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Ran Abramitzky  
Leah Platt Boustan

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**ABSTRACT**

The United States has long been perceived as a land of opportunity for immigrants. Yet, both in the past and today, US natives have expressed concern that immigrants fail to integrate into US society and lower wages for existing workers. This paper reviews the literatures on historical and contemporary migrant flows, yielding new insights on migrant selection, assimilation of immigrants into US economy and society, and the effect of immigration on the labor market.

Ran Abramitzky  
Department of Economics  
Stanford University  
579 Serra Mall  
Stanford, CA 94305  
and NBER  
ranabr@stanford.edu

Leah Platt Boustan  
Department of Economics  
8283 Bunche Hall  
UCLA  
Los Angeles, CA 90095-1477  
and NBER  
lboustan@econ.ucla.edu

## I. Introduction

The United States has long been perceived as a land of opportunity, a place where prospective immigrants can achieve prosperity and upward mobility.<sup>1</sup> Yet, both in the past and today, US natives have expressed concern that immigration lowers wages and that new arrivals fail to assimilate into US society. These fears have influenced historical immigration policy and are echoed in contemporary debates.<sup>2</sup>

In this essay, we address three major questions in the economics of immigration: whether immigrants were positively or negatively selected from their sending countries; how immigrants assimilated into the US economy and society; and what effects that immigration may have on the economy, including the effect of immigration on native employment and wages. In each case, we present studies covering the two main eras of US immigration history, the Age of Mass Migration from Europe (1850-1920) and the recent period of renewed mass migration from Asia and Latin America.

Reviewing the historical and contemporary evidence side by side yields a number of insights. First, the nature of migration selection appears to have changed over time. Whereas, in the past, migrant selection patterns were mixed, with some migrants positively and others negatively selected from their home countries on the basis of skill, migrants today are primarily positively selected from source country populations, at least on observable characteristics.<sup>3</sup> The rise in income inequality in the US can help explain the increasingly positive selection of

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<sup>1</sup> Ellis Island in New York Harbor served as the entry point for millions of immigrants arriving from Europe in the late nineteenth and early twentieth centuries. The Statue of Liberty in New York Harbor, which has come to be a symbol of the country's openness to new arrivals, was extolled in Emma Lazarus's 1883 poem, *A New Colossus*, for beckoning "world-wide welcome."

<sup>2</sup> Jencks (2001) describes the parallels between historical and contemporary immigration debates, writing that "America's current immigration debate often sounds a lot like the debate that raged early in the twentieth century. Once again many American workers see immigrants as an economic threat... Once again the great majority of Americans would prefer to keep the country homogeneous."

<sup>3</sup> We discuss exceptions to this broad pattern in the corresponding section.

immigrants seeking to take advantage of the high returns to skill in the US. But the fact that recent immigrants are not negatively selected – even from destinations that are more unequal than the US, as would be predicted by the classic Roy model of self-selection – may be explained by the growing selectivity of US immigration policy over time, or by rising costs of (often undocumented) entry due to strict immigration restrictions.

Second, both in the past and today, the evidence is not consistent with the common perception of the “American dream,” whereby immigrants arrived penniless and eventually caught up with US natives. Long-term immigrants in both periods have experienced occupational or earnings growth at around the same pace as natives. As a result, immigrants who held lower-paid occupations than natives upon arrival to the US did not catch up with natives over a single generation. The major difference between the past and present is that, circa 1900, typical long-term immigrants held occupations similar to the native born, even upon first arrival, whereas today the average immigrant earns less than natives upon arrival to the US. Smaller earnings gaps in the past are consistent with the fact that immigrants primarily hailed from European countries that, though poorer than the US, were not as dissimilar in development to the US as are sending countries like Mexico and China today.<sup>4</sup> However, there was a substantial degree of heterogeneity in immigrants’ skills and earnings across sending countries, including some immigrant groups that out-earn natives from the outset. We also argue that, when evaluating the pace of immigrant assimilation, methods matter. Studies based on cross-sectional data, which are less well-suited to studying assimilation than are panel data, often provide an overly-optimistic sense of immigrant convergence.

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<sup>4</sup> US GDP per capita is over 5 times higher than Mexico or China today, whereas the US had GDP per capita that was only 2-3 times higher than European sending countries circa 1900.

Third, both then and now, immigrants appear to reduce the wages of *some* natives, but the evidence does not support the view that, on net, immigrants have negative effects on the US economy. Instead, new arrivals creates winners and losers in the native population and among existing immigrant workers, reducing the wages of low-skilled natives, encouraging some native born to move away from immigrant gateway cities, and spurring capital investment; in the past, these investments took the form of new factories geared toward mass production.

The main goal of this paper is to review the historical evidence on key issues of concern to the economics of immigration today. We explicitly address the set of topics covered in the Borjas' (1994, 2014) reviews of the literature, which include immigrant selection and assimilation and the effect of immigrants on native workers, and we add in each case the insight that comes from comparison with the historical evidence. Our focus is on the labor and applied microeconomics research, rather than on more macroeconomic approaches to this topic. Hatton and Williamson (2005) and Ferrie and Hatton (2014) provide complementary reviews of the role of immigration in global economic history. There are a number of important historical topics that we do not cover here. These include internal migration within the US,<sup>5</sup> the involuntary migration of slaves,<sup>6</sup> migrations to destinations outside of the US,<sup>7</sup> or the effect that out-migration might

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<sup>5</sup> Classic references on internal migration in US history are Steckel (1983), Hall and Ruggles (2004) and Ferrie (2005). Collins and Wanamaker (2014) uses linked Census data to evaluate the selectivity and returns to migration for black and white migrants leaving the US South before 1930. Boustan (2009) and Boustan, Fishback and Kantor (2010) study the effect of internal migrants on existing workers in destination areas. Molloy, Smith and Wozniak (2011) address the more recent decline in the rates of internal migration in the US.

<sup>6</sup> Curtain (1972), Menard (1975), Fogel (1989), and Eltis, Lewis and Richard (2005) discuss effects of the slave trade on US population and markets. Nunn (2008) considers the effect of slave trade on the source countries.

<sup>7</sup> Hatton and Williamson (1994) include chapters on migration to Argentina, Australia and Canada, the three largest receiving countries in the period outside the US. Green, MacKinnon and Minns (2002) compare British migrants who chose to settle in the US versus Canada, and Balderas and Greenwood (2010) compare the determinants of migration to Argentina, Brazil and the US. Green and Green (1993), Green and MacKinnon (2001), and Dean and Dilmaghani (2014) study the assimilation of European immigrants into the Canadian economy. Fares to Australia and New Zealand were higher than to other destinations in this period, and information about these economies was scarcer (McDonald and Shlomowitz, 1991). Hudson (2001) discusses these effects of these impediments on migration to New Zealand. Pérez (2014) constructs panel data to study the selection and assimilation of immigrants to Argentina during the Age of Mass Migration.

have on sending countries.<sup>8</sup> Furthermore, our coverage of the literature on the modern period is only partial.

## **II. Immigration regimes in US history**

The history of immigration to the United States has been shaped both by changes in the underlying costs and benefits of migration as well as by substantial shifts in immigration policy. The high cost of crossing the Atlantic in the seventeenth and eighteenth centuries gave rise to a long period of indentured immigration (c. 1600-1800).<sup>9</sup> With revolutions in shipping technology<sup>10</sup> and a growing reliance on a network of migrant finance,<sup>11</sup> migration costs declined in the mid-nineteenth century, ushering in a sustained Age of Mass Migration from Europe (1850-1920). This period ended with the imposition of a literacy test for entry in 1917 and strict immigration quotas in 1921, which were modified (although not eliminated) in 1965. Most recently, the relaxation of immigration quotas has allowed for a period of constrained mass migration, primarily from Asia and Latin America.<sup>12</sup>

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<sup>8</sup> There has been surprisingly little work done on the effect of emigration on the sending regions considering the dramatic rates of out-migration from Europe during the Age of Mass Migration. Boyer, Hatton and O'Rourke (1994) and Hatton and Williamson (1998, chpt. 9) study the labor market effects of out-migration in Ireland and Sweden. Karadja and Prawitz (2015) study the effect of emigration on local political development in Sweden.

<sup>9</sup> The majority of voluntary migrants who settled in the American colonies before 1775 arrived on indentured servants' contracts (Smith, 1947; Tomlins, 2001). Indenturing arose as a solution to the high costs of migration in the seventeenth and eighteenth centuries (Galenson 1981a, 1981b, 1984). Most indentured servants were young men from the United Kingdom or Germany (Gemery, 1986). Servants worked for a defined period of time, often seven years, in exchange for passage from Europe to the New World (Grubb, 1985, 1986, 1988). The market rewarded servants who arrived with more skills in the form of shorter periods of indenture (Galenson 1981a, 1981b). Abramitzky and Braggion (2006) suggest that, relative to the West Indies, the mainland American colonies appeared to have attracted servants with higher levels of human capital.

<sup>10</sup> As wooden hulls and paddle wheels were replaced by iron sides and compound steam engines, trans-Atlantic travel time declined from one month in the mid-eighteenth century to eight days by 1870 (Hugill, 1993; Cohn, 2005). On the industrial organization of the steamship industry at its height, see Keeling (1999).

<sup>11</sup> See Grubb (1994) on the relationship between migrant financing and the decline in indentured servitude. The demise of indenturing in the US may also have been tied to the growth of the slave population (Galenson, 1984). Indeed, indenturing was widely used to transport Asians, primarily from India and China, after the abolition of slavery in the Caribbean sugar islands and South America in the 1830s (Engerman, 1986).

<sup>12</sup> We borrow this periodization in part from Chiswick and Hatton (2003).

The rise of mass migration was associated with the shift from sail to steam technology in the mid-nineteenth century, and a corresponding decline in the time of trans-Atlantic passage.<sup>13</sup> As travel costs fell and migrant networks expanded from 1800 to 1850, the number of unencumbered immigrants entering the US increased substantially.<sup>14</sup> Annual in-migration rose from less than one per 1,000 residents in 1820 to 15 per 1,000 residents by 1850 (Panel A of Figure 1).<sup>15</sup> Throughout the Age of Mass Migration (1850-1920), about 55 million immigrants left Europe, with the US absorbing nearly 30 million of these arrivals (Hatton and Williamson, 1998, p. 7).<sup>16</sup> As a result, the foreign-born share of the population rose from 10 percent in 1850 to 14 percent in 1870, where it remained until 1920 (Panel B of Figure 1).<sup>17</sup> Another notable feature of this era is the fluctuations of migration flows with the business cycle; annual in-migration rates varied between 0.4 and 1.6 percent of the population. Spitzer (2014) explains this pattern in the context of a dynamic model in which prospective migrants optimally time their moves to the New World; in this case, high migration rates during economic booms can generate follow-on migration via migrant networks, thereby augmenting business cycle swings.

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<sup>13</sup> In the mid-eighteenth century, it took around one month to sail from a European port to the US. The SS *Great Western*, the first steamship to cross the Atlantic in 1838, completed the journey in 16 days. As ship technology improved, with wooden hulls and paddle wheels replaced by iron sides and compound steam engines, travel time declined further, reaching eight days by 1870 (Hugill, 1993; Cohn, 2005). On the industrial organization of the steamship industry at its height, see Keeling (1999).

