# The Effects of Immigration on the Economy:
# Lessons from the 1920s Border Closure


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**Abstract:** In the 1920s, the United States substantially reduced immigrant entry by imposing country-specific quotas. We compare local labor markets with more or less exposure to the national quotas due to differences in initial immigrant settlement. A puzzle emerges: the earnings of existing US-born workers *decline* after the border closure, despite the loss of immigrant labor supply. We find that more skilled US-born workers – along with unrestricted immigrants from Mexico and Canada – move into affected urban areas, completely replacing European immigrants. By contrast, the loss of immigrant workers encouraged farmers to shift toward capital-intensive agriculture and discourage entry from unrestricted workers.



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## I. Introduction

The closing of the border to mass migration in the 1920s was one of the most fundamental changes to United States immigration policy in the past century. From the country's founding, European immigrants faced few restrictions for entry into the US.[1] In the early twentieth century, roughly 1 million immigrants arrived on the nation's shores each year, relative to a population of 92 million. This era of open immigration ended in the 1920s with a series of increasingly restrictive immigration quotas, eventually limiting entry from affected countries to 150,000 a year. As a result, the foreign-born share of the population fell from 14 percent in 1920 to 5 percent in 1970 (see **Figure 1**). Because there have been few such drastic changes in immigration policy in US history, studying the 1920s border closure offers a rare window into how the economy might adapt to other such large declines in immigrant flows (e.g., proposed legislation like the 2017 RAISE Act).[2]

Contemporary observers debated the likely effect of closing the border on the economic fortunes of the existing workforce. Jeremiah Jenks, an economist at Cornell and member of the Dillingham Commission, argued that immigrants displaced the US-born from the manufacturing sector and lowered wages, writing that "it is undoubtedly true that the availability of the large supply of recent immigrant labor has prevented an increase in wages which otherwise would have resulted during recent years from the increased demand for labor" (Jenks and Lauck, 1912, p. 195). Others disagreed, suggesting that low-skilled immigrants were complements to the higher-skilled US-born workforce.[3] Immigrants also worked in the rural economy, often as farm

[1] A set of state-level regulations allowed for aliens "likely to become a public charge" to be barred from entry or deported after arrival (Hirota, 2017). These laws were particularly strong in Massachusetts and New York. Massachusetts deported more than 50,000 immigrants between 1830 and 1880. Yet, even at that rate, these removals represent less than one percent of immigrant entrants to the US.

[2] The US quotas were part of a global movement away from open immigration, mirrored by Canada, Argentina and other New World economies (Timmer and Williamson, 1998).

[3] Immigrants enter "disagreeable occupations 'white people' have forsaken" said Peter Roberts, who argued that "wherever unskilled [work] is needed, the foreigner is the one who does it; but the managing force is generally made up of the native born" (Roberts, 1912, p. 52). Edward Steiner, professor at Grinnell College, agreed, asserting that "until now, there has been room for all, and [immigrants] have not presented a serious economic menace…thus far, all have been crowded up and not many have been crowded out… [US-born workers] do not care to go back to the track, the pickax and the shovel" (Steiner, 1909, p. 190-91).

labor. The agricultural sector lobbied against immigration quotas, asserting that immigrants were willing to take agricultural jobs that the US-born would not.[4]

In this paper, we study how the economy adapted to this unprecedented restriction to immigration. We start by documenting that, despite the large decline in immigrant labor supply, the (occupation-based) earnings of US-born workers fell in labor markets that were more exposed to the quota policy, a pattern first found in a working paper by Ager and Hansen (2016) and by Tabellini (2019).[5] We then ask how such a large reduction in immigrant labor could take place without raising earnings of the existing workforce.

