Influential voices in the media and in public policy circles have sustained the impression and perhaps heightened the concern that high levels of immigration harm resident Americans by reducing their wages. This perception of “labor market flooding” – sometimes billed as “common sense” (Brimelow 1995) – is bolstered by the logic of introductory-level microeconomic theory. That analysis begins by assuming a downward-sloping demand curve for labor in a static labor market. Under such circumstances, an immigration-induced outward shift in the labor supply curve will cause the equilibrium wage to fall. George Borjas emphasized this logic in the title of a recent paper, “The Labor Demand Curve is Downward Sloping” (Borjas 2003).

Nonetheless, an impressive number of empirical studies based on recent data find no evidence of a negative impact of immigration on resident wages. At the conclusion of a survey of the literature published in 1995, Rachel M. Friedberg and Jennifer Hunt report:

Despite the popular belief that immigrants have a large adverse impact on the wages and employment opportunities of the native-born population, the literature on this question does not provide much support for this conclusion. … [E]mpirical estimates in a variety of settings and using a variety of approaches have shown that the effect of immigration on the labor market outcomes of natives is small. There is no evidence of economically significant reductions in native employment. Most empirical analysis of the United States and other countries finds that a 10 percent increase in the fraction
of immigrants in the population reduces native wages by at most 1 percent (Friedberg and Hunt 1995, 42).¹

Yet immigration’s impact on wages is extremely difficult to measure. This is why the debate continues. Several well-known economists, with Borjas prominent among them, contend that immigration reduces the economic well-being of residents (Borjas 1995, 1999a, 2003). The negative effect of immigration is hidden, they suggest, because native-born workers respond to the arrival of immigrants by moving elsewhere, “voting with their feet” (Borjas 1999b, 1740). As Borjas explains:

… natives may respond to the wage impact of immigration on a local labour market by moving their labour or capital to other cities. These factor flows would reequilibrate the market. As a result, a comparison of the economic opportunities facing native workers in different cities would show little or no difference because, in the end, immigration affected every city, not just the ones that actually received immigrants (Borjas 2003, 1338, emphasis in original).

In this view, immigrants “crowd out” native workers who flee to areas less impacted by immigration. Indeed, if every arriving immigrant worker inspired one resident departure, total employment in the local market, and therefore the wage, would remain unchanged. The residents’ departure disperses the immigrants’ wage-depressing effect across the entire economy, where it is difficult to detect precisely because it is pervasive. Therefore the question of the wage effects of immigration is intimately related to the locational choices of foreign and native workers.

The empirical evidence on this “crowding out” hypothesis for the modern period is mixed and no consensus has been reached. Investigating data for the 1970s and 1980s, Randall Filer (1992), Borjas (2001), and several others find a negative relationship between immigration (or net immigration) and out-migration of resident workers. Research by Michael White and Yoshie Imai (1994); Richard Wright, Mark Ellis, and Michael

¹ This summary refers in particular to a series of studies reported by the National Bureau of Economic Research (NBER). See Robert LaLonde and Robert Topel (1991) and Joseph Altonji and David Card (1991). In summarizing the NBER research effort John Abowd and Richard Freeman reported that the “broad implication is that immigrants have been absorbed into the American labor market with little adverse effect on natives” (Abowd and Freeman 1991, 22). A National Research Council Panel convened by the U.S. Commission on Immigration Reform reached the same conclusion (Smith and Edmonston 1997, 219-220). See Card (2005) and Gianmarco Ottaviano and Giovanni Peri (2005, 2006) for recent contributions that bolster the conclusion that the impact of immigration on the wages of competing native-born workers is small.
Reibel (1997); David Card (2001); and Mary Kritz and Douglas Gurak (2001) found either no relationship between the entry of immigrants and the exit of the native-born or a positive one; that is, both immigrants and the native-born moved to the same cities. Because the question of harm is, in Borjas’s words, “at the core of the immigration debate” (Borjas 1999, 62-63), the issues of locational adjustment and wage effects remains hotly contested within the economics profession.² Kritz and Gurak, in a review of this debate, suggest that the confusing results reported in the literature are a product of different model specifications, the different populations studied, the different regions, and the different time periods chosen for analysis (Kritz and Gurak 2001, 134-135).³

This chapter attempts a fresh empirical look at the economic consequences of immigration with particular attention to the argument that native-born workers are pushed out of labor markets flooded by foreign workers. Our approach shifts attention away from the recent experience to the decades centered on the centennial year 1900. There are several reasons for thinking that an examination of this historical “Age of Mass Migration” may prove helpful. During that period, immigration flows were considerably heavier than they are today, especially when compared with the size of the resident population. If a negative impact of immigration is hard to find in modern data, perhaps it will reveal itself during a period of much more intense labor market pressure. Second, most of the economists who argue that there ought to be significant negative impacts of immigration have taken a short-run, static point of view and thus have assumed away any relationships between immigration, structural changes, and economic growth. A long-run, dynamic, historical analysis – one that emphasizes the positive impact of immigration on economic growth – usually concludes that immigration would bring significantly large positive benefits to residents. This is the perspective taken by economic historians and theorists of economic growth (for a review, see Carter and Sutch 1999). If the objective is to measure the net effect of immigration, not just the partial short-term impact, then one needs to take a longer historical perspective. Before turning attention to the empirical and theoretical issues, it is useful to summarize the similarities and differences between immigration then and now.

² See Roger Lowenstein (2006) for an accessible account of the debate.
³ Another problem is that some of the findings are driven by two significant outliers: Los Angeles and New York City. Both cities are major ports of entry for new immigrants even today.
1. American Immigration in the Age of Mass Migration

The several decades before World War I have been called the “Age of Mass Migration.” With the important exception of the Chinese, most of whom were barred from entering the country after passage of the Chinese Exclusion Act of 1882, America’s door was essentially open to all immigrants willing and able to come. It was not until 1917 that the U.S. Congress took measures to restrict immigration with literacy requirements and an expanded prohibition of Asian immigration. A few years later, the Quota Law of 1921 imposed numerical restrictions for the first time on immigration from non-Western Hemisphere countries, and then these quotas were reduced in 1924. The impact was dramatic. Figure 1 plots net immigration rates (net immigration per thousand members of the resident population) for the full range of the country’s history. Net rates which ran in the range of six to eight per thousand in the first fifteen years of the twentieth century fell below two per thousand after enforcement of the 1924 quotas. The Quota System was removed in 1965, replaced by the Preference System, and since then the net immigration rate has slowly drifted upward. In 2005, the rate was 3.5 per thousand, about one-half the level a century earlier.

Figure 1. Net Immigration per Thousand of Resident Population

Note: Immigrants include both authorized and unauthorized additions to the resident population. Net immigration is the difference between immigration to the United States and emigration from the United States. This series differs from the “official” figures that measure only arrivals and not departures, and because an effort is made to indicate the year of the immigrants, arrival and not the year of their official admission.


4 There were some health and character restrictions as well. A brief chronology of U.S. Immigration policy can be found in Barde, Carter, and Sutch (2006, Table Ad-C).
The net immigration rate can be taken as a measure of the magnitude of the impact of an immigration flow on the receiving population. Since the relative magnitude of immigration was greater in the first decade of the twentieth century than in its last decade, the impact on labor markets, including the impact on the wages of the resident population, would presumably be greater and more easily detected. To be sure, the characteristics of early-twentieth-century immigrants were in some ways different from the “new” immigrants of the recent past. Furthermore, the structure of the two economies and their factor markets presented distinct institutional environments for the new arrivals to confront (Carter and Sutch 1998). But we argue that on balance these differences probably should accentuate the wage adjustments required in the earlier period relative to the recent period.

Immigration during the Age of Mass Migration was dominated by single males of young working ages. Today there are greater proportions of children, the elderly, and others who do not immediately join the labor force (Carter and Sutch 1998, 290). The impact on the labor market was, therefore, likely greater than the net immigration rate would suggest since a disproportionate fraction of immigrants from that period joined the labor force. Moreover, the age distribution of the resident population was more concentrated at younger ages then is true of today’s aging population (Sutch and Carter 2006, Series Aa125-144). Thus the young adults who dominated the immigrant flow at the turn of the twentieth century were more similar in age, background skills, and experience to resident workers then is true today. Thus we would expect more direct competition between the two groups.

Two widely cited studies, one by Claudia Goldin and the other by Timothy Hatton and Jeffrey Williamson, conclude that the mass immigrant arrivals during this period exerted strong downward pressure on the earnings of resident workers. Goldin reports, “wages were depressed in cities having an increase from 1899 to 1909 in the percentage of their populations that was foreign born” and “the results are even more supportive of the view that immigration severely depressed the wages of less-skilled labour” (Goldin 1994, 252). Hatton and Williamson conclude that “a 1 percent rise in the labour force due to immigration would have reduced the real wage in the long run by 0.4 per cent … or 0.5 per cent” (Hatton and Williamson 1998, 172). Hatton and Williamson also report that crowding out was a significant phenomenon between 1880 and 1910, presumably as natives fled the regions that were attracting the immigrants as the wages in those labor markets fell in response to labor market flooding. Given the large magnitude of the immigrant flows, the age and skill mix of the immigrants
relative to the existing population, and the less-structured character of the American labor market at that time, these conclusions are certainly plausible. But are they correct? This chapter takes another look.

2. Modelling the Impacts of Immigration

Economic analyses of the consequences of immigration usually take as their starting point a static model of the labor market. In the simplest version of this model, labor is assumed to be homogenous in its productivity and other relevant characteristics so that immigrant and native-born labor are perfect substitutes. Demand for labor is assumed to be a downward-sloping function of the wage. The labor supply curve is assumed to be upward sloping (or in some expositions to be vertical).

According to this model, demand is assumed to be unaffected by immigration itself. Thus, for example, the analysis ignores the impact of immigrants in increasing demand for final products. It assumes an economy that is closed to trade with other regions so that an inflow of immigrants cannot lead to an increase in the production of traded goods or an in- or out-migration of resident labor. The increase in labor relative to capital is not allowed to simulate an inflow of capital or the adoption of new production techniques. We will return to relax these restrictive assumptions later. Our discussion of this simple version is intended, not as a straw man, but as a starting point for discussing our analytical framework.

Figure 2. The Texbook Economy

Figure 2 presents the familiar graphical analysis which we have labeled the “Textbook Economy” model. Before immigration, the labor supply curve
is \( S_0 \). It establishes an equilibrium wage of \( W_0 \) and a quantity of resident labor hired of \( R_0 \). If a flow of immigrant workers equal to \( M \) arrives, the supply curve for labor is pushed to the right as shown by \( S_1 \). Here it is assumed that the supply of immigrant labor is perfectly inelastic; that is, wages do not influence the amount of immigrant labor supplied. The outward shift of the labor supply curve lowers the equilibrium wage to \( W_1 \), reduces the employment of residents from \( R_0 \) to \( R_1 \), and increases total employment to \( R_1 + M \). The model assumes “full employment,” so the decline in resident employment is due to the voluntary withdrawal of labor services by residents unwilling to put forth the same effort at the reduced wage.

As students of the subject know, however, the presence of immigrants is often associated with high, not low wages. For example, when Friedberg and Hunt plot the average wage and salary income of the thirty largest cities in the United States in 1990 against the fraction of those cities’ population that is foreign-born, they find that “cities with higher immigrant densities also have higher mean incomes. The correlation between these two variables is 0.37” (Friedberg and Hunt 1995, 31). In a study of the American economy a century earlier, Goldin also found a strong positive relationship between the fraction of a city’s population that was foreign-born and the city’s average wage (Goldin 1994, 247).

There is another prediction of the simple model that fails the empirical test. Real wages in sectors that employed a large and growing number of immigrants during America’s Age of Mass Migration did not fall over time; they rose. Real wages at the end of the period were higher than at the beginning despite the influx of immigrants. Figure 3 displays three real wage series for the period: one for manufacturing, one for railroads, and one for lower-skilled labor. In 1910, manufacturing employed one-third of the foreign-born men while transportation and communications employed another 12 percent (Sutch and Carter 2006, Series Ad894-896). We suspect that a disproportionate number of the lower-skilled workers were immigrants.

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5 The simple model assumes one type of labor. Data reported here are averages across a variety of labor types. These averages are affected not only by the wage paid to each category of labor, but also by the relative share of the different occupations in the total. The impact of shifting relative shares on the average is called the “composition effect.” Since immigrants earned lower wages than the native-born, the growth of the immigrant share of the labor force would be expected to lower the average wage. Indeed, as the immigrant share of the labor force grew, it is theoretically possible for the overall wage to fall even when the wages of both the native-born and the immigrants were rising. That the average rose despite the negative composition effects means even stronger wage gains for immigrants, natives, or both, than trends in the average wage suggest.

6 The series on lower-skilled labor is the one used by Hatton and Williamson (1998). The Hatton and
Figure 3. Trend in Real Wages

Note: The data for “all manufacturing” are based on the hourly earnings estimates originally developed by Albert Rees (1961) and are considered superior to the manufacturing wage data estimated by Paul Douglas (1930). Douglas’ series on the weekly wages of railroad workers were derived from the reports of the Interstate Commerce Commission and are considered quite reliable. The series on low-skilled workers is taken from Paul David and Peter Solar (1977) but these are in turn based on the estimates published by Whitney Coombs (1926). Coombs based his estimates on the full-time weekly earnings of the lowest paid occupations reported for each industry by the Bureau of Labor Statistics. Since these data exclude most common laborers, the series is labelled “lower-skilled,” though Coombs and David and Solar call it “unskilled.” All three series were deflated by the David-Solar index of the cost of living (1860=100) and the resulting estimates of real wages were then converted to a common base where 1900 is set equal to 100. See the source for additional detail and for citations to the original sources.

Source: Sutch and Carter 2006; Series Ba4314, Ba4316, Ba4218, and Ce2.

So what explains the failure of the straightforward predictions of the textbook model to accord with the facts? As we have noted, one explanation may be native flight or “crowding out.” This view takes as a starting assumption the notion that before the arrival of new immigrants the regional labor markets are in a country-wide equilibrium with an identical wage (after adjustments for particular regional conditions) prevailing in all markets. Thus the arrival of immigrants would push the local wage below the national level, inducing some residents of the impacted market to move to another area. In doing so, they restore a national equilibrium. This explanation, which we illustrate in Figure 4, is favored by Hatton and Williamson (1998, Figure 8.4, 166). They relax the textbook assumption that native workers are confined to the local market and postulate as a

Williamson wage series was developed by Williamson (1995, Table A1.1). Williamson’s source for the period in question is Paul A. David and Peter Solar (1977). See Williamson (1995, 176). In Figure 3 we plot David and Solar’s series for lower-skilled workers. Incidentally, the Williamson series is in error for 1889 and 1890.
consequence a highly elastic supply of resident labor, indicated here by the supply curve $S_0$. If the local wage falls much below the national norm of $W_0$, some local workers would depart, seeking higher wages elsewhere. It might be said that they were “crowded out” by the immigrants. On the other hand, if the local wage rises above $W_0$, it will attract migrants from other regions. With a highly elastic supply of resident labor, the exogenous arrival of a number of immigrants equal to $M$ will shift the labor supply curve to right as indicated by curve $S_1$. As drawn here, wages fall, but by very little. The impact of immigrant entry is masked by the native flight. The employment of residents falls sharply from $R_0$ to $R_1$. If every arriving immigrant worker inspired one resident departure, the wage and total employment would remain unchanged. The only change would be the replacement of native workers by immigrants.

Figure 4. Crowding Out

3. Locational Choices of Immigrants and Natives: State-Level Analysis

Hatton and Williamson are particularly concerned with the possibility of crowding out as depicted in Figure 4. They write,

Local labour market studies almost certainly understate (or miss entirely) the economy-wide impact of immigration on wages. After all, immigration will only lower wages in a local labour market insofar as it increases the total supply of labour. If instead there is completely offsetting native emigration, then a rise in the immigrant share is consistent with no change in the size of the local labour force and no wage effect of
immigration compared with other local labour markets in which natives relocate. But wages should fall (perhaps equally, perhaps not) in all locations (Hatton and Williamson 1998, 171; emphasis in the original).

The most powerful element of Hatton and Williamson’s argument that immigration was harmful to resident workers, therefore, is their finding that crowding out was substantial. They estimate that

… an additional 100 foreign-born in-migrants to these northeastern states increased native-born out-migration by 40. While this is not quite the one-for-one Filer found for late-twentieth century America …, it is substantial crowding-out nonetheless” (Hatton and Williamson, 1998: 168-169 citing Randall Filer 1992).

Hatton and Williamson’s conclusions are based on an analysis of data assembled by Hope Eldridge and Dorothy Swaine Thomas (1964) from the decennial censuses. Hatton and Williamson focus on the three decades beginning in 1880. To identify possible crowding out, they begin by comparing regional differences in net native- and foreign-born in-migration rates calculated as a share of the native population. They call attention to three different regional patterns:

(1) in the Northeast, low (but non-negligible) rates of native out-migration coupled with high rates of foreign in-migration,

(2) in the South, high rates of native out-migration coupled with very low rates of foreign in-migration,

(3) in the West, large inflows of both the native- and the foreign-born.

Hatton and Williamson concede that there was no crowding out in the South or the West. Few immigrants were going to the South, so they could not be the reason for native departures. Both natives and immigrants were going West in large numbers, so immigrants do not appear to have thwarted the natives’ westward march. If crowding out occurred, it would have to be

Hatton and Williamson also directly address the issue of whether immigrants reduce wages nationally (1998, 171-173). They adopt an approach that we find unconvincing. See Carter and Sutch (1999, 332-333) for a discussion of our reservations.
in the populous fourteen states of the Northeast that were attracting large numbers of immigrants while at the same time losing many of their native-born. It is to states in this region that the Hatton-Williamson crowding-out results reported above apply. Here we review their evidence.

Figure 5 plots for each state the net migration rates of the native- and foreign-born for the 1890s. The surprise, in seeming contradiction to the conclusions presented by Hatton and Williamson, is the positive correlation between native- and foreign-born migration rates. That is, states experiencing the largest exoduses of the native-born – Vermont, Maine, New Hampshire, Michigan, and (hidden just to the upper right of New Hampshire) Wisconsin – reported very small inflows of foreign-born. Immigrant inflows were less than one percent of the resident population. While on balance more native-born left these states than entered, crowding out by foreigners does not appear to explain the exodus. More likely, the native-born left because of the poor state of New England agriculture and the attractive agricultural opportunities out West (Barron 1984). States with the heaviest inflows of the foreign-born – Rhode Island, Massachusetts, Connecticut, New York, and New Jersey – on the other hand were also attracting the native-born migrants.

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8 The data for other decades is qualitatively similar. The correlation coefficients between native- and foreign-born net migrations are 0.64, 0.70, and 0.77 for the decades of the 1880s, 1890s, and 1900s, respectively. Only Wisconsin in the 1880s displayed migration patterns consistent with possible crowding out. In that decade an 18.7 percent immigration rate was associated with an 8.2 percent outflow of the native born.
In Figure 5 we present the same data that Hatton and Williamson use in their analysis. How is it that they reached their seemingly opposite conclusion that the arrival of 100 foreigners prompted the out-migration of 40 natives? We can best explain the logic of their argument by reference to Figure 6. Begin with an initial equilibrium wage in, say, the Massachusetts labor market of $W_0$ with total employment consisting entirely of resident workers, given by $R_0$. Now let there be a demand shock that shifts the demand for labor curve out from $D_0$ to $D_1$. In the absence of immigration, the wage would rise to $W_h$ and resident employment would increase to $R_h$. Now let $M$ foreign-born workers respond to the wage increase by moving to Massachusetts. This shifts the supply of labor curve out to $S_1$, reduces the equilibrium wage to $W_1$, and reduces resident employment to $R_1$. The “crowding out” of natives that Hatton and Williamson measure is not a reduction in native employment to a level below $R_h$. Rather, it is the difference between the hypothetical resident employment increase to $R_h$ and the actual employment $R_1$. In other words, natives and immigrants were both moving to the same dynamic locations. As they accurately put it, “strong labour demand crowding in and foreign-born immigrant crowding
out were both at work in this case” (1998, 167). Hatton and Williamson’s measure of a four for ten “immigrant crowding out” was actually offset by “labour demand crowding in.” Natives were crowded out only in the sense that their inflow might have been larger still had the immigrants failed to arrive.9

We suggest that Hatton and Williamson’s effort to measure a hypothetical crowding out separate from the inflows induced by strong labor demand is misleading. The crowding out that is associated with a harmful impact of immigration, by definition, can only occur if wages fall below the national average. But at $W_1$ and $R_1$, wages are higher than in the initial equilibrium and native employment is greater. The appropriate question is whether there is a negative relationship between foreign immigration and resident migration. There is not. The state-level data on immigration and native migrant flows do not support the conclusion that immigration during this period reduced the wages of residents.

4. Locational Choices of Immigrants and Natives: County-Level Analysis

Earlier we showed that state-level data for the fourteen states of the Northeast were characterized by a positive correlation between the destinations of resident and foreign-born workers. While state data is better than regional data, even states are too heterogeneous to reveal migration flows across

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9 This definition of crowding out may overstate the case since the model rules out, by assumption, a number of processes by which immigrant arrivals may increase local wages, thereby increasing their attraction to native-born workers.
labor markets. New York in 1900, after all, included both big industrial cities and thinly populated, rural, agricultural areas. To focus more directly on the labor markets we examine migrant flows at the county level between 1900 and 1910. These data demonstrate that there was no crowding out. Instead, native and foreign-born were migrating to the same counties.

Our county-level data comes from the published returns of the U.S. Censuses for 1900 and 1910, which reported county-level data on population disaggregated into native (white, black, and other races) and the foreign-born. For 1910 we also have these population figures for those ten years of age and older. We use these data to calculate a crude measure of net in-migration of the native and foreign-born into each county.

**Figure 7. Immigrant Magnet Counties, 1900-1910**

*Note:* All 318 counties with an increase in the foreign-born population (aged 10 and older in 1910) equal to or greater than 1,000 are indicated. The bubble size is proportionate to the numerical increase in the foreign-born with New York and Kings Counties in New York State the largest, with increases of 362 and 195 thousand, respectively, followed by Cook County, Illinois (the site of Chicago with 193 thousand), and Philadelphia County, Pennsylvania (75 thousand).

*Source:* Haines 2004 and authors’ calculations.

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10 These data are available in machine-readable format for the Inter-University Consortium for Political and Social Research (Haines 2004).

11 A discussion of the method used to calculate the net migration rates is given in Sutch (1967). Some county boundaries changed between 1900 and 1910, some counties were partitioned to form new counties, and some counties changed their name. We have used the maps in William Thorndale and William Dollarhide (1987) to aggregate counties in 1910 in such a way as to produce a contiguous area that closely matched the boundary of a 1900 (or an appropriate aggregate of 1900 counties). This procedure produced approximately 2,800 county or county-like regions in 47 states or territories and the District of Columbia. The data set excludes Oklahoma and Indian Territories (1900) and the State of Oklahoma (1910). Because of incomplete enumerations, four Indian Reservations (Standing Rock, Cheyenne River, Pine Ridge, and Rosebud) all in South Dakota and Williamsburg County, Virginia were excluded. Alaska and Hawaii Territories are not included.
Figure 7 identifies what we call “Immigrant Magnet Counties.” These are the 318 counties that experienced a net increase of 1,000 or more immigrants over the decade. Bubble size is proportional to the numerical increase. It is clear from the figure that immigrants disproportionately settled in the industrial counties of the Northeast and Midwest and, to a lesser extent, along the Pacific coast. In general, the Immigrant Magnet Counties are the ones that had already established a strong immigrant presence in the nineteenth century. Some evidence in support of this view is that there is a strong correlation between the foreign-born population in 1900 and the net foreign in-migration over the following decade. Perhaps immigrants’ locational choices had nothing to do with high wages but instead were most heavily influenced by the presence of other immigrants, particularly their families and friends from the home country who had immigrated earlier.

Figure 8 helps to clarify the relative role of family and friends versus economic factors such as high wages in attracting immigrants in this era. It displays what we call an Immigration Impact Index for each magnet county. We define this as the increase in the number of foreign-born between 1900 and 1910 per thousand native-born residents in 1900. It shows that the largest increases in immigrants relative to the native population occurred in counties in the upper Midwest, Mountain, and Pacific regions, not those of the industrial Northeast.

Of the 318 “Immigrant Magnet Counties” depicted in Figure 7, 72 percent experienced a positive inflow of both foreign-born immigrants and native in-migrants. Figure 9 presents a log-log scatter diagram that plots each of the magnet counties in a manner designed to illustrate the relationship between the total net in-migration (native and foreign-born) and the net increase in the foreign-born population. The 45-degree line represents the locus of points where the increase in the foreign-born and the total in-migration are the same. Counties plotted above the 45-degree line experienced a net in-migration of both the native- and foreign-born. Counties below the 45-degree line experienced a net out-migration of foreign-born and an offsetting net out-migration of native-born. Perhaps the arrival of the foreign-born prompted the native-born to flee by depressing wages.

12 The correlation between the logarithms of the two numbers is 0.79.
Figure 8. Immigration Impact Index

Note: All 318 counties with an increase in the foreign-born population (aged 10 and older in 1910) equal to or greater than 1,000 are indicated. The bubble size is proportionate to the rate of foreign immigration.

Source: Haines 2004 and authors’ calculations.

We cannot conduct a formal test of this hypothesis since we do not have county-level wage data, but we suggest that the pattern displayed in Figure 9 is not consistent with an interpretation that the counties below the line exhibited crowding out. The sizes of the bubbles in the diagram indicate the magnitude of each county’s immigration impact index. Where the impact of immigration was the greatest (indicated by large bubbles), we find that both natives and immigrants had poured into the county. In all of the counties below the line, the immigration impact index is quite low (the bubble sizes are small). Only four counties below the line had an impact index greater than the average index of those above the line. These patterns suggest that the reason for the native outflow from the counties below the line was unlikely to have been due to a proportionately heavy foreign-born inflow. We conclude that the crowding-out mechanisms did not operate during the Age of Mass Migration in any general way. Instead, natives and immigrants were both moving to the same high-wage regions. These findings suggest that the immigrant arrivals were not reducing the wages of resident workers in this period.
5. An Alternative Model of Immigration’s Impact

As we noted, switching the focus to a period a century ago prompts us to adopt a dynamic perspective that we believe may resolve the contradiction between the elementary models of immigration (including the crowding out model) which predict a decline in wages, and the empirical studies that find little or no evidence for such an effect. The simple models assume that the only change in a labor market experiencing immigration is the exogenous outward shift of the labor supply curve. This assumption is systematically violated in the real world. It is scarcely an exaggeration to say that it is never the case. Immigrant entry not only responds to market conditions, it also stimulates market change.

We also suggest that it is impossible to imagine a plausible sequence of events in which immigrant entry occurs in isolation of other related changes. To take only the most obvious consequence, the arrival of newcomers will increase the demand for final products. Immigrants have to eat and find shelter and they can be counted on to purchase many other goods and services ranging from necessities to indulgences. But, when immigrants purchase these items, output will respond and thus the demand for labor will shift out. Because the shift in the labor supply curve inevitably is
accompanied by a shift in the labor demand curve, it is extremely difficult to measure a “pure” wage impact of immigration on resident wages holding “other things equal.” The inherent technical and conceptual difficulties of this problem, heightened by the political implications of the results, are what make the issue of immigrant impacts so contested. We suggest that immigration is interesting and important precisely because of those features that make measurement of its wage impact problematic.

In addition to the labor demand shifts that occur pari passu with the arrival of immigrants, history suggests that immigrants are generally drawn to localities, occupations, and industries experiencing innovation, growth, and evolutionary change. In other words, they do not locate in stagnant textbook labor markets. Our first suggestion then is that immigrants differentially select destinations with high and/or growing wages. The reasons why this might be true are easy to understand. Immigrants have already made the decision to leave home; they select their final destinations using economic criteria. Indeed, immigrants’ selection of high-wage cities was Goldin’s explanation for the positive correlation between the city wage and the foreign-born share that she found about 1900 (Goldin 1994, 247). A simple expression of this possibility is depicted in Figure 10, which we label the “Dynamic Economy” model. We begin with the assumption that wages in all local labor markets are in equilibrium at the intersection of the original demand and original supply curve, the point shown by \( W_0 \) and \( R_0 \). We then let the labor demand curve in a selected city shift outward, perhaps reflecting a resource discovery. As a result, wages in that city might be expected to rise to \( W_h \) and resident employment to expand to \( R_h \). However, since immigrants are mobile and attentive to economic rewards, they select the city with the dynamic economy over all others. When they do so, they cause the supply of labor curve to shift out (and become more elastic) at wages above \( W_0 \). Employment expands from \( R_0 \) to \( R_1+M \). Although the resulting wage rate, \( W_1 \), is below the counterfactual wage \( W_h \), it may nevertheless remain for some time above the initial level \( W_0 \), and therefore above the wage in cities that did not experience the positive demand shock. Resident employment also expands from \( R_0 \) to \( R_1 \).
Figure 10 provides a framework for interpreting Goldin’s finding of a negative wage impact. When she reports, “wages were depressed in cities having an increase … [in their] foreign born” (emphasis added), she is referring to the difference between $W_h$ and $W_1$, not to a wage below $W_0$. This subtlety is overlooked in many summaries of Goldin’s contribution. Reviews of Goldin reported by Hatton and Williamson (1998, 170), Dolmas and Huffman (2004, 1129), and Graham (2004, 60) suggest that immigrants depressed wages to a level below $W_0$. This was not the case. Resident wages were high in cities with large numbers of immigrants. The dynamic economy model assumes a demand shock unrelated to immigration. A second mechanism that would explain the failure of immigration to have a depressing impact on wages is an induced demand shift, that is, a shift in demand that responds to the arrival of immigrants. More foreigners – or indeed more population from any source by itself – should not mean lower wages or increased unemployment, because the additional people not only supply labor but also add to the demand for output in a closed economy. Even if we relax the textbook assumption of a closed economy and allow local labor markets to import goods from another region to meet the expanding demand, this induced-demand story will still be valid. This is because some goods and services must be produced where they are consumed – restaurant meals, construction, and educational and medical services. In addition, an open economy will respond to an increase in its labor force by expanding production of tradable commodities in which it has a comparative advantage. Thus an exogenous entry of immigrants that produces an outward shift in the labor supply curve will prompt a positive
response from the labor demand side of the market. It is also conceivable that, with an open economy, the impact of immigration may increase resident wages if the expansion of local industry pursuing a comparative advantage also allows those firms to exploit economies of scale (Romer 1996; Brezis and Krugman 1996) or if strong complementarities between immigrants and residents are at work (Ottaviano and Peri 2005).

Figure 11. Open Economy Model

This mechanism is depicted in Figure 11, which we label the “Open Economy” model. Before the arrival of the immigrants, the market is in equilibrium at \( W_0 \) and \( R_0 \). An exogenous inflow of immigrants then shifts the labor supply curve from \( S_0 \) to \( S_1 \), temporarily driving the wage down to \( W_1 \). The relatively low wages attract new firms to the city. This response shifts the labor demand curve from \( D_0 \) to \( D_1 \), thereby restoring the wage to its initial level. Borjas, Freeman, and Katz (1997) suggest that these shifts in industrial structure play a quantitatively important role in the adjustment of city wages to immigration shocks. If economies of scale exist, then the demand for labor might shift out even further as the region’s firms exploit their competitive advantage \( \text{vis à vis} \) competitors in other regions. Then wages might rise to \( W_2 \) and, if so, the employment of native residents would increase from \( R_0 \) to \( R_2 \).
6. Conclusion

The dynamic and open economy models portrayed in Figures 10 and 11 imply that immigration does not harm resident workers in the common-sense way in which the term “harm” is generally understood. In both of these cases, the wage either increases or remains the same and the employment of residents is not reduced. The empirical evidence from 100 years ago suggests that wages of residents increased and the local employment of residents increased in the presence of heavy immigration. The estimates reported by Goldin and Hatton and Williamson of a wage setback for resident workers are only valid if we interpret them to suggest that resident wages would have risen even faster without immigration.\textsuperscript{13} Such a counterfactual estimate is problematic for at least two reasons. If one is looking either for an explanation of political opposition to immigration in the past, as was Goldin or Williamson in an earlier article (1982), or if one is defending a proposal to restrict immigration in the present, what is likely to matter most is whether real wages fall in the presence of immigration, not whether the growth of real wages is slowed (Williamson 1982, 256). Second, as articulated by Goldin and Hatton and Williamson, the counterfactuals that they offer assume that there is no impact of immigration on the forward momentum of the economy. Yet, there is every reason to suppose that without the immigration, wage growth, even in these high-wage cities, might have been slower or even halted. There is a broad consensus that immigration accelerated the rate of economic growth. The key mechanisms emphasized in the literature, are:

- The high labor force participation rate of immigrants,
- Immigration-induced capital flows from abroad,
- High immigrant saving rates,
- Increase in population-sensitive investment,
- Economies of scale,
- The roles of immigration in stimulating inventive activity and of population growth in accelerating the adoption of new technology,
- The importation of significant stocks of human capital without cost to the American economy.

For a review of the literature see Carter and Sutch (1999, 319-332).

In a dynamic economy there is also a more direct connection between immigration and growth. The fact that immigrants opportunistically select

\textsuperscript{13} These authors, we think, would accept this interpretation of their findings.
local markets with the highest wages suggests that the ebb and flow of immigrants can act as a “governor” for the economy. By reducing the rate of wage growth, the local business boom can continue without being choked off by explosive wage growth (Carter and Sutch 1999, 338-339). Thus the fact that the wage does not reach the hypothetical level of $W_h$ can be considered as good for the economy and as good for resident workers.
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