<sup>14</sup> Shorter trans-Atlantic voyages reduced the cost of migration in part by lowering the mortality risk of the journey. In the 1840s, the mortality rate during the crossing was one in 100 (Cohn, 1984). Mortality risk was especially high for children (Cohn, 1987). Once migrant communities were established in US cities and rural areas, many prospective migrants were able to travel on pre-paid tickets financed by friends or family, thereby lowering borrowing costs (Hatton and Williamson, 1998; Carrington, et al., 1996). See also Kobrin and Day (2002) on the role of immigrant banks in facilitating migration.

<sup>15</sup> To compare immigration flows over time, note that Figure 1a does not include undocumented immigrants, which represented an additional 650,000 entrants per year during the decade of the 2000s (Hanson, 2006). Adding undocumented immigrants would double contemporary immigrant in-flows, making immigration rates more comparable today to the Age of Mass Migration.

<sup>16</sup> Other important receiving countries were Argentina, Canada and Brazil.

<sup>17</sup> Migrants represented a larger share of the labor force than the population during the Age of Mass Migration (20 percent versus 14 percent), largely because few migrants were young children. Today the gap between the foreign born share of the population and the labor force is smaller (13 percent versus 16 percent).

Alongside this growth in migrant numbers, falling migration costs also facilitated a shift in the typical mix of sending countries towards poorer countries on the European periphery (Figure 2). In 1850, over 90 percent of the migrant stock hailed from Northern and Western Europe, particularly from the Great Britain, Ireland and Germany. The share of migrants from Southern and Eastern Europe began to rise in 1890; by 1920, 45 percent of the migrant stock was from the “old” sending countries, while 41 percent was from the “new” regions. Immigrants from Southern and Eastern Europe were, on average, younger, more likely to be male and unmarried, and less likely to settle permanently in the US (Hatton and Williamson, 1998, p.11, 101-102). According to official statistics on return migration, first collected in 1908, around 30 percent of European migrants returned to their home country (Gould, 1980; Wyman, 1996); recent work by Bandiera, Rasul, Viarengo (2013) suggests that the return rates from certain countries may have been much higher.<sup>18</sup>

Immigrants clustered by region in the US (Dunlevy and Gemery, 1977). Figure 3 uses the complete count of the 1920 Census to map the most numerous country-of-origin group among the foreign born by county. The map illustrates some well-known patterns in US history: Scandinavians were the largest foreign-born group in the upper Midwest; German-speaking migrants represented the largest share of the foreign born in the lower Midwest; Italians were prevalent in New York, New Jersey and Pennsylvania. Migration within the Americas was also sizeable, with Canadians representing the largest country-of-origin group in Maine and along parts of the northern border, and Mexicans dominating through most of Texas, Arizona, New Mexico and southern California. Settlement patterns in the South were far less cohesive,

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<sup>18</sup> BRV compare the counts of migrant inflows from newly-digitized passenger manifests to the stock of foreign-born residents in the Census and attribute the difference to return migration. This method implies that 60-75 percent of migrants returned to Europe in the 1900s and 1910s.



primarily reflecting the fact that the immigrant share of the population in southern counties was very low.

Immigrant enclaves are easier to observe in Figure 4, which presents the share of the county's population in 1920 made up of immigrants from particular sending countries. For illustration, we consider three groups – Austrians and Germans, Italians, and Norwegians. The largest clusters of German immigrants (as a share of the total population) were in Wisconsin, central Minnesota and Iowa; and in Pennsylvania and Texas. Italians represented over ten percent of the population in certain counties in Connecticut, Rhode Island and upstate New York. Norwegians were equally numerous in the northern tip of Minnesota and in much of North Dakota.

Rising migrant numbers and, especially, the shift towards new sending countries contributed to the growing political pressure to restrict immigrant inflows.<sup>19</sup> Congress convened the Dillingham Commission in 1907 to study the effect of immigration on the US economy and society. The Commission's report, published in 1911, advocated for a set of additional regulations, including limits on the number of immigrant arrivals, quotas by county-of-origin, and restrictions against immigrants who were illiterate or penurious. All but the wealth requirement were passed over the next decade and the era of open borders came to an end.

A literacy test for entry into the US was passed over President Wilson's veto in 1917. In 1921 (amended in 1924), a set of country-specific immigration quotas were imposed. From over a million annual entrants in the late 1910s, immigrant arrivals were capped at 150,000 by 1924.

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<sup>19</sup> The anti-immigration movement scored early victories with targeted bans against smaller immigrant groups, including the 1882 Chinese Exclusion Act; restrictions against the criminal and the "insane" in 1891; and the 1908 Gentleman's Agreement limiting immigration from Japan. In 1880, there were around 100,000 Chinese immigrants in the US (representing 3 percent of foreign-born males between the ages of 18 and 65). These pre-Exclusion Act migrants formed ethnic enclaves (Chinatowns) in many American cities (Carter, 2013). After the immigration ban, many Chinese immigrants instead settled in South America and the Caribbean.

Allocation of quota slots was based on the size of migrant stocks from each country of origin in 1890 (King, 2000, p. 199-217).<sup>20</sup> This early benchmark favored countries in Northern and Western Europe, especially the UK, over the “new” sending countries from Southern and Eastern Europe.<sup>21</sup> Support for immigration restriction was based on concerns about labor market competition, as well as xenophobia and antipathy toward new immigrant arrivals (Goldin, 1994).<sup>22</sup> A shift in the southern vote away from open immigration was decisive in allowing Congress to override the presidential veto.<sup>23</sup>

Following the imposition of strict immigration quotas, the foreign born share of the US population declined from 14 percent in 1920 to 5 percent in 1970 (see Panel B of Figure 1). The flow of low-skilled immigrants dropped substantially after 1921, due both to a change in the country-of-origin mix and to increased selectivity within sending countries (Massey, 2013). Specific immigrant groups, including Jewish refugees during World War II and Eastern Europeans allowed entry by the Refugee Relief Act of 1953 contributed to this shift in migrant selection (Blum and Rei, 2015). The imposition of quotas also reduced the phenomenon of temporary migration, especially among unskilled and agricultural workers (Greenwood and

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<sup>20</sup> Legislation passed in 1921 limited immigrant arrivals to 357,000 and allocated slots on the basis of migrant stocks in the 1910 Census. These restrictions were tightened in 1924 and further amended in 1929.

<sup>21</sup> Swings in US immigration regimes mirror similar policy shifts in immigrant-receiving countries over time. Timmer and Williamson (1998) document a general shift toward restrictive border policy in many immigrant-receiving countries in the early twentieth century, which Williamson (1998) attributes in part to the political pressure of low-skilled native voters.

<sup>22</sup> Goldin (1994) finds that congressional districts with mid-sized immigrant communities (as opposed to large or small concentrations of the foreign born) and districts facing stagnant wages were the most likely to support restriction. Nationally, organized labor and residents of rural areas were the most consistent supporters of immigration restriction. Rural voters may simply have been xenophobic or may have worried about the competition that immigrants posed for their children, many of whom were moving to urban areas. On the role of nativism in depressing immigration flows in the 1850s, see Cohn (2000). Higham (2002, ori. pub. 1955) is the classic reference on nativism in US history.

<sup>23</sup> Few immigrants moved to the South. Indirectly, immigration affected southern interests by providing a steady supply of workers in northern factories, which may have forestalled the move of southern black workers to northern cities (Collins, 1997).

Ward, 2014). An exception is the temporary migration of over four million Mexican farm laborers authorized by the Bracero program (1942-1964) (Massey and Liang, 1989).

Immigration quotas remained in place until the 1960s. The Immigration and Nationality Act of 1965, passed in the midst of the Civil Rights movement, eliminated the country-specific quota system and increased the immigration cap from 150,000 to 270,000 entrants per year.<sup>24</sup> The country-specific allocation was replaced by preferences for close family members of US citizens or legal permanent residents and for individuals with specific skills with employment sponsorship. Another route to legal migration, albeit in small number, is through refugee or asylum seeker status. Currently, the global immigration quota is 620,000, with no more than 7 percent of the flow allocated to any given country.<sup>25</sup>

The foreign-born share of the population increased from 5 percent in 1970 to 14 percent in 2010, returning to a level last seen during the previous Age of Mass Migration. In 2010, 51 percent of the migrant stock was from Latin America and 28 percent was from Asia. Given that demand for immigration to the US now outstrips available slots, the number of “illegal” or “undocumented” immigrants living in the US increased, reaching 27 percent of the total stock of immigrants by 2011 (and a larger share of the annual flow). In the decade of the 2000s, estimates suggest that around 650,000 undocumented immigrants arrived each year, mainly from Mexico (Hanson, 2006).<sup>26</sup>

Policymakers have attempted to counteract undocumented migration by expanding the policing of the southern border; expenditures on border control rose ten-fold from the 1980s to

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<sup>24</sup> King (2000, p. 247) argues that the 1965 policy change was “not designed to open the US to increasing numbers of immigrants but simply to end inequities in the selection of immigrants” (on this point, see also Massey and Pren, 2012).

<sup>25</sup> The assignment of immigration slots by hemisphere ended in 1978, in favor of a single, worldwide quota.

<sup>26</sup> See facts at <http://pewhispanic.org/files/reports/126.pdf>

the 2000s (Gathmann, 2008).<sup>27</sup> Since 2001, Congress has repeatedly introduced (but failed to pass) the DREAM Act to create a path to permanent residency for the children of undocumented immigrants.<sup>28</sup> In 2012, the Obama Administration passed an executive order to offer temporary work permits to such children and expanded this Deferred Action program to other undocumented immigrants in 2014. An immigration reform bill passed by the Senate in June 2013 (but not brought to a vote in the House) offered a “tough but fair” pathway to citizenship for the estimated 11 million undocumented immigrants living in the US. The reform was intended to provide a wider set of employment and educational opportunities to immigrants and their children, and at the same time set stronger enforcement tools to prevent more illegal immigrants from coming to the US. Immigration reform remains a central issue for the 2016 presidential campaign.<sup>29</sup>

### **III. Migrant selection**

International migration is a selective process, with some residents choosing to leave their country of birth and others choosing to stay. Who moves depends on the costs and benefits of migration, which can vary across individuals for both systematic and idiosyncratic reasons. In a simple Roy model in which migration costs are assumed to be the same for everyone, prospective migrants possessing skills that are highly valued in the destination economy can

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<sup>27</sup> Policing the border has an ambiguous effect on the total number of undocumented migrants living in the US; fear of apprehension reduces the inflow of new undocumented migrants but also discourages existing migrants from returning home (Angelucci, 2012; Gathmann, 2008; Hanson and Spilimbergo, 1999).

<sup>28</sup> Woolston (2015) compares the educational attainment of undocumented immigrants who arrived in the US as young children with their younger siblings who were born in the US and shows that US citizenship has a positive effect on educational outcomes.

<sup>29</sup> Contemporary survey evidence finds that low-skilled workers are less favorable toward an open immigration policy than their higher-skilled counterparts, although the underlying cause of this association – whether concerns about labor market competition or an association between skill level and nativist attitudes – is unclear (Scheve and Slaughter, 2001; O’Rourke and Sinnott, 2006; Hainmueller and Hiscox, 2007). See Citrin, et al. (1997) for an alternative reading of the survey evidence.

expect the highest return to migration and are thus most likely to move. Specifically, if the destination country offers higher labor market rewards for skill relative to the sending country, the migrant flow will be positively selected on the basis of skill. If, instead, the destination economy offers lower rewards for skill relative to the sending area, the migrant flow will be negatively selected on the basis of skill.<sup>30</sup> By positive (or negative) selection, we mean that migrants have more (less) productive skills than residents who stay behind in the source country. In practice, skills can be indexed by observable attributes (like education) or pre-migration wages, which provide a measure of otherwise unobserved skills rewarded in the labor market.