We find that workers who were unrestricted by the quota policy (i.e., US-born workers and immigrants from the Western Hemisphere, including Mexicans and Canadians) replaced the loss of immigrant labor in exposed urban areas nearly one-for-one after the border closure.[6] These new arrivals were more skilled than the immigrants that they replaced, filling only 50 percent of low-skilled blue collar positions previously held by immigrants. The arrival of higher skilled artisans and tradesmen, who may have been closer substitutes for existing US-born workers than the immigrant workers they replaced, can help explain why the earnings of existing residents fell after the border closure. By contrast, in rural areas, the loss of immigrant workers encouraged land owners to invest in more farm capital and to shift away from labor-intensive crops, which in turn discouraged US-born workers from moving into affected rural areas.

We emphasize that our estimates reveal the *total* effect of the immigration restriction policy for local labor markets after corresponding flows of labor and capital occurred. Thus, the "puzzle" of why the earnings of US-born workers fell in cities after the border closure, despite a decline in immigrant labor supply, can be understood as the combined effect of a decline in the

[4] The American Farm Bureau Federation "severely criticized even temporary restriction for hampering farm production" (Wang, 1975).

[5] Typically, economists assess the effect of immigration on the wages of the US-born. However, questions on wage and salary income or annual earnings were only added to nationally-representative surveys in 1940, twenty years after the border closure. Furthermore, given the scope for adjustment at the local level – either through inflows of substitutable capital or labor, or through the specialization in more capital-intensive production – wage changes are not a sufficient statistic for how the loss of immigrant labor affected US-born workers in many classes of models (Borjas, Freeman, Katz, 1997; Lewis, 2011; Burstein, Hanson, Tian and Vogel, 2017).

[6] A large increase in Mexican entry to the US in the 1920s suggests that most of the Mexican-born arrivals to US cities were new immigrants from Mexico, rather than existing Mexican immigrants shifting from one labor market to another.

(primarily low-skilled) immigrant workforce and a corresponding rise in (a more mixed-skill) US-born workforce.

We classify labor markets as more or less exposed to the national immigration quota based on the country-of-origin composition of their immigrant population. The 1920s quota laws restricted immigration from some sending countries more than others. Most of the slots were reserved for entrants from the United Kingdom, Ireland, and Germany, leaving only a small proportion of the overall quotas available for immigrants from Southern and Eastern Europe, such as Russia and Italy. Immigrants from the Western Hemisphere,[7] including Mexico and Canada, were entirely exempted from the quota laws.[8] Because immigrants tend to settle in areas with established networks of others from their home country (Bartel, 1989), labor markets that had larger clusters of Russians or Italians, for example, were more affected by the policy than areas with clusters of Irish and Germans. Conceptually, our approach is similar to other work relying on regional variation in exposure to a federal policy change, including Lee (1999) on the minimum wage, as well as studies of the effect of changes in immigration policy (Clemens, Lewis and Postel, 2018) and trade liberalization on local economies (e.g., Kovak, 2013 and Dix-Carneiro and Kovak, 2017).

[7] Many Caribbean islands were classified as "non-self-governing" colonies and thus may have fallen under the quota of their colonial power (Putnam, 2013). However, the number of Caribbean immigrants in the US increased by 70 percent in the decade after the border closure, larger even than the growth from unrestricted countries like Mexico (29 percent) and Canada (7 percent). Classifying the Caribbean as restricted does not affect our quota exposure measure very much because only two local labor markets had a sizeable share of the population from these locations in 1900 (Fort Lauderdale and Miami, FL, with 32 percent and 14 percent of the population respectively; the next largest Caribbean enclave was in New Bedford, MA, representing only 0.8 percent of the population).

[8] Mexican immigration was unregulated before the 1920s. Immigration inspectors "ignored Mexicans coming into the southwestern United States during the 1900s and 1910s to work in railroad construction, mining, and agriculture." (Ngai, 2003, p. 82). Mexican immigrants were required to pay a ten dollar visa fee for the first time in 1921, raising the cost of entry through official entry ports, but did not face a restrictive quota (Escamilla-Guerrero, 2019). Furthermore, all entrants from Mexico were subject to inspections where none had existed before, including "a degrading procedure of bathing, delousing, medical line inspection, and interrogation" (Ngai, 2003, p. 85; see also Markel and Stern, 2002). Temporary workers from Mexico, many of whom worked in the agricultural sector, were authorized to enter the US via the Bracero program (1942-65). Official quotas for the Western Hemisphere were first added in the 1965 Immigration and Naturalization Act.

It is easiest to think of our variation in the context of a simple difference-in-differences analysis. At the extreme, consider two local labor markets with the same foreign-born share of the population, one of which has exclusively Italian immigrants and the other has exclusively German immigrants. The first labor market will be treated by the quota policy and the second will not. In reality, labor markets will vary more continuously in the share of the population hailing from affected countries. For example, among urban areas with around the median share of foreign born, Madison, Wisconsin has a low quota exposure measure because of its large concentration of immigrants from Germany and Youngstown, Ohio has a high quota exposure because of its large concentration of immigrants from Eastern Europe.

As in any difference-in-difference setting, our identification relies on the assumption of parallel trends, which we can relax or test in a few ways. First, we control for trends by initial foreign-born share of the population and by Census division. We also use a Lasso procedure to assess whether our measure of quota exposure is correlated with any other initial characteristics of a location and we find that this is not the case. Second, we assess pre-trends by considering a placebo policy date for the border closure: what if the border closure movement, which proposed its first legislation in 1891 and successfully passed a literacy test in both the House and the Senate in 1896 (later vetoed by President Cleveland), had been successful in restricting immigration circa 1900, rather than in the 1920s?[9] This placebo test reveals that labor markets exposed to the quota policy did not experience declining immigration or rising (falling) US-born arrivals between the pseudo-pre period (1890-1900) and the pseudo-post period (1900-10).

Our analysis shares some features with shift-share instruments because it relies on initial immigrant settlement to determine labor market exposure to the national quota policy (Bartik, 1991, Card, 2001). Jaeger, Ruist and Stuhler (2018) encourage caution in applying shift-share methods to the study of immigration, pointing out that, in "normal times," local areas that receive large immigration flows in one decade also receive large inflows in the next. In this case, estimating the effect of immigration on the economy can be complicated by dynamic adjustments to the first shock that are still ongoing in the second period. The sharp change in immigration policy between the 1900s and 1920s breaks the persistence of immigrant inflows to

[9] The 1896 literacy test was passed in the House on a vote of 195 to 26 and in the Senate on a vote of 52 to 10. It was vetoed in March 1897 and passed over the veto by a supermajority of the House, with no further time to allow a second vote in the Senate. The various immigration restrictions considered before 1921 are detailed in Fairchild (1917).

an area over time (correlations in predicted immigration inflows within a location over time are above 0.96 from 1980-2010, but only -0.16 for actual inflows in our setting).[10]

Data from the Census of Manufactures and the Census of Agriculture are consistent with the observed migration responses of US-born workers to the quota policy in urban and rural areas. Given the compositional shift in the workforce away from low-skilled immigrants toward higher-skilled US-born workers, we find a small (but not statistically significant) positive association between quota exposure and changes in the average manufacturing wage at the city level.[11] In rural areas, more quota exposure is associated with a shift away from labor-intensive crops towards more capital-intensive production (see LaFortune, Tessada and González-Velosa, 2015 and Lew and Cater, 2018 on the border closure; Hornbeck and Naidu, 2014 on black out-migration from rural areas; and Clemens, Lewis and Postel, 2018 on the Bracero guest worker program).

Closing off the US economy to immigration in the 1920s had potentially wide-ranging effects on the economy. Ager and Hansen's working papers (2016, 2017) are the earliest studies to analyze the effect of the immigration quotas on economic outcomes. Other recent work includes Xie (2017) on black migration, Doran and Yoon (2018) and Moser and San (2019) on patenting, innovation and science, Tabellini (2019) on political support for anti-immigrant policies and politicians, and Ager, Feigenbaum, Hansen and Tan (2019) on mortality. Together, these papers provide a fuller sense of how the US economy adapted to the border closure of the 1920s, a topic of central historical importance.[12]

We also complement the broader literature about the economics of the Age of Mass Migration from Europe reviewed by Abramitzky and Boustan (2017). This work has spanned many topics, including migrant selection and assimilation (Ferrie, 1999; Abramitzky, Boustan and Eriksson, 2012, 2013, 2014, Forthcoming; Spitzer and Zimran, 2018; Alexander and Ward, 2018; Ward, 2018; Eriksson, Forthcoming); return migration to Europe (Bandiera, et al., 2013; Ward, 2017; Abramitzky, Boustan and Eriksson, 2019); and the long-run effects of immigrant

[10] Tabellini (2019) makes a similar argument in the context of a shift-share design, but his paper is only based on data from 1910-1930. Given the moratorium on immigration during World War I, we perceive both of these decades to be part of the "low immigration" regime.

[11] We discuss the differences between the wage data from the Census of Manufactures and the occupation-based earnings from the Census of Population in detail in Section VI.

[12] Greenwood and Ward (2015), Massey (2016), and Ward (2017) examine how the quotas of the 1920s changed the skill selection and probability of return migration for European migrants.

settlement on local areas (Ager and Brueckner, 2013, 2018; Burchardi, et al. 2016; Sequeira, et al., Forthcoming).

Our paper investigates how the economy adapted to a major decline in labor supply through corresponding inflows of labor and capital. In this way, it is related to modern analyses by Dustmann, Schönberg and Stuhler (2017), who document net declines in internal migration in response to immigrant arrivals, and Lewis (2011), who finds that low-skilled immigrants substitute for automation machinery. We are also drawing on a large body of work in labor economics about how immigrants might "displace" US-born workers from local labor markets (Filer, 1992; Wright, Ellis and Reibel, 1997; Card and DiNardo, 2000; Card, 2001; Borjas, 2006; Peri and Sparber, 2011; Wozniak and Murray, 2012) and we add to a nascent literature on the economic effects of immigration policy, which includes recent papers on the ending of the Bracero program for seasonal Mexican workers in 1964 (Clemens, Lewis and Postel, 2018) and the expansion of border fencing to deter illegal entry from Mexico in 2006 (Allen, Dobbin, and Morten, 2019).[13]

## II. Immigration policy in the early twentieth century

America had an open immigration policy toward European immigrants in the 150 years after its founding, punctuated by periodic outbreaks of anti-immigrant sentiment (Hutchinson, 1981; Higham, 2002). For example, the arrival of poor Irish immigrants escaping the Great Famine of the 1840s gave rise to the (short-lived) nativist Know-Nothing party (Hirota, 2016; Alsan, Eriksson and Niemesh, 2018; Collins and Zimran, 2019). The advent of immigration from Southern and Eastern Europe in the 1880s encouraged a new round of anti-immigrant policy. This movement was successful in passing the Chinese Exclusion Act of 1882 and a series of incremental restrictions on contract labor and the entry of criminals, paupers, and other 'undesirable' groups (Lew-Williams, 2018; Okrent, 2019). These limits, although narrow, laid the groundwork for broader immigration restriction by requiring the expansion of the federal immigration bureaucracy and bolstering the legal case for border restrictions (Daniels, 2004).

[13] Other immigration policies that have been studied by economists are the Chinese Exclusion Act of 1882 (Chen, 2015), and contemporary legislation to address undocumented migration, including the Immigration Reform and Control Act (Philipps and Massey, 1999; Freedman, Owens and Bohn, 2018) and Secure Communities (Miles and Cox, 2014).

The first attempt at broader immigration restriction, a bill requiring a literacy test for entry to the US, failed in 1891. Adopting literacy and wealth tests for entry, alongside numerical limits on immigration, were the main recommendations of The Dillingham Commission, which was convened in 1906 and published its report in 1911. A literacy test was eventually adopted in 1917, but was widely perceived to be ineffective, both because it was poorly enforced and because literacy rates in Europe were rising rapidly during this time period.[14]

After a series of unsuccessful attempts to close the border, the era of open immigration effectively ended in the 1920s. In 1921, Congress passed the Emergency Quota Act, which set an annual quota of 360,000 for immigrants from Europe (compare to around 800,000 entrants per year in the early 1910s). Entry slots were allocated by country-of-origin and were set to 3 percent of the foreign-born stock from each nationality living in the US as of 1910. The country-of-origin formula differentially affected immigration from each European country. Immigration from Southern and Eastern Europe was severely restricted because the immigrant stock from these countries in 1910 was small relative to the 1921 flow, whereas the quotas assigned to immigrants from Northern and Western Europe were still relatively generous. Immigration from the Americas, including Canada and Mexico, was not regulated by the act. **Figure 2** reports the share of the immigrant stock from each sending region by decade, illustrating that only about one third of the quota have been assigned to countries from Southern and Eastern Europe.

The Immigration Act of 1924 (also known as the Johnson-Reed Act) made the quota system permanent. The 1924 act also enacted two consequential changes: shifting the base year in the quota formula from 1910 to 1890 and lowering the inflow from 3 percent to 2 percent of that stock per year. Together, these changes reduced the share of quota slots allocated to Southern and Eastern Europe to around 10 percent (see Figure 2). The annual quota for affected countries was set at 150,000 in 1929 and remained largely unchanged until the 1965 Immigration and Naturalization Act (for details on the policy debates, see King, 2000; Tichenor, 2001).[15]

[14] The Immigration Act of 1917 required from immigrants over sixteen years of age to pass a literacy test by reading 30-40 lines in any language of their choice. The law further banned immigration from the so-called Asiatic Barred Zone, which included most parts of Asia and the Pacific Islands.

[15] After July 1, 1927 the allocation was based on a 'national origins' formula based on Census estimates of the national origins of the country's original white population (in 1790). This rule further restricted immigration from Southern and Eastern European countries and favored immigration from the United Kingdom and Ireland over Germany and Scandinavia (King, 2000).

The 1920s quotas had profoundly different effects on immigrant entry by country of origin. **Figure 3** presents annual immigrant flows to the US from 1900 to 1930, separated into three categories: high restriction countries from Southern and Eastern Europe; low restriction countries from Northern and Western Europe; and no restriction countries from the Western Hemisphere. A list of countries underlying each category are presented in **Appendix Table 1**. In the decades before the quota policy, high restriction countries accounted for around 70 percent of the total flow. After the passage of the 1924 quota, immigration from high restriction countries fell to around 15 percent of the total flow, and the flow itself was almost an order of magnitude lower than it had been during the open period.

**Figure 4** presents decadal in-migration flows from these three country groups to demonstrate the time series variation underlying our analysis. Black bars represent inflows in the period of open immigration (1902-10), while dark gray and light gray bars depict actual and quota-allocated inflows respectively after the passage of the first immigration quota (1922-30). Nearly six million immigrants from high restriction countries entered the US from 1902-10. After the passage of the quotas, this sum fell to less than one million. Immigration from low restriction countries also fell during this period, but the change was less drastic (from two million to one million) and the gray bars show that some of the available quota slots went unfilled, suggesting that some of this decline may not have been legislated, but instead may have been driven by changes in the underlying demand to immigrate to the US. In contrast, immigration from unrestricted countries in the Western Hemisphere (Canada, the Caribbean, and Mexico) increased over this period, quadrupling from the 1900s to the 1920s.

## III. Research design and estimation

### *A. Measuring local exposure to the immigration quotas*

Our goal is to measure exposure of each local labor market to the national immigration quotas. We start by delineating local labor markets according to the 460 State Economic Areas (SEA).[16] SEAs are comprised of groups of counties deemed to be economically integrated as of 1950 (Bogue, 1951). We think of SEAs as the historical equivalent to Commuting Zones today

[16] We exclude SEAs located in Hawaii, Alaska and Oklahoma, which were not part of the US in a consistent manner throughout this period. One downside of SEAs as a local labor market definition is that they are nested entirely within states, which may mis-measure economic activity that crosses state lines (e.g, Kansas City, KS-MO; greater New York City, NY-NJ).

which are often used in evaluating local labor markets (e.g., Autor, Dorn and Hanson, 2013). Commuting Zones are not appropriate or feasible in our setting because (1) they were defined in 1990, nearly a century after our period of interest, and (2) they are based on sub-county geographic units that cannot be easily reconstructed in the historical data. We demonstrate robustness to the use of counties as a definition of local labor markets below.

Our identification strategy relies on variation across SEAs in the settlement patterns of immigrants by country of origin in the pre-quota period. The following example illustrates the quota-based "experiment" we have in mind: Consider two SEAs *A* and *B*. Both SEAs have the same foreign-born share in 1900, but in SEA *A* all foreign-born are Italians (a more restricted country) while in SEA *B* the foreign-born stock consists only of Germans (a less restricted country). After the quota system is introduced, we would expect the immigrant inflow into highly affected SEA *A* to be lower relative to the less affected SEA *B*.

Operationalizing this thought experiment requires two pieces of information for each SEA: (1) the initial population share of the SEA from each country of origin (as calculated from the complete-count Census of 1900), and (2) the intensity of quota restriction for each country of origin. In our simplest measure of local exposure to the quota policy, we classify all sending countries as either restricted or unrestricted by the policy, defining an indicator $I(Restricted)_c$ equal to one for all Southern and Eastern European countries *c* and zero otherwise. Even though the quota legislation technically set numerical limits for immigration from Northern and Western European countries as well, these quotas were rarely filled (see Figure 4), and historical accounts of the period emphasize that the law was targeted at immigrants from the "new" sending countries of Southern and Eastern Europe (King 2000, Tichenor, 2001, Daniels, 2004). The resulting measure of *quota exposure* for SEA *j* ($QE_1$) is thus:

$$QE_j = \sum_c \frac{FB_{cj1900}}{Pop_{j1900}} \times 1\{\text{Restricted}_c\} \quad (1)$$

where $FB_{cj1900}$ is the count of residents living in SEA *j* in 1900 who were born in country *c* and $Pop_{j1900}$ is total population of the SEA in 1900. In other words, local exposure to the national immigration quotas simply scales with the share of an area's population that was born in Southern or Eastern Europe. This approach also resembles the identification strategy of Clemens,

Lewis and Postel (2018) to capture the impact of the exclusion of Mexican Bracero workers on wages and employment of domestic farm laborers.

We construct two alternative measures of quota exposure ($QE_2$ and $QE_3$) to account for variation in quota severity across sending countries. Ideally, we would know the share of the immigrant flow that was barred by the quotas by sending country. The challenge with constructing these alternative measures is that we cannot observe what the counterfactual immigration flows *would have been* in the 1920s in the absence of the restrictive quotas. Our first alternative ($QE_2$) assumes that immigration would have remained at the same levels in 1922-30 as it had been from 1902-10 (the corresponding pre-quota years) if not for the policy. However, mass migrations tend to follow an inverted-U shaped pattern, peaking after some time and then trending downward (Hatton and Williamson, 1998). Immigration from Germany and Great Britain were already trending downward by 1900, and thus likely would have been even lower in the 1920s even absent the quota policy. On the other hand, some countries in Eastern Europe were experiencing war- and revolution-related disruptions and so out-migration may have been even higher in the 1920s than before. Thus, our second alternative ($QE_3$) relies on a simple prediction for what immigration would have been in the 1920s based on historical time series.[17] Appendix Table 1 (columns 1-3) reports the quota intensity for each country group using these three measures.

In particular, for each alternative measure ($QE_2$ and $QE_3$), we replace the treatment indicator $I(Restricted)_c$ in equation (1) with a ratio that varies from zero to one in quota intensity. The ratio is defined as the difference between unrestricted flows (absent the policy) and quota slots in the 1920s, normalized by unