller than in the comparable regressions in

Table 7 The effect of different past stocks at census division level with origin-region effects

Dependent variable	Annual earnings	Annual earnings	Annual earnings	Annual earnings
Years since migration/10 (i,j,r,g,t)	0.263***	0.251***	0.256***	0.243***
	[0.058]	[0.056]	[0.057]	[0.057]
Years since migration squared/100 (i,j,r,g,t)	−0.029**	−0.027**	−0.029**	−0.026**
	[0.012]	[0.012]	[0.012]	[0.012]
Group years since migration/10 (r,g,t)	0.053**	0.053**	0.051**	0.046*
	[0.025]	[0.024]	[0.025]	[0.027]
Immigrant stock per 100 population (r,g,t)	−0.022	−0.019	−0.018	−0.034*
	[0.015]	[0.015]	[0.017]	[0.020]
Immigrant stock per 100 popn. squared (r,g,t)	0.002*	0.001	0.001	0.002
	[0.001]	[0.001]	[0.001]	[0.001]
Stock per 100 population 120 years ago (r,g,t)	0.010***			
	[0.002]			
Stock 120 years ago × high education (r,g,t)	−0.000			
	[0.004]			
Stock per 100 population 70 years ago (r,g,t)		0.018***		
		[0.004]		
Stock 70 years ago × high education (r,g,t)		−0.019**		
		[0.008]		
Stock per 100 population 30 years ago (r,g,t)			0.016	
			[0.014]	
Stock 30 years ago × high education (r,g,t)			−0.066***	
			[0.023]	
Percent of population with group ancestry (r,g,t)				0.009***
				[0.003]
Group ancestry × high education (r,g,t)				−0.004*
				[0.002]
Log distance (r)	0.025	0.038	−0.001	0.037
	[0.043]	[0.046]	[0.043]	[0.051]
R^2	0.44	0.45	0.45	0.44
No. of observations	12,542	12,542	12,542	12,542

The dependent variable is the log of the ratio of annual migrant earnings to annual native earnings. Robust standard errors in brackets, clustered at the census year × ethnicity group level. Regressions include dummies (not reported) for eight age groups, four education groups, 16 regions of origin, nine census divisions and three census years. The data are weighted according to the number of migrants underlying each observation. In the last column, ancestry is instrumented using average past stock.

***$p = 0.01$, **$p = 0.05$ and *$p = 0.10$

Table 5. This reinforces the conclusion that to some degree, the receptiveness to different immigrant groups by origin region operates at the national level rather than at the local or regional level within the USA. In the first three columns, the coefficients on the main effect of the past immigrant stock remain fairly stable as the past stock becomes closer to the present, but as in the national-level estimates, the interaction effect becomes larger the more recent the immigrant stock. Finally, the ancestry variable, which is instrumented as before, gives a coefficient that is very similar to that in the national-level estimates of Table 5.

8 Immigrant integration and host country attitudes

The evidence for earnings suggests that—relative to non-immigrant Americans—immigrants from origin regions that have a long immigration history do better in the labour market than those with shorter histories but larger current numbers. The interpretation that we have given to this is that these immigrants are more readily accepted because their cultures are more familiar and have, to some degree, become part of the mainstream culture. But does this really reflect the degree of integration of different ethnic communities or is it simply the result of other unobserved characteristics that happen to be correlated with immigration histories? In this section, we briefly review other indicators of the degree of integration and acceptance of immigrants by origin.

Intermarriage between immigrants and native-born Americans has often been regarded as a key indicator of social integration (Kalmijn 1998).[16] Thus, "intermarriage across racial or ethnic lines is considered a litmus test of assimilation because it affirms the dissolving of cultural barriers to the formation of intimate relationships between members of socially or culturally distinct groups" (Bean and Stevens 2003, p. 175). Table 8 lists the proportion of married immigrants aged 20–39 in 1980 who were married to a native-born American and who married after their arrival in the USA.[17] As others have noted, the rate of intermarriage is much higher among 'old' than among 'new' immigrant groups (Lieberson and Waters 1990). Across origin groups, the correlation between the ratio of the average past stock to current stock (column 3) and the rate of intermarriage (column 1) is 0.80.

Intermarriage rates are consistent with the idea that immigrants with a long tradition behind them are more readily accepted because their cultures are more familiar and have, to some degree, become part of the mainstream culture. But it could nevertheless be argued that immigrants from non-traditional sources are simply less willing to marry native-born Americans because of

[16]The intermarriage literature, motivated by concerns about the assimilation of new ethnic groups, dates back at least to Drachsler (1920).

[17]We use census data from 1980 because this is the most recent year for which we can calculate both the date at which the individual first married and the period when he or she arrived in the USA.

Table 8 Intermarriage and citizenship in 1980

Origin region	Proportion intermarried	Proportion citizen	Past/present immigrant stock
Mexico	0.31	0.27	0.27
Central America	0.34	0.31	0.08
Caribbean	0.22	0.48	0.15
South America	0.29	0.32	0.11
Scandinavia	0.73	0.40	7.93
UK and Ireland	0.76	0.50	7.74
Western Europe	0.74	0.57	2.70
Southern Europe	0.36	0.61	1.38
Central/Eastern Europe	0.65	0.70	3.55
Russian Empire	0.42	0.73	2.71
East Asia	0.31	0.46	0.32
Southeast Asia	0.28	0.45	0.06
India/Southwest Asia	0.19	0.28	0.06
Middle East/Asia Minor	0.37	0.54	0.41
Africa	0.45	0.37	0.10
Australia and New Zealand	0.60	0.43	0.43

Derived from the 5% census sample for 1980. The base is foreign-born persons aged 20–39 who were married after arriving in the USA and who were in their first marriage with spouse present. Intermarriage means being married to a partner born in the USA; citizenship means being a US citizen by naturalization. Past immigrant stock is the average share of the population in the available censuses from 1860 to 1970.

greater cultural distance or differences in religious beliefs. Thus, the evidence from intermarriage may reflect the preferences of immigrants rather than those of the host society.[18] One measure of immigrants' social assimilation which does not rely on the cooperation of others is the proportion of those who take out citizenship. The second column of Table 8 shows the proportion of the same base group who had become citizens. This has a much lower correlation (0.30) with the ratio of past stock to present stock. It suggests that intermarriage largely reflects the preferences of natives rather than those of immigrants, but this is at best a very indirect inference.

What direct evidence is there on the views of Americans about different types of immigrants by source region? While there are many surveys that ask respondents about their attitudes towards immigrants in general, relatively few elicit attitudes to immigrants by detailed origin country or region. A Roper survey of 1982 contains a question about immigrants from 13 different origin countries, some of which have long immigration traditions stretching back to the nineteenth century. The survey asked whether immigrants from a given source had on balance been a good thing or a bad thing for the USA, and the figure reported in Table 9 is the difference between the numbers who responded 'good' and the numbers who responded 'bad' as a percentage of

[18]On the links between religion, ethnicity and cultural assimilation see Bisin et al. (2004). Empirical studies of intermarriage include Kantarevic (2004) and Meng and Gregory (2005).

Table 9 Opinion on the net benefit of immigrant groups

Immigrant group	Net benefit of immigrants by origin (%)			Past/present immigrant stock (% of US population)		
	1982 Poll Roper	1985 Poll USA Today/CNN	1993 Poll USA Today/CNN	Immigrant stock 1910/1980	Immigrant stock 1950/1980	Immigrant stock 1960/1990
English	60			6.27	1.83	2.05
Irish	55	73	65	15.10	2.88	2.97
Jews	50					
Germans	46			5.28	0.97	1.23
Italians	46			3.91	2.43	2.84
Poles	41	65	50	0.19	2.54	2.88
Japanese	29			1.12	0.21	0.40
Chinese	25	56	28	0.40	0.19	0.16
Mexicans	21	7	−30	0.26	0.36	0.19
Koreans	−6	29	20	0.07	0.01	0.02
Vietnamese	−18	17	−5	0.00	0.00	0.00
Haitians	−29	−4	−46	0.00	0.02	0.04
Iranians		−12	−48	0.00	0.00	0.00
Cubans	−50	−26	−40	0.00	0.06	0.15

Opinion on net benefit of immigrants from Lynch and Simon (2003), p. 44–45

all respondents.[19] Thus, for example, 53% of respondents thought that Polish immigrants had on balance been 'good' while 12% thought they had been 'bad', with the remainder responding either 'mixed feelings' or 'don't know'.

If we can interpret these figures as a measure of the overall approval rating of immigrants from different sources, then a clear hierarchy emerges, with the more traditional immigrant origins receiving the highest approval ratings. This ranking can be compared with the ratio of the immigrant stock in the past relative to that in the present, as a reflection of the past history of immigration. While the ranking is not exact, there is a clear positive correlation between the approval ratings and the ratios of past to present immigrant stocks. The correlation coefficient between the 1982 approval rating and the 1910/1980 stock ratio is 0.61, and the correlation between the approval rating and the 1950/1980 stock ratio is 0.74. Two further opinion polls conducted for USA Today and CNN in 1985 and 1993 asked whether immigrants from the sources listed had "generally benefited the country or generally created problems for the country". Here, the list of countries is shorter but the rankings are fairly similar. It is tempting to suggest that the decline in the approval rating for Mexicans reflects the steep rise across the 1980s in the current stock relative to

[19]The question was phrased as follows: "Since the beginning of our country, people of many different religions, races and nationalities have come here and settled. Here is a list of some different groups. Would you read down the list and, thinking of what they have contributed to this country and what they have gotten from this country, for each one tell me whether you think on balance, they have been a good thing or a bad thing for this country." (Lynch and Simon 2003, p. 44–45).

the past stock. However, it is hazardous to infer very much about changes over time from these relatively small samples.

Evidence such as that in Table 9 is largely circumstantial, and it could reflect a host of things other than the degree to which Americans are willing to trust, do business with, employ or engage in other ways with different immigrant groups. And there remains the doubt that these rankings are conditioned largely on racial stereotypes rather than being a reflection of immigration traditions. In 1997, a Knight–Ridder survey on attitudes towards immigrants asked questions specifically about recent immigrants (meaning those arriving since 1980). Respondents were asked for opinions towards different origin groups on a scale of one (very unfavourable) to 10 (very favourable). The results in the first column of Table 10 indicate that while European immigrants were the most favourably regarded, others, such as Africans and Japanese, also scored highly, and the differences across groups were relatively small. The second column reports on a scale of 1 to 10 the respondent's perception of the way that these groups are portrayed in the media. This gives a somewhat wider range with a ranking a little more similar to that in the previous table. One interpretation of these results is that while individuals see themselves as relatively unbiased, they regard society as a whole as rather more unfavourable to groups such as Mexicans and Cubans who scored low in the polls reported in Table 9.

Supporting evidence for this interpretation is reported in the third column of Table 10. Respondents were asked if they had friends who were recent immigrants from up to three of the origin groups listed. They were also asked if immigrants from up to three origin groups were living nearby. The third column of Table 9 reports the ratio of the number who replied that they had friends from a particular origin divided by the number that reported having neighbours from that origin. This can be interpreted as the number of close

Table 10 Opinion towards immigrant groups

Immigrant group	Favourable opinion	Positively portrayed	Friends/ neighbours	Immigrant stock 1960/1990
Africa	6.05	4.83	1.65	0.11
Europe	6.55	6.59	1.51	1.92
Middle East	5.07	4.00	1.70	0.41
Mexico	5.16	3.94	0.64	0.19
Central and South America	5.75	4.45	1.43	0.10
Cuba	4.87	3.85	0.95	0.15
Other Caribbean islands	5.29	4.25	1.71	0.17
India	5.77	4.87	0.71	0.03
China	5.97	5.29	0.49	0.16
Japan	6.21	5.81	1.06	0.40
Philippines	5.87	4.84	1.24	0.17
Other Asia	5.27	4.55	0.89	–

Roper Center survey reference USPSRA1997-KR97005. The data covers 1,200 respondents excluding the oversamples of Blacks and Hispanics.

contacts divided by the opportunity for such contacts. This ratio is much lower for Mexico, Cuba, India and China than for Africa, Europe, the Middle East and Other Caribbean. While the ranking does not correspond particularly closely with the past to present immigrant stock ratio in the final column, neither does it correspond very closely with the column on favourable or unfavourable opinion. Thus, while Americans do not seem to be particularly prejudiced against some origin groups relative to others, there are distinct differences in the degree to which they interact with these different groups.

9 Conclusion

The earliest accounts of immigrant assimilation argued that America was a melting pot in which immigrants with different cultures and from different parts of the world were absorbed into the mainstream within a couple of generations. While each new wave of unfamiliar faces from unfamiliar places tended to be received with suspicion and with some degree of prejudice, over time, they became accepted and integrated into the US labour market. The more recent literature has cast doubt on the melting pot view, arguing that waves of immigrants from different origins have unique histories that trace out very different trajectories of assimilation and integration. What they do agree on, however, is that patterns of assimilation in general, and labour market outcomes in particular, depend on the *interactions* between immigrant communities and the host society and not solely on the characteristics and the motivation of immigrants as individuals. This in turn suggests that the economic outcomes for first-generation immigrants depend on the size of the immigrant community both in the present and in the past.

In this paper, we have attempted to capture these forces by including the size of origin-specific immigrant communities in the present and in the past as explanatory variables for relative earnings. Our results support the view that a large number of immigrants from a given origin tends to depress relative earnings while a history of past immigration from that source raises relative earnings. Thus, just as the surge of Southern and Eastern European migrants to the USA put downward pressure on their countrymen's wages in the period up to the First World War, the more recent waves from Asia and particularly from Mexico have had a similar effect. But as the past stock of Southern and Eastern Europeans increased relative to the current stock, so their economic outcomes improved. Something similar is now happening to immigrants from countries whose share of the US migrant stock is increasing.

Although the relative earnings of immigrants to the USA have fallen since the 1960s, this is largely because of the shift in the composition towards immigrants from origin regions with little past history. As the high level of immigration has continued, the ratio of past stock to current stock has been increasing for most origin regions. This has contributed to the rise in the relative earnings of immigrants when the source region composition is held

constant.[20] On the one hand, this suggests that the melting pot still works: as the new immigrant groups of recent years accumulate longer histories, their outcomes will continue to improve. On the other hand, our results suggest that this community-level assimilation process may take rather a long time.

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Appendix

Census variables

The following variables are taken from the 5% samples of the 1980, 1990 and 2000 US Censuses, available at the IPUMS database (Ruggles et al. 2008).

Sample restriction

Men aged between 25 and 64

Individual-level variables

Annual wage and salary income (INCWAGE)

Annual hours worked: weeks worked last year (WKSWORK1) × usual hours worked per week (UHRSWORK)

Hourly wages: annual earnings/annual hours worked

Education groups: (EDUCREC) coded into four categories: less than high school (codes 1–6), high school (code 7), 1–3 years of college (code 8) and 4 + years of college (code 9).

Years since migration: from year of immigration (YRIMMIG, which is in interval) and census year. Origin-group years since migration are the average of all immigrants from a given origin excluding the age/education group to which it is applied.

Migrant stock variables

Derived from birthplace (BPL) codes according to the following classification:

Mexico (200), Central America (210), Caribbean (250–260), South America (300), Scandinavia (400–405), UK and Ireland (410–44), Western Europe

[20]Between 1970 and 2000, the ratio of past average stock to current immigrant stock, taking an unweighted average across the 16 origin groups, increased from 1.1 to 2.6. If, instead, we weigh these ratios by the current immigrant stock, then the average falls from 2.3 in 1970 to 0.8 in 2000.

(420–429), Southern Europe (430–440), Central/Eastern Europe (450–459), Russian Empire (460–465), East Asia (500–509), Southeast Asia (510–519), India/Southwest Asia (520–524, 548), Middle East/Asia Minor (530–547, 549), Africa (600) and Australia and New Zealand (700). For each census, the origin-region immigrant stock is expressed as a percentage of the total US population.

The past stock variable is the average of these percentages in the 120 years before the date of observation, excluding the census years 1890 and 1930 for which the data were missing at the time the paper was drafted. To be precise, when looking at immigrant outcomes in the 1980 census, we use the past stock from the 1860–1970 censuses; when looking at immigrant outcomes in the 1990 census, we use the past stock from the 1870–1980 censuses; and when looking at immigrant outcomes in the 2000 census, we use the past stock from the 1880–1990 censuses. Because of the missing data for 1890 and 1930, we are averaging in each case across ten censuses conducted over a 120-year period.

We also explore various alternative measures of past immigrant stock for the time periods of 30, 70 and 120 years ago. Because this measure was unavailable in 1930 at the time the paper was drafted, the immigrant stock 70 years ago in 2000 is the average of the percentages in 1920 and 1940.

Ancestry is the first-mentioned ancestry (ANCESTR1), which contains a diverse range of origins that have been classified into the same groups as birthplace. We calculate the proportion aged 15 and over claiming ancestry from these origin regions, excluding the foreign-born and non-responses but including in the base those who claimed ancestry from North America.

Source country variables

GDP per capita: calculated from Maddison (2001), Appendix C, pp. 267–333. Origin region GDP per capita calculated from countries and regional residuals, weighted by population.

Education years: Average years of education for the population aged 15 years and over for 80 countries, weighted by country populations within each of the 16 regions. Data from Barro and Lee (2001), available from the website of the Center for International Development at Harvard University: http://www.cid.harvard.edu/

Inequality: Gini coefficient of household income for 80 countries, weighted by population in each of the 16 origin regions. These data were originally assembled by Deininger and Squire, and have now been augmented and made available at the website of the World Institute for Development Economics Research of the United Nations University (UNU-WIDER) at: http://www.wider.unu.edu/. The observations selected are (almost) exclusively those labelled as 'high quality', with adjustments according to whether the underlying data were for income/expenditure, for gross/net income or for individuals/households. Census year observations are obtained from linear interpolation, where appropriate.

Distance from Chicago: Distances in km are calculated using a Java routine available on the website of John A. Byers at: http://www.chemical-ecology.

net/java/lat-long.htm. Origin-region capitals are Mexico City, Panama City, Kingston (Jamaica), Brasilia, Stockholm, London, Paris, Rome, Berlin, Moscow, Beijing, Jakarta, Mumbai, Jerusalem, Johannesburg and Sydney. Distances from the nine US divisions (Tables 6 and 7) are measured from: Boston, New York, Chicago, Kansas City, Baltimore, Memphis, Houston, Denver and Los Angeles.

All data and code are available from the authors upon request.

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