Selection patterns during the Age of Mass Migration are consistent with a basic Roy model. Migration to the US was positively selected from some European countries and negatively selected from others, with differences in selection lining up with differences in the relative returns to skill across sending countries. In the recent period, migrants to the US from many sending countries appear to be positively selected on the basis of education and other observable dimensions of productivity. Such positive selection may be a result of immigration policy that favors education and skill.

### **A. Migrant selection in the past**

Given available information on the income distribution of European sending countries in the mid-nineteenth century, an application of the Roy model would predict neutral selection from Western Europe and negative selection from the European periphery. At this time, the US exhibited a similar income distribution to many Western European countries, in which case we would expect neutrally-selected migration from countries like Great Britain (Lindert, 2000;

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<sup>30</sup> This logic is drawn from Roy's (1951) model of self-selection into occupations, as applied to the migration decision by Borjas (1987); see Borjas (2014, p. 8-25) for a useful summary of this application.

Lindert and Williamson, 2014).<sup>31</sup> Although evidence on the income distribution in other European countries is limited, scattered data suggest that the US was more equal than countries on the European periphery in the late nineteenth century.<sup>32</sup> In these cases, low skilled workers would have the most to gain from moving to the US and we would expect negative selection.

Indeed, as a basic Roy model would predict, historical evidence suggests that migration from Western Europe to the US was neutrally selected. Passenger lists of emigrants leaving the German region of Hesse-Cassel in the 1850s reveal that mid-skill level artisans were overrepresented in the migrant flow, as opposed to poor laborers or rich farmers (Wegge, 2002). British immigrants in the 1860s and 1870s were also more likely to have been raised by a father in a semi-skilled profession, as opposed to by an unskilled or white collar father; Long and Ferrie (2013b) observe this pattern in Census data matched between the US and the UK.<sup>33</sup>

In contrast, migrants to the US from countries in the European periphery (including Ireland, Norway and Italy) appear to have been negatively selected. Irish migrants from the pre-famine and famine periods held lower-paid occupations than men who remained at home and were more likely to report a round-numbered age; such age heaping is often used as a proxy for a lack of numeracy (Mokyr and Ó Gráda, 1982; Cohn, 1995). Norwegian migrants in a linked Census sample were more likely than non-migrants to be raised by fathers who did not own land and who held lower-paid occupations (Abramitzky, Boustan and Eriksson, 2012). Abramitzky, et al. also find a higher return to migration within pairs of brothers than in the population as a

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<sup>31</sup> Lindert and Williamson's (2014) new inequality estimates for the US in 1860 are based on "social tables," or counts of the population in 1-digit occupations, matched with information on labor and property income by occupation category.

<sup>32</sup> See Abramitzky, Boustan and Eriksson (2012) for a comparison of the US and Norwegian income distributions in 1900. Atkinson and Piketty (2007) and Atkinson, Piketty and Saez (2011) provide a broader set of cross-country comparisons. We caution that the Atkinson, et al. series begin circa 1920 and focus on the share of income earned by workers at the top of the income distribution, both of which may reduce the applicability to the Age of Mass Migration.

<sup>33</sup> Cohn (1992) instead finds that, during the antebellum period, British migrants were drawn from both the richest occupations (farmers) and the poorest (laborers), with the skilled artisans underrepresented in the migrant flow.

whole, suggesting that naïve estimates of the return to migration are biased downward by negative selection for men leaving urban areas. Spitzer and Zimran (2014) compare the stature of Italian migrants entering the US – logged in Ellis Island arrival records – with the stature of Italian males conscripted into the armed forces as a proxy for childhood health conditions. Migrants were negatively selected on the basis of height from the overall Italian population, due entirely to higher migration rates from the poorer southern provinces.<sup>34</sup>

The direction of migrant selection is closely related to the motivations of prospective migrants. The Roy model implicitly assumes that migrants are seeking to optimize lifetime income but, in some cases, migration may also be prompted by flight from persecution or pursuit of political and social freedoms. An extensive literature in economic history studies the determinants of aggregate migration flows, drawing either on national time series (e.g., Hatton, 1995 for the UK; Hatton and Williamson, 1998 for Ireland) or provincial differences in emigration rates (e.g., Hatton and Williamson, 1998 for Ireland and Italy; Sanchez-Alonso, 2000 for Spain).<sup>35</sup> In general, the size of the migration flow increases with the relative wage and employment rates in the destination country, as well as with the size of the migrant network, suggesting that prospective migrants are aware of and responsive to economic conditions.<sup>36</sup> Improvements in relative economic opportunities in the destination country are also associated with more positive migrant selection (Covarrubias, Lafortune and Tessada, 2015).

There has been less work done on the role of non-economic factors such as political upheavals or persecution in driving migration flows during the Age of Mass Migration. Boustan

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<sup>34</sup> Kosack and Ward (2014) use heights to assess the selection patterns of Mexican migrants into the US at the beginning of the twentieth century. Their results suggest positive selection: migrants from Mexico were on average four to five centimeters taller than Mexican conscripts. See also Greenwood (2007, 2008) on migrant selection by age and gender.

<sup>35</sup> Hatton (2010) provides a thorough review of this literature (see p. 942-949).

<sup>36</sup> See Moretti (1999) on the role of social networks on migration from Italy during the Age of Mass Migration.

(2007) and Spitzer (2014) show that Jewish out-migration from the Russian empire reacted to anti-Jewish violence (pogroms), but that economic fundamentals continued to drive much of the migration patterns in this case. Research into other cases, including the German revolutions of 1848, the Irish struggles for independence, and the role of various famines and natural disasters, could prove rewarding.

## **B. Migrant selection in the present**

Unlike in the past, recent empirical evidence on migrant selection to the US appears to be at odds with predictions from the basic Roy model. In particular, migrants to the US from many sending countries appear to be positively selected in their education and other observable skills, regardless of the differentials in returns to skill between destination and source (Jasso, et al., 2004; Feliciano, 2005; Kennedy, et al., 2006; Grogger and Hanson, 2011).

The case of Mexican immigrants has been analyzed most closely. A high level of income inequality in Mexico suggests that the migrant flow out of Mexico should be negatively selected. Instead, early work found that migrants were drawn from the middle of the educational distribution (Chiquiar and Hanson, 2005; Orrenius and Zavodny, 2005).<sup>37</sup> More recent work based on Mexican panel data finds some evidence of negative selection from Mexico, in the sense that migrants earned less than non-migrants in the period before their trip (see Fernandez-Huertas Moraga, 2011; Ambrosini and Peri, 2012; Kaestner and Malamud, 2013). Differences in the two sets of studies could be due to under-enumeration of undocumented Mexican immigrants

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<sup>37</sup> Caponi (2011) uses a structural approach to estimate the skill distribution of Mexican immigrants into the US. He finds that Mexican immigrants into the US are positively selected in terms of ability.



in the US Census (Ibarraran and Lubotsky, 2007) or to differential selection patterns by observed skill (education) versus labor market productivity (wages).<sup>38</sup>

The common finding of positive selection in contemporary migration flows has led to various attempts to adapt the standard Roy model framework, including modifying the utility function and incorporating individual variation in migration costs. Grogger and Hanson (2011) argue that positive migrant selection can be rationalized with the use of a linear (rather than logarithmic) utility function. In this case, the migration decision depends on absolute rather than percentage wage differences. Hence, given that rich countries tend to exhibit larger absolute differences between the wages of low and high skilled workers, immigrants that move from developing to developed countries will tend to be positively selected in terms of skills.

Alternatively, the costs of migration (and not only the benefits) may vary by skill level. First, skilled workers may find it easier to adapt to the new location, for example by learning a new language, navigating bureaucratic hurdles at entry, and searching for housing and employment in the destination. Second, the low skilled may have a harder time accessing credit to finance their move, “pricing out” the poor from migration opportunities. Finally, under the existing immigration regime, highly-educated workers may have greater access to legal avenues of immigration, such as employer sponsorship, leaving lower skilled migrants to face the high costs of illegal entry.<sup>39</sup>

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<sup>38</sup> Gould and Moav (2010) argue that patterns of migrant selection can differ across skill categories. Education, in particular, may reflect “general” skills, while other labor market skills may be “country-specific.” They show that Israeli emigrants are positively selected in terms of education but are drawn from the middle of the distribution of unobserved skills, as proxied by residual wages.

<sup>39</sup> Members of different skill groups may also have different values for US-specific amenities, including cultural diversity and political freedoms like the right to vote (see Vigdor, 2002 for one application of this idea).

### **C. History can inform current debates on migrant selection**

Changes in the economic environment would predict the observed shift over time toward positive migrant selection. The divergence in absolute income between the US and the developing world and the widening of the US income distribution might increasingly attract high-skilled migrants seeking to take advantage of the high returns to skill in the US. However, a puzzle remains: why is there positive selection today even from sending countries that are *more* unequal than the US (e.g., Nigeria and Brazil)?

Historical evidence can help adjudicate between proposed explanations for the positive selection puzzle. Some explanations for this puzzling fact are not consistent with the negative selection of migrants from some European sending countries in the past. For example, if the higher-skilled are simply better able to navigate the migration process and adapt to a new culture, we would expect positive selection in both the past and the present. Similarly, a model of linear, rather than logarithmic, utility, as in Grogger and Hanson (2011), predicts that migrants from poorer to richer countries would have been positively selected in the past, which is contrary to evidence from Ireland, Italy and Norway.

In a basic Roy model, the cost of migration is the same for everyone. If, instead, restrictive immigration policy renders migration costs particularly high today for the low skilled, migration costs could help explain the positive selection puzzle. Today, around 20 percent of entry slots in the US are reserved for immigrants sponsored by an employer; these openings tend to be filled by high-skilled immigrants. Legal immigrants are then able to sponsor family members to join them through family reunification. Jasso, et al. (2000) document that the average skills of new green card holders have been increasing relative to the native born since

the 1970s and attribute these changes to an increasing preference for skilled workers over time.<sup>40</sup> Furthermore, even as travel costs have declined, the actual cost of entering the US for many low-skilled workers, often illegally with the help of a smuggler, has increased.

Immigrants from Europe in the Age of Mass Migration did not face legal barriers to entering the US and, perhaps as a result, were negatively selected from their home country population in some cases. Today, a few immigrant groups are able to migrate to the US without restriction, including residents of US territories like Puerto Rico.<sup>41</sup> Puerto Rico is more unequal than the US (compare a Gini coefficient of 0.55 in Puerto Rico and 0.48 in the US mainland) and thus, according to a basic Roy model, we would expect migration from the island to be negatively selected. Indeed, Puerto Ricans who move to the mainland are negatively selected on the basis of educational attainment and earnings ability (Ramos, 1992; Borjas, 2008).<sup>42</sup>

The role of migration costs in generating positive selection need not imply that the poor are priced out of migration because of a lack of credit or financing for their trip. Both in the past and the present, there is evidence that immigrant networks can alleviate such financial constraints. Wegge (1998) compares “networked” migrants in 1850s Germany who shared a surname with other migrants from their village with their “non-networked” counterparts. Networked migrants held substantially less wealth at departure, suggesting that migrant networks served as an effective substitute for self-financing. In Norway in 1900, where mass migration was already underway, individual wealth was a deterrent to (rather than a facilitator of)

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<sup>40</sup> Jasso and Rosenzweig (2008) and Antecol, Cobb-Clark and Trejo (2003) compare the immigrant selection system in the US to those used in Australia and Canada.

<sup>41</sup> Selection patterns of internal migrants who can move at will also shed light on migrant selection in the absence of policy restrictions. Molloy, Smith and Wozniak (2011) and Malamud and Wozniak (2012) find that college graduates are more likely to move across state lines; this pattern would be consistent with the Roy model if these highly-skilled migrants tend to settle in states where the return to skill is high (Dahl, 2002). See also Robinson and Tomes (1982), Borjas, Bronars and Trejo (1992) and Abramitzky (2009).

<sup>42</sup> In contrast, migrants from the Federated States of Micronesia (FSM), an associated state of the US, are positively selected on educational attainment and pre-migration earnings, despite moving from a more unequal sending country (Akee, 2010).

migration (Abramitzky, Boustan and Eriksson, 2013). Men who grew up in households with assets, particularly those who could expect to inherit their family's land by virtue of birth order and sibling composition, were less likely than others to migrate.<sup>43</sup> A similar pattern holds today: Mexican migrants from communities with strong migration networks are less wealthy than are migrants from communities with weak migration networks (McKenzie and Rapoport, 2007, 2010).<sup>44</sup>

In addition to underlying changes in the costs of migration, some of the observed differences in selection patterns across time could be due to measurement issues. First, there is a wide array of measure of skills used in the literature, including literacy, years of schooling, proxies for numeracy, earnings, wealth, unobserved ability, health and height. Although these measures are most likely correlated, this relationship might be weak in some cases. Second, historical work is more likely to measure the *flow* of new migrants into the US using passenger lists, whereas the contemporary literature often analyzes the *stock* of immigrants observed in the US Census at a point in time (e.g., Chiquiar and Hanson, 2005). These two methods need not produce the same answer if return migration is also selective (existing evidence suggests that this is the case; see, for example, Lubotsky, 2007; Abramitzky, Boustan and Eriksson, 2014; Ward, 2015).

#### **D. Future research directions**

Despite our speculation that shifts in immigration policy may explain changing selection patterns over time, there is little work directly assessing the relationship between migrant

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<sup>43</sup> In contrast, Angelucci (2012) finds that an exogenous increase in wealth induced by the Mexican program Oportunidades increased the probability of migrating to the US.

<sup>44</sup> Relatedly, Spitzer (2014) argues that migrant networks helped Jews flee waves of anti-Jewish violence in the Russian empire.

selection and prevailing immigration restrictions. We view the connection between immigration policy and migrant selection to be a crucial area of future research, especially given the ongoing political debates about immigration reform. Shifts in the immigration regime also encourage the involvement of different institutions in the immigration process – including immigrant banks and immigrant aid societies in the past and universities and firms as the sponsors of student or worker visas today. Little is known about the role that these institutions have played in shaping both migrant selection and assimilation.

A recent explosion in historical Census micro data from a number of European sending countries, including Ireland, Norway, Sweden and the United Kingdom, opens up the possibility for new work on the role of local conditions in shaping migrant selection. To date, most work on migrant selection has analyzed national trends, but there may be substantial variation in who leaves from different regions of sending countries. Micro data also allow for the analysis of international migration alongside internal migration within sending countries from rural to urban areas. We also emphasize the importance of building new panel datasets to study both contemporary and historical migration flows.

Finally, we emphasize that a proper understanding of migrant selection is necessary for generating unbiased estimates of the economic gains to migration. Abramitzky, Boustan and Eriksson (2012) and McKenzie, Gibson and Stillman (2010) have made this point for historical and contemporary immigration flows, respectively. A comparison of their estimates suggests that the return to migration has increased substantially over time, perhaps as a result of quotas that artificially restrict the supply of immigrant workers. However, these studies are based on very specific cases – migration from Norway to the US and from Tonga to New Zealand, respectively

– and so additional estimates of the economic returns to migration for larger migration flows and at various points in time would be welcome.

#### **IV. Immigrant assimilation in the US**

How do immigrants perform in the US labor market? Do newly-arrived immigrants fare worse than the natives born and, if so, do they catch up with natives over time? We might expect immigrants to earn less than the native born if they start out with fewer productive skills than natives or if they are discriminated against at the workplace. Immigrants held back by an initial lack of US-specific skills may be able to close their earnings gap with natives by investing in the skills necessary to succeed in the US (see, for example, Borjas 2014 for a clear formalization of this idea). Immigrants facing discrimination in the labor market may still be able to catch up with the native born if they can “pass” as natives – for example, by changing their name or losing their accent.

Both during the Age of Mass Migration and today, immigrants experienced some earnings convergence with natives as they spent more time in the US labor market, but this convergence process is slow. As a result, immigrants do not experience complete catch-up in a single generation, either in the past or the present.

##### **A. Earnings convergence between immigrants and natives**

###### **i. Contemporary patterns and methodological developments**

Much of the contemporary literature on immigrant assimilation has been focused on solving methodological issues in order to properly measure changes in immigrant earnings with time spent in the US. In early work on this topic, Chiswick (1978) found that immigrants in the

1970 Census earned less than natives upon first arrival, but rapidly caught up and were able to overtake natives after spending 15-20 years in the US. A declining earnings gap between immigrants and natives with time spent in the US may reflect immigrants' earnings growth, but may also be driven by declining skill levels of immigrants across arrival cohorts and negatively-selected return migration. By following immigrant arrival cohorts across Census waves, Borjas (1985) documents that around half of the convergence observed in a single cross section can be attributed to declining skills across arrival cohorts. The extent of convergence is smaller yet in panel datasets that follow individual immigrants over time, thereby controlling for selective return migration (Lubotsky, 2007).<sup>45</sup> Figure 5 provides a succinct graphical illustration of the conceptual issues associated with inferring earnings convergence from cross-sectional data and the benefits of using panel data in this context.

In recent years, initial earnings gaps and the speed of convergence between immigrants and natives have varied by arrival cohort. Earnings at entry relative to natives have fallen from a gap of around 20 log points in the arrival cohort of 1965-69 to a gap of around 35 log points for the arrival cohort of 1985-89, before stabilizing or improving slightly (Chiswick, 1986; Smith, 2006; Borjas and Friedberg, 2009). Newer cohorts also appear to experience slower earnings growth across Census waves (Borjas, 2016). The decline in immigrants' relative earnings can be attributed, in part, to a general widening of the income distribution, which has adversely affected earnings of the low skilled (Lubotsky, 2011). Immigrants in recent arrival cohorts may also be suffering from lower levels or slower acquisition of US-specific human capital, particularly

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<sup>45</sup> Other panel analyses of immigrant assimilation using data from various countries include Borjas (1989), Hu (2000), Edin, Lalonde and Aslund (2000), Duleep and Dowhan (2002), Constant and Massey (2003), Eckstein and Weiss (2004) and Kim (2011).

English language, or from a declining transferability of skills across countries (Duleep and Regets, 2002; Borjas, 2016).<sup>46</sup>

Earnings patterns also vary by immigrant country of origin. Mexican immigrants earned less than natives in every year since 1910 and this disparity has increased over time, reaching a 40 percent earnings disadvantage by 1990 (Feliciano, 2001). Some of the decline in relative earnings for Mexican immigrants can be attributed to a widening gap in educational attainment with the native born. Furthermore, Hispanic immigrants experience slower-than-average rates of earnings convergence with natives, suggesting that the earnings gap is likely to persist over at least one generation (Lubotsky, 2007). In contrast, Chinese and Japanese immigrants enjoyed similar labor market outcomes to natives in the 1970 Census (Chiswick, 1983). More recent evidence suggests that first generation Asian immigrants fare worse than comparable whites but that this difference vanishes in the second generation (Duleep and Sanders, 2012; Arabsheibani and Wang, 2010).

Less is known about the earnings assimilation of highly educated immigrants who work in the high-tech industry or pursue graduate degrees and stay in the US upon graduation. Parey, et al. (2015) show that German college graduates who settle in the US relative to other destination areas are positively selected, consistent with predictions from the Roy model. Even among this positively selected pool, the most successful of US-educated foreign PhDs tend to remain in the US (Grogger and Hanson, 2015). Highly-skilled immigrants are more likely to start companies than natives with a similar degree of education, and they tend to earn higher wages,

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<sup>46</sup> The more rapid assimilation of cohorts arriving in the 1960s, when the foreign born share of the labor force was small, is consistent with the idea that immigrants compete more readily with other immigrants. Assimilation may be slower in periods of mass migration.



and to patent and publish more (Hunt, 2011), although these outcomes depend on country of origin.<sup>47</sup>

## **ii. Immigrant-native convergence during the Age of Mass Migration**

Studies of immigrant assimilation during the Age of Mass Migration also find evidence of substantial earnings convergence between immigrants and natives in cross-sectional data but produce more tempered conclusions in new panel datasets.<sup>48</sup> Using published tabulations from the Dillingham Commission reports, initial work in this area documented that, circa 1900, the average immigrant earned substantially less than the average native-born worker (Higgs, 1971; McGouldrick and Tannen, 1977; Blau, 1980).<sup>49</sup> In cross-sectional sources, immigrants appear to make up all or most of this gap within a generation (studies by Eichengreen and Gemery, 1986 and Hanes, 1996 are exceptions). Hatton (1997) and Hatton and Williamson (1998) analyze surveys of workers in particular industries in Michigan and California and find that immigrants enjoyed faster wage growth than natives. Minns (2000) uses the 1900 and 1910 Censuses – which allow him to control for changes in the average skills of different arrival cohorts – and finds that, outside the farm sector, immigrants moved up the occupational ladder at a faster pace than natives.<sup>50</sup>

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<sup>47</sup> Mattoo, et al. (2008) argue that, unlike educated immigrants from Asian countries and Western Europe, educated immigrants from Latin America and Eastern Europe do not hold jobs commensurate with their skill level. They attribute this pattern to differences in the quality of education across sending countries.

<sup>48</sup> Immigrants experienced a notable degree of upward mobility in the antebellum period. Ferrie (1994, 1997, 1999) links passenger lists from ship registers to the Censuses of 1850 and 1860. More than half of immigrants who arrived in unskilled occupations moved up the occupational ladder over twenty years. Immigrants' wealth also increased by an average of 10 percent with each year spent in the US. Ferrie does not compare immigrants to natives directly.

<sup>49</sup> Hannon (1992) finds a similar pattern in individual-level earnings data from the copper mining industry in Michigan.

<sup>50</sup> Moving into farming was a more frequent avenue of upward mobility for natives than for immigrants (Abramitzky, Boustan and Eriksson, 2014). Hence, excluding the farm sector can bias the results towards finding faster relative income growth for immigrants.

Cross-sectional data overstates the convergence of immigrants to natives in the past, both because of declines in the skill levels of arrival cohorts and because immigrants who returned to Europe were less skilled than those who stayed in the US. Abramitzky, Boustan and Eriksson (2014) build a panel dataset of natives and immigrants from 16 sending European countries from 1900 to 1920. The average long-term immigrant in the panel data held similarly-paying occupations to the native born upon first arrival and moved up the occupational ladder at the same rate, neither converging with nor diverging from the native born.<sup>51</sup> This pattern is at odds with a view commonly held today that, in the past, European immigrants who arrived with few skills were able to invest in themselves and succeed in the US economy within a single generation.<sup>52</sup>

The labor market performance of a “typical” immigrant in the US masks substantial heterogeneity by sending country. Immigrants from sending countries with real wages above the European median, such as England and France, held significantly higher-paid occupations than US natives upon first arrival, while immigrants from sending countries with below-median wages (e.g., Norway, Portugal) started out in equal or lower-paid occupations (Abramitzky, Boustan and Eriksson, 2014).<sup>53</sup> Yet, immigrants from all sending countries converged with natives slowly or not at all, thereby maintaining existing gaps between immigrants and natives for at least a generation.

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<sup>51</sup> However, the average immigrant in the cross-sectional data, which included many temporary migrants, did earn less than the native born, consistent with the general finding of lower immigrant earnings in this period.

<sup>52</sup> Contemporary studies have data on individual earnings, whereas studies using historical Census data rely on occupation-based earnings measures. We replicated the analysis in Abramitzky, Boustan and Eriksson (2014) using the 1970-1990, 1980-2000, and 1990-2010 census repeated cross sections and document two facts: First, the initial occupational earnings penalty faced by immigrants is not fully closed in the repeated cross section in any of the periods. Even after more than 20 years in the US, the average immigrant earns about 5-10 percent less than the average native. Second, this initial difference has been growing, from 10 percent in the 1970s to more than 15 percent in the most recent sample.

<sup>53</sup> Chiswick (1991, 1992) argues that Jewish immigrants faced an initial disadvantage in occupational status in this period but were able to catch up with the native born after around 15 years in the US; this convergence rate is typical of what is commonly found using cross-sectional data.

### **iii. Convergence across generations**

Differences between immigrants and the native born can persist into the second generation if children inherit ability or skills from their parents, or from their broader ethnic environment.<sup>54</sup> However, we would expect these gaps to diminish across generations both due to regression to the mean and because, unlike their parents, many children of immigrants were educated in US schools and exposed to US cultural norms. Studying the children and grandchildren of migrants who arrived during the Age of Mass Migration is especially useful for gaining insight into the process of inter-generational convergence, given that enough time has gone by for multiple generations to be observed into adulthood.

During the Age of Mass Migration, immigrant advantage (or disadvantage) relative to natives persisted across generations. Abramitzky, Boustan and Eriksson (2014) find that if first-generation immigrants from a sending country out-performed natives (e.g., immigrants from England or Russia), so too did the second generation, whereas if the first generation held lower-paid occupations than natives (e.g., immigrants from Norway or Portugal), the second generation did as well. Yet, the partial convergence in the past was faster than inter-generational convergence for some country-of-origin groups today. Mexican immigrants are converging more slowly than did Southern and Eastern Europeans across generations, in large part because their rates of educational attainment have lagged behind those of the native born (Perlmann, 2005).

Broader analyses of immigrant outcomes across two or three time periods finds stability in the degree of correlation between immigrant fathers and sons over time. Borjas (1993) and Card, DiNardo, and Estes (2000) estimate inter-generational correlations between cohorts of immigrant parents and their native-born children over two periods (1940-70 and 1970-2000).

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<sup>54</sup> See Borjas (1992) on the concept of 'ethnic capital.'

Borjas (1994) extends this analysis to three generations, using the Censuses of 1910, 1940 and 1980. These papers find that intergenerational correlations in earnings are strong (around 0.4) and remarkably stable across immigrant cohorts. The relationship between the earnings of fathers and sons is mediated, in part, by educational attainment; controlling for education reduces the correlation between the earnings of father and son cohorts to around 0.15.

## **B. Investments that facilitate labor market assimilation**

Immigrants work toward earnings convergence with natives by making investments in US-specific skills, including English fluency. Bleakley and Chin (2004, 2010) find a large return to knowing English in the contemporary period, both in the labor market and along other dimensions of assimilation (e.g., marriage, fertility). They identify the effect of English fluency by comparing immigrants from English- and non-English-speaking countries who arrived in the US at different ages. Ward (2015b) estimates a smaller return to knowing English in the early twentieth century using a similar research design. This pattern is consistent with agricultural and manufacturing base of the historical economy; Chiswick and Miller (2010) find that English has lower returns today in occupations that rely more heavily on manual rather than communication-based skills.

In the past, immigrant parents appear to have learned English from their children, who are more adept at learning languages, but current immigrants are more likely to rely on their children to navigate the English-speaking world (Kuziemko and Ferrie, 2014; Kuziemko, 2014). School curriculum can influence children's ability to learn English. Some states passed laws in the 1910s and 1920s requiring that public school classes be taught in English only.<sup>55</sup> Lleras-

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<sup>55</sup> Bandiera, et al. (2015) show that compulsory schooling laws were first introduced in US states that received more immigrants from countries that lacked compulsory schooling rules.

Muney and Shertzer (2015) find that this language policy had modest effects on the literacy of children of non-English speaking parents.<sup>56</sup>

Choosing a labor market or a neighborhood with greater access to employment offers another opportunity for immigrants to increase their earnings potential. Upon first arrival, many immigrants settle in ethnic enclaves. Immigrant-native residential segregation remained stable and modest from 1910 to 1950, with a dissimilarity index of around 40; thereafter, segregation between immigrants and natives rose (dissimilarity = 55 in 2000) (Cutler, Glaeser and Vigdor, 2008).<sup>57</sup> In theory, living in an enclave could enhance employment opportunities if immigrants receive job referrals or other assistance from their compatriots (Munshi, 2003; LaFortune and Tessada, 2012). However, immigrant neighborhoods could also limit employment opportunities if residents are isolated from information about the broader labor market.<sup>58</sup> In that case, moving to a more integrated neighborhood could be a form of labor market investment. To our knowledge, economic historians have not studied how residential segregation affected the labor market outcomes of immigrants in the past.<sup>59</sup> Contemporary data suggest that immigrants who choose to live in immigrant neighborhoods have lower earnings capacity but that, correcting for this selection, living in an enclave can improve labor market performance.<sup>60</sup>

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<sup>56</sup> Today, policy makers debate the benefits of teaching immigrant children in English immersion classrooms or in separate bilingual settings; Chin, Daysal and Imberman (2013) find that English-language learners are equally well served by both methods but that bilingual education benefits native English speakers by limiting their contact with non-English speaking peers.

<sup>57</sup> The dissimilarity index can be interpreted as the share of immigrant households that would need to move such that each neighborhood would reflect the overall immigrant share in the population. In the context of racial segregation, a dissimilarity index of 35 is considered low, while an index value of 55 is considered moderate.

<sup>58</sup> Beaman (2012) argues that members of an ethnic network face a tradeoff: network members may provide job referrals to new arrivals, but they also may compete with each other over employment in an occupational niche.

<sup>59</sup> Collins and Margo (2000) study the effect of segregation on a number of socioeconomic outcomes for African Americans from 1940 to 1990. They find little or no evidence of negative effects of segregation prior to 1980, while negative effects in more recent times.

<sup>60</sup> Edin, Fredriksson and Aslund (2003) and Damm (2009) analyze refugee settlement policies in contemporary Sweden and Denmark, respectively, in which residential location is quasi-randomly assigned. See also Cutler, Glaeser and Vigdor (2006) on the effect of living in an immigrant enclave.

Investments in US-specific skills may have a limited effect on earnings growth if immigrants face discrimination in the labor market.<sup>61</sup> However, in this case, immigrants may be able to mitigate discrimination by changing their self-presentation to de-emphasize their foreign roots. Immigrants change their own names and choose less foreign names for their children as they spend more time in the US (Carneiro, Lee and Reis, 2015; Abramitzky, Boustan and Eriksson, 2016). Biavaschi, Giulietti and Siddique (2013) find that immigrants who changed their names between filing their first and second papers for naturalization in the 1920s experienced more occupational upgrading, perhaps because Americanized names shielded them from discrimination. Likewise, children of immigrants who received less foreign-sounding names enjoyed better labor market outcomes, even after controlling for other aspects of family background (Abramitzky, Boustan and Eriksson, 2016; Goldstein and Stecklov, 2015).

### **C. Beyond labor market assimilation**

Both in the past and the present, public support for immigration restriction is often tied to the perception that immigrants fail to assimilate into US society, instead maintaining their distinct cultural norms, by continuing to speak foreign languages and live in enclave communities. Therefore, documenting and understanding the speed and extent of immigrants' cultural assimilation is a potentially important input into policy debates. Contemporary studies find that immigrants maintain some of their distinctiveness because their norms and behavior

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<sup>61</sup> Moser (2012) exploits a change in attitudes towards a particular immigrant group – German-Americans after the outbreak of World War I – to evaluate the effect of discrimination on immigrants' economic opportunities. She shows that, during (but not before) the war, men of German ancestry were more likely to be excluded from seats on the New York Stock Exchange.

were shaped by experiences in their home countries or by ethnic enclaves in the US (see Fernandez and Fogli, 2009; Alesina and Giuliano, 2010; Luttmer and Singhal, 2011; Blau, et al., 2012). Yet, as immigrants spend more time in the US, they begin to resemble natives along a number of dimensions, including health, educational attainment, homeownership, fertility and political preferences.

Often, full adoption of the behaviors common to US natives takes more than a single generation (Watkins, 1994). In one example of this phenomenon, Guinnane, Moehling and Ó Gráda (2006) study the fertility patterns of Irish immigrants in the US. Irish immigrants converged toward US fertility norms, having fewer children than either rural or urban households in Ireland. Yet, Irish immigrants had more children than otherwise similar native households and this fertility gap remained into the second generation, suggesting some cultural persistence.<sup>62</sup> Other examples of “incomplete” assimilation include immigrants’ consumption patterns and name selection for children. Using an early version of the Consumer Expenditure Survey, Logan and Rhode (2010) document that immigrants continued to purchase foods that were relatively abundant (and therefore inexpensive) at home even at higher prices in the US.<sup>63</sup> Abramitzky, Boustan and Eriksson (2016) find that immigrants selected more native-sounding names for their children after spending more time in the US, but that some gap with native households remained even after a generation. In contrast, immigrants appear to completely assimilate to native

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<sup>62</sup> More broadly, Guest (1982) and Morgan, Watkins and Ewbank (1994) find that the fertility levels of immigrants in the late nineteenth and early twentieth century were higher than those of natives, but that this difference decreased in the second generation. Morgan, et al. also document substantial differences in fertility rates across immigrant groups, with “new” immigrants exhibiting higher fertility levels.

<sup>63</sup> Immigrants also converged with natives in marriage behavior. Foley and Guinnane (1999) show that, after controlling for relevant socio-economic characteristics, the marriage patterns of Irish immigrants were similar to those of the native born. Sassler and Qian (2003) find a decline in the “ethnic dispersion” in the age at first marriage throughout the twentieth century.

incarceration patterns, with recent arrivals less likely than natives to be arrested but rapidly converging to natives over time (Moehling and Piehl, 2009, 2014).<sup>64</sup>

#### **D. Future research directions**

The existing literature on immigrant assimilation has established a set of patterns, estimating the speed of income convergence between immigrants and natives from different sending countries and at different points in time. A promising next step in this literature could be identifying the social and economic factors that can explain such variation in convergence and assimilation. These aids (or impediments) to immigrants' ability to assimilate and to their assimilation choice could include the strength of immigrant networks, the extent of discrimination or anti-immigrant enforcement in the workplace, or investments in public education and health, among others. Differences in these factors across states or labor markets may generate disparities in immigrant performance across space.

Furthermore, the speed of immigrant assimilation might be influenced by the prevailing immigration policy regime. In an era of open borders, the initial selection into immigration was less favorable on the basis of skill and immigrants needed to contend with more competition from other recent arrivals in the labor market. Both of these mechanisms suggest that immigrant assimilation may have been hindered by open immigration policy. On the other hand, less-skilled people who move for better opportunities might have particularly strong incentives to succeed in their new destination. Ultimately, the effect of immigration policy on the trajectory of immigrant assimilation is an empirical question.

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<sup>64</sup> Bell, Fasani, and Machin (2013) study the criminal behavior of immigrants in a contemporary setting, using variation in immigrant share and in crime rates across regions in the UK.



Finally, immigrants who were propelled from their home country by political unrest or persecution may experience a different trajectory in the US than immigrants who arrived in order to pursue economic opportunity. For example, unlike economic migrants who often return to their home countries, refugees often have nowhere to return to. Refugees may thus have a stronger incentive to invest in country-specific human capital in order to assimilate in their new destination (Cortes, 2004). Today, there are millions of refugees around the world. Host countries are often concerned with the speed of refugee assimilation and possible negative impacts of refugees on natives. Yet, there has been very little economic research on this population. We believe that the study of refugee migrants and the comparison of the long-term outcomes of refugees and economic migrants are promising direction for new research. Because refugee migration is hardly a recent phenomenon, the study of refugees in historical settings may prove particularly insightful.

## **V. The effects of immigration on natives and on the US economy**

A series of early empirical papers found negligible effects of immigration on native wages, in seeming contrast to predictions from a simple model, in which immigration lowers the capital-to-labor ratio in the short run, reducing wages for native workers (Card, 1990; Altonji and Card, 1991; Card, 2001). This unexpectedly small effect of immigration on native wages has generated a long and still unresolved debate in the contemporary literature.

We argue that historical cases can help to adjudicate between potential explanations for limited effects of immigration on native wages today. Historical immigration patterns differed from contemporary flows in a number of potentially useful ways. First, in the past, immigrants were more substitutable with the native born, both in terms of skills and legal status. Previous

waves of immigrants worked in a set of occupations similar to those held by native workers (Abramitzky, Boustan and Eriksson, 2014), whereas, today, immigrants are more likely than natives to be drawn from the very bottom or the very top of the educational distribution.<sup>65</sup> Furthermore, a sizeable number of immigrants today are undocumented, and therefore often not subject to the same set of labor market institutions (such as the minimum wage), whereas, in the past, immigrants and natives received similar (and, overall, much lower) level of labor market protection. Second, the historical economy was more reliant on agriculture and manufacturing, whereas the contemporary economy is centered on services. Agriculture and manufacturing are less dependent on communication and team-based production, which may have limited the channels through which immigration influenced production in the past.<sup>66</sup>

Early work on the effect of immigration prompted two responses in the contemporary literature: proposed modifications to the empirical methodology or adjustments to the underlying economic model. The first studies on this topic relied on variation in the flow of immigrants into metropolitan areas. Geographic variation can understate the true effect of immigration if immigrants choose to settle in areas that experience positive labor demand shocks or if immigrant arrivals encourage similarly-skilled natives to move elsewhere. Borjas (2003) analyzed the effect of immigration on national skill groups instead and found a sizeable negative effect of immigration on native workers.<sup>67</sup> Examples of papers that propose modifications to the standard model include Lewis (2011), which argues that cities with larger inflows of unskilled immigrants were slower to adopt labor-saving technologies, thereby preserving the demand for

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<sup>65</sup> In 2010, 17.5 percent of immigrants aged 25-65 report having less than a ninth grade education and 11.3 percent report having more than a college degree, compared to 1.9 percent and 10.6 of native workers.

<sup>66</sup> Despite the heavily agricultural and manufacturing-based economy, Ager and Brückner (2013) find that a higher level of cultural fractionalization was associated with higher output growth at the county level during the Age of Mass Migration, although, somewhat puzzlingly, cultural polarization (which is highly correlated with fractionalization) had the opposite effect.

<sup>67</sup> Boustan (2009) adapts the national skill group-based approach to study the effect of internal black migration from the South on the wages of existing black and white workers in the North in the mid-twentieth century.

low-skilled workers; Ottaviano and Peri (NBER version in 2006, published in 2012), which suggests that immigrants and natives are somewhat imperfectly substitutable in production, even within skill categories;<sup>68</sup> and Peri and Sparber (2009), which contends that immigration increases total factor productivity by facilitating specialization across tasks (see also Peri (2012) and Ottaviano, Peri and Wright (2013)). The contemporary literature on the effect of immigration on the US economy is too large for us to cover in full here; for recent surveys, see Hanson (2009) and Kerr and Kerr (2011).<sup>69</sup>

Given the greater substitutability between immigrants and natives in the past, we would expect to find larger effects of immigrant arrivals on native wages during the Age of Mass Migration. Indeed, historical immigration flows appear to have a larger effect on the wages and employment opportunities of native workers than those found in contemporary geographic studies (subject to the caveat of differences in outcome variables and research design). Using cross-city variation in migrant flows in the 1910s, Goldin (1994) estimates that a one percentage point increase in the foreign-born share of the population reduced the wages of unskilled laborers and artisans by around 1.5 percent, with larger effects in the tradeable sector (clothing manufacturing and foundries).<sup>70</sup> Boustan, Fishback, and Kantor (2010) find that internal immigration in the 1930s had no effect on the wages of local workers, but did reduce work opportunities and access to relief jobs, a pattern that is consistent with the presence of sticky wages during the Great Depression. They create an instrument for migrant arrivals that relies on

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<sup>68</sup> Ottaviano and Peri (2012) use national, skill-group variation as in Borjas (2003). However, we view this paper's main contribution to be its modification of the standard assumption of perfect substitutability between immigrants and natives. Borjas, Grogger and Hanson (2008) question the methods in the working paper version of this study. Recent work by Doran, et al. (2015) shows that firms are unable to hire a high-skilled immigrant because they lost the H-1B lottery experience no declines in patenting rates, suggesting that native and foreign workers are good substitutes, at least at the upper end of the skill distribution.

<sup>69</sup> Earlier, now-classic reviews of the literature include Borjas (1994) and Friedberg and Hunt (1995).

<sup>70</sup> Biavaschi (2013) finds much smaller effects at the state level over a long period (1900-50). Hatton and Williamson (1998, chapter 8) and O'Rourke and Williamson (1999, chapter 8) use time series data instead to estimate the effect of mass migration on wages.

“push factors” from sending labor markets, including New Deal generosity and extreme weather events.<sup>71</sup>

As in the present, immigration to cities encouraged native out-migration in the past, meriting some caution in the use of geographic variation to identify the effect of immigration on native wages. Hatton and Williamson (1998) estimate that over the 1880-1910 period, 40 natives left their state per each additional 100 immigrants, suggesting that immigrants partially crowded out the native labor force.<sup>72</sup> Collins (1997) shows that cities that absorbed large numbers of European migrants had correspondingly low rates of black in-migration from the rural South, which also implies that native location decisions were responsive to the presence of immigrant workers.

In the long-run, the effect of immigration on native wages is moderated by the pace of new capital investments. Historical immigration flows contributed to the transformation of American manufacturing from small-scale artisanal shops to large factories engaged in mass production (Hirschman and Mogford, 2009). Unskilled immigrants appear to have been complementary with investments in assembly-line machinery (LaFortune, Tessada and Lewis, 2014). Kim (2007) shows that firms in counties with a higher share foreign born in 1920 were larger, more productive, and more likely to be organized as factories; he uses the settlement pattern of immigrants in 1850, as well as distance from the port of New York, as instruments for the later immigrant share of the population. Yet, Hatton and Williamson (2006) argue that land

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<sup>71</sup> See also Hornbeck (2012) and Long and Siu (2013) on migration responses to the Dust Bowl.

<sup>72</sup> In contrast, Carter and Sutch (2008) argue that immigrants did not crowd out natives during this period because native- and foreign-born workers migrated to the same set of counties.

was a more important input in production in the past and hence capital mobility was less effective in dampening the wage effects of migration.<sup>73</sup>

Historical immigration was also associated with higher rates of both trade and innovation, which may have contributed to economic growth.<sup>74</sup> Dunlevy and Hutchinson (1999) find that immigrants increased trade flows between the US and Europe in the early twentieth century, perhaps by providing information about and network connections to their home markets (see also O'Rourke and Williamson, 1999, chapter 13). Moser, Voena and Waldinger (2014) analyze one immigrant flow that would be particularly expected to increase innovation in the US economy: the arrival of Jewish scientists forced to flee from Nazi Germany in the 1930s.<sup>75</sup> US patenting in categories associated with the dismissed scientists increased by 30 percent after 1933.<sup>76</sup>

We believe that there is a large scope for future work on the historical effects of immigrant arrivals on the US economy and society. Recent work on contemporary immigration flows has introduced improved identification strategies to study the effect of immigrants on native workers; these empirical innovations have yet to be fully incorporated into work on the Age of Mass Migration. The dramatic shift in immigration regime in the 1920s presents a potentially useful opportunity to design well-identified studies of the effect of immigration on the economy in this era. Furthermore, we suspect that, beyond their effects on the economy, immigrant voters influenced important policy choices, including, perhaps, the design of social

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<sup>73</sup> This observation is in line with the Malthusian idea that – in an economy without capital – a higher population depresses income.

<sup>74</sup> Munshi and Wilson (2010) and Rodriguez-Pose and von Berlepsch (2014) argue that European migration had long-lasting effects on economic activity at the local level through its effects on institutions and culture.

<sup>75</sup> Hornung (2014) studies another forced high-skilled immigration – that of the Huguenots from France to Prussia in the seventeenth century. The arrival of Huguenots, who carried with them specialized knowledge of textile manufacturing, was associated with higher productivity in the local manufacturing sector.

<sup>76</sup> A number of papers study the relationship between immigration and innovation in the contemporary period. Hunt and Gauthier-Loiselle (2010) find that college-educated immigrants increase patent rates at the state level. The influx of foreign doctoral students has also positively influenced scientific output in US academic departments (Stuen, Mobarak and Maskus, 2012). Yet, Borjas and Doran (2012) show that the sudden arrival of Russian mathematicians into the US academy after the fall of the Soviet Union reduced the output of competing American mathematicians, leading to no net increase in overall output.

welfare programs in the 1930s. Making connection to the literature on diversity and public goods provision would be useful here as well (a classic reference is Alesina, Baqir and Easterly, 1999).

## **VI. Conclusion**

US history is characterized by two episodes of mass in-migration, an era of unrestricted migrant arrivals from Europe (1850-1913) and a more recent period of constrained mass migration, primarily from Asia and Latin America (1965-present). Many of the same topics that concern the economics of immigration today – including migrant selection and assimilation and the effect of immigrant arrivals on native workers – were also relevant in the past. We argue that comparing the research findings across these two periods can illuminate contemporary debates.

In particular, our reading of the literature suggests that migrant selection, which is primarily positive today, was decidedly mixed in the past, with cases of negative migrant selection from some European sending countries. Changes in migrant selection over time are consistent with rising bureaucratic costs of migration, which may price out the poor, and with growing income inequality in the US, which would attract a higher-skilled set of immigrants. Upon arrival, the average long-term immigrant in the past held a similar set of occupations to the average native worker, and moved up the occupational ladder at the same pace. The pace of economic convergence between immigrants and natives was relatively slow in both the past and the present, with the notable difference that, today, the average immigrant starts out with a larger earnings gap to overcome (although there is substantial variation in initial earnings by sending country). It appears that historical estimates of the effect of immigrant arrivals on native wages are larger than comparable estimates for today, which may be due to the fact that, in the past, immigrants and natives held a similar set of skills. However, comparisons of these magnitudes

over time are complicated by methodological differences, and could be improved with a new round of well-identified historical studies on the effect of immigration on labor markets.

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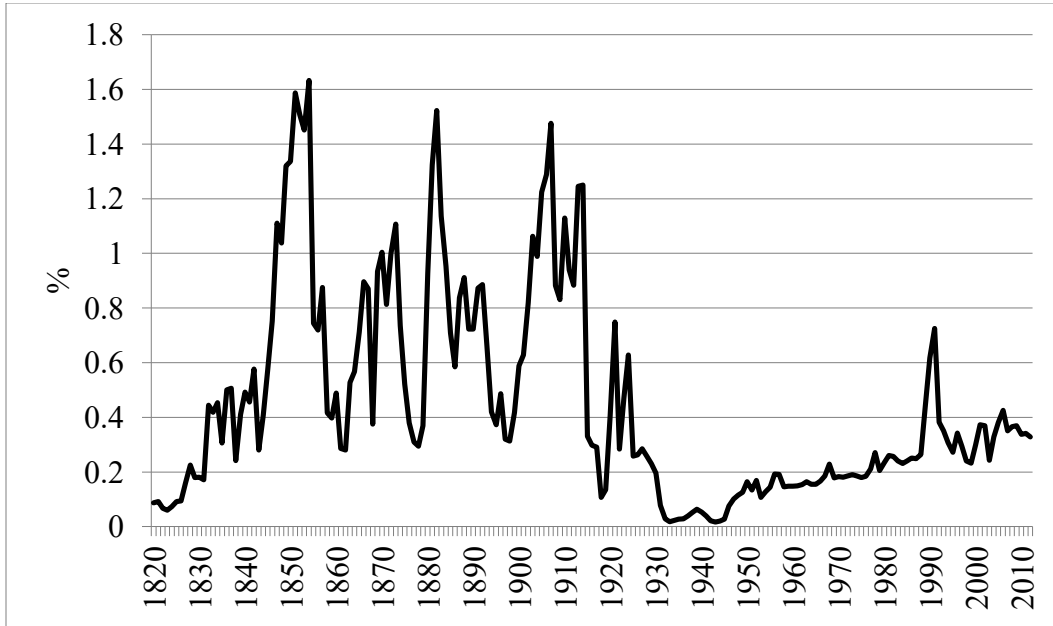


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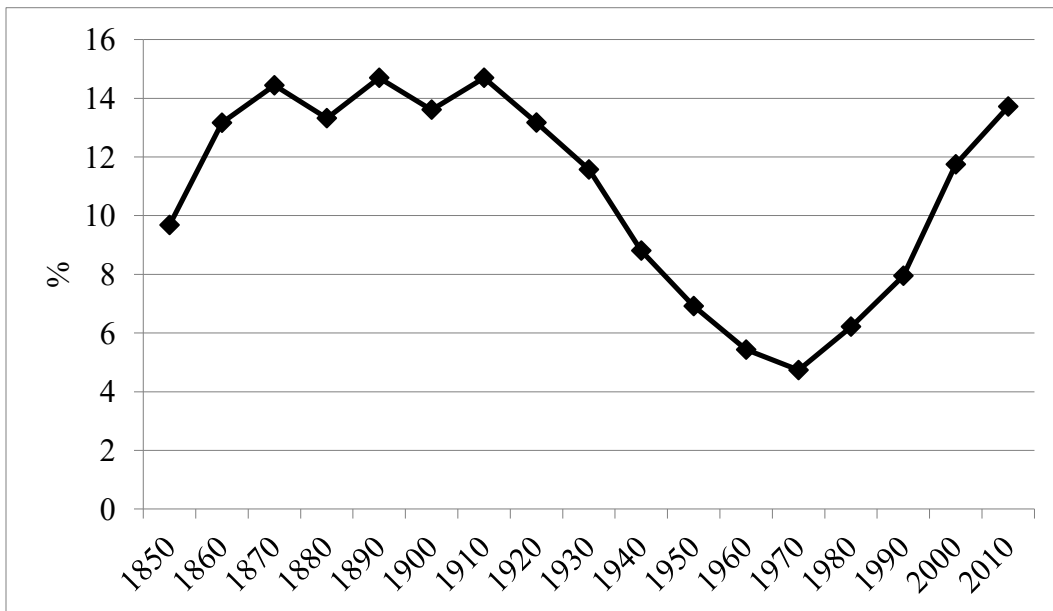
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**Figure 1**

**Panel A: Foreign born flow as percentage of the US population (1820-2010)**

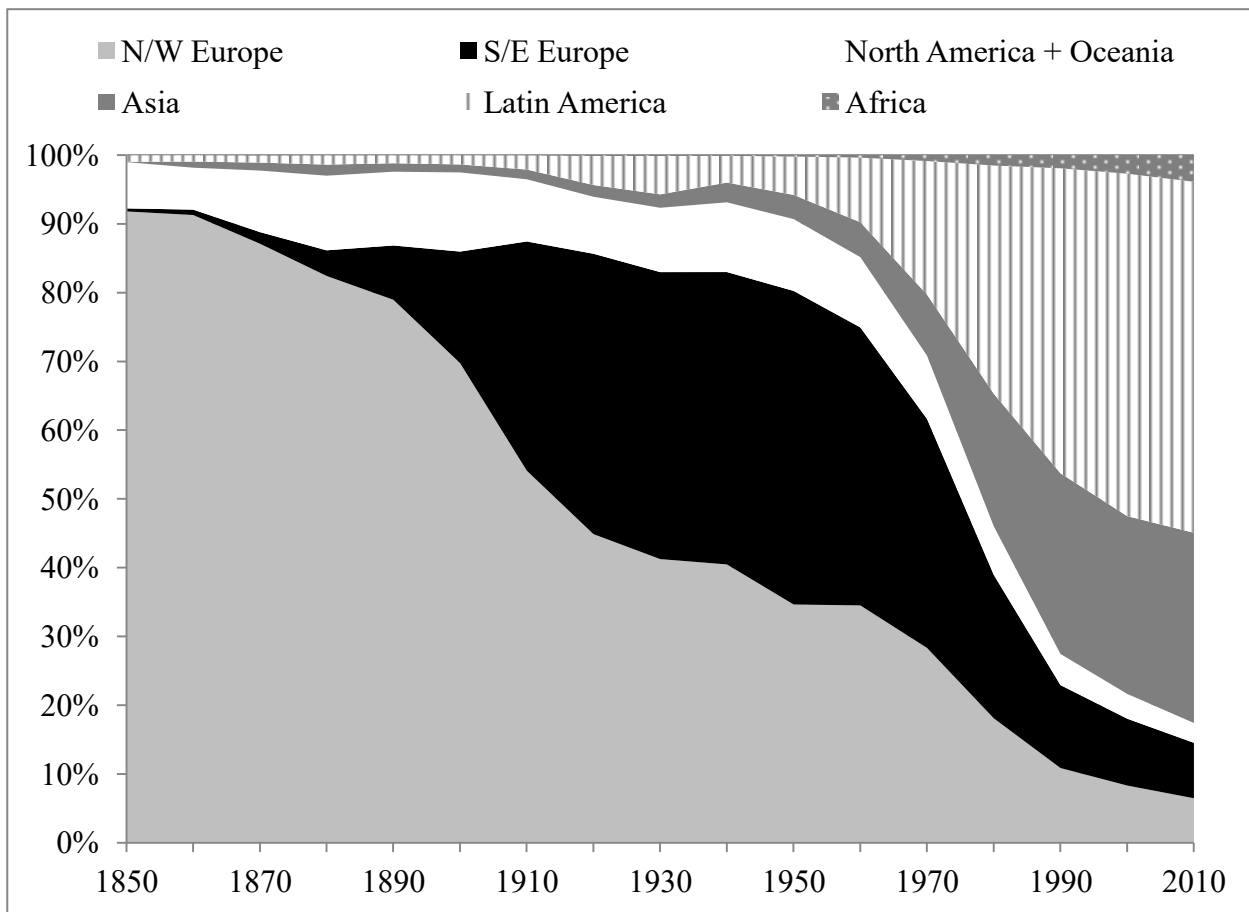


**Panel B: Foreign born stock as percentage of the US population (1850-2010)**



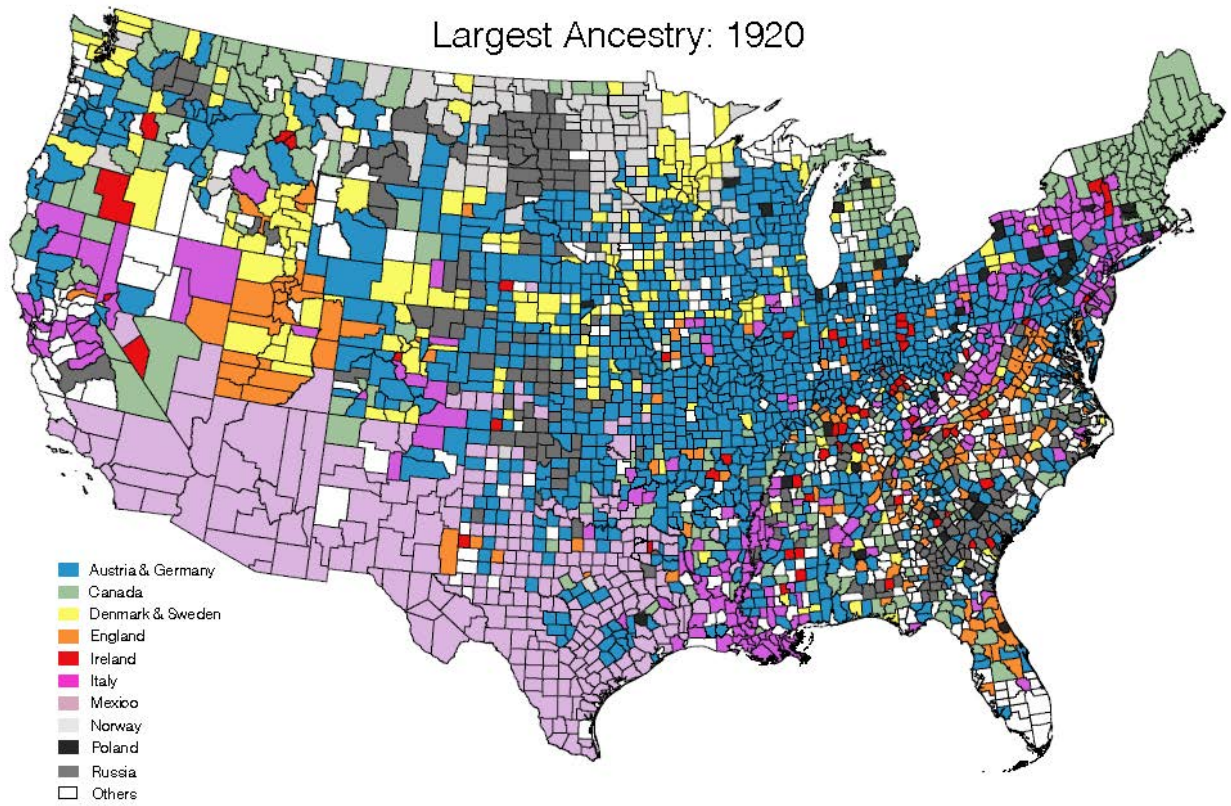
Source: Authors' calculations based on US Historical Statistics (Panel A) and IPUMS samples of US Census (Ruggles, et al., 2010) (Panel B). Immigrant flows in Panel A include only legal entrants, leading to an undercount particularly after 1965.

**Figure 2: Sending regions within the foreign-born population, 1850-2010**



Source: Authors' calculations based on IPUMS samples of US Census (Ruggles, et al., 2010).

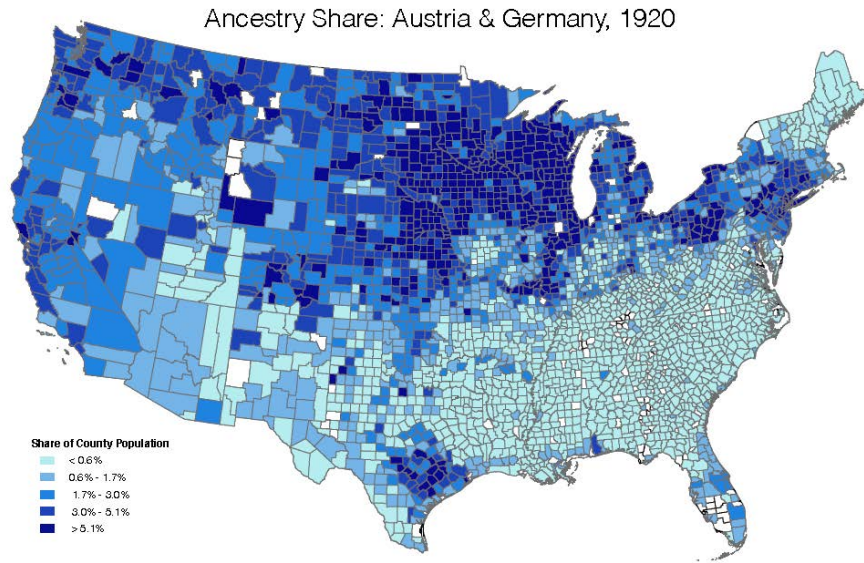
**Figure 3: Largest country-of-origin group among foreign born by county, 1920**



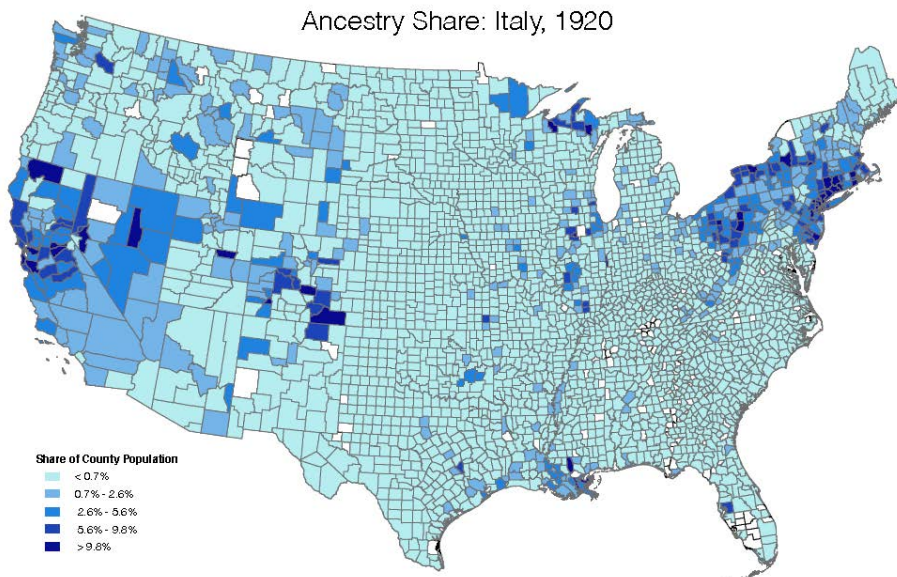
Source: Authors' calculations from complete-count data of 1920 Census.

**Figure 4: Share of county population from particular countries-of-origin, 1940**

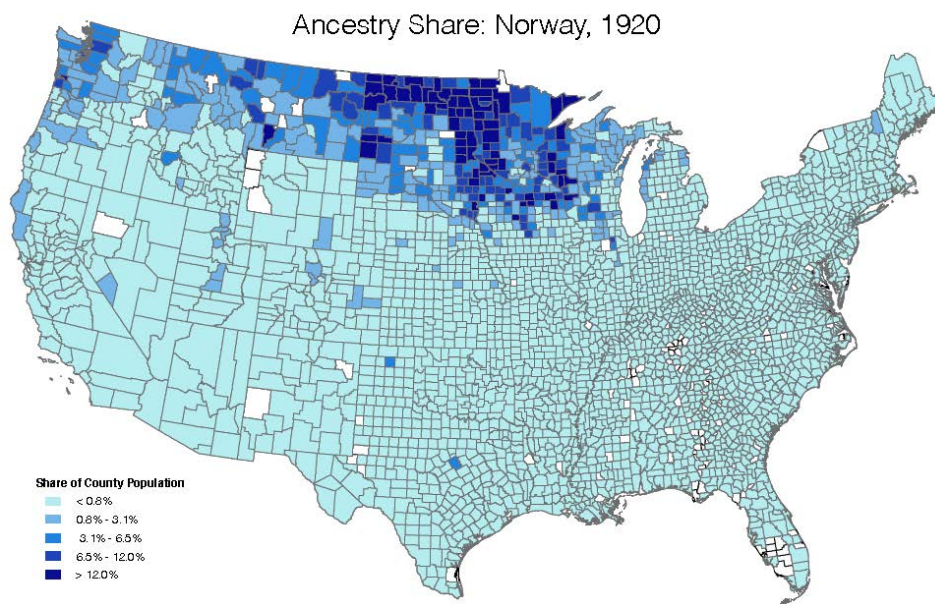
**A. Austria and Germany**



**B. Italy**

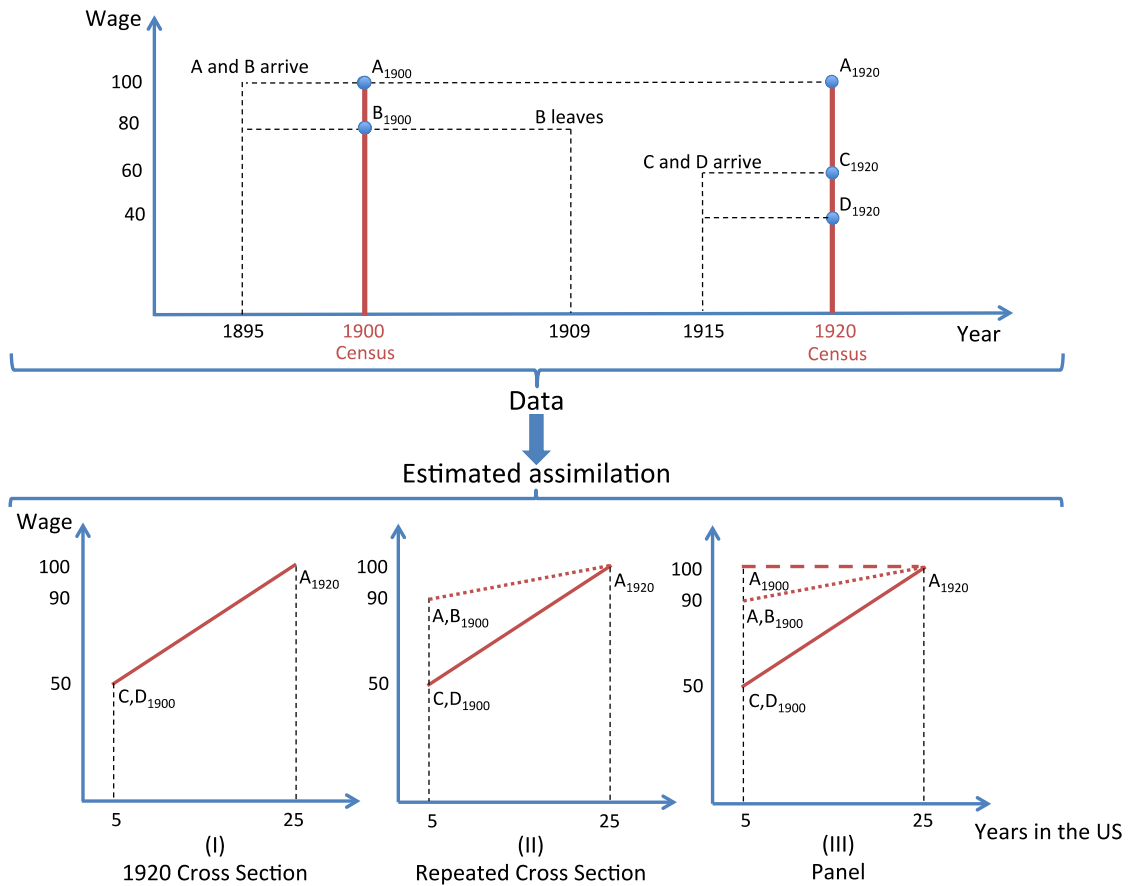


## C. Norway



Source: Authors' calculations from complete-count data of 1920 Census.

**Figure 5: Inferring assimilation from cross sectional and panel data**



Notes: The top graph depicts the earnings of four hypothetical migrants. For illustrative purposes, we assume that natives earn 100 in every year. Migrants A and B arrived in 1895 and earn 100 and 80 respectively. Migrant B returns to his home country in 1909. Migrants C and D arrived in 1915 and earn 60 and 40 respectively.

The bottom row of graphs depicts inferred assimilation profiles from a series of hypothetical datasets containing subsets of these migrants. With a single cross section of data (say, the 1920 census), a researcher would compare the earnings of immigrants C and D (who arrived in 1915) to the earnings of immigrant A (who arrived in 1895) and infer that immigrants fully close the earnings gaps with natives after 25 years in the US. With repeated cross sections, a researcher would follow the cohort that arrived in 1895 (immigrants A and B), say between the 1900 and 1920 Census. As immigrant B leaves the US, the average earnings of the cohort increase despite the fact that, by construction, they are constant over time for each individual immigrant. A panel dataset allows researchers to measure the true pace of earnings growth over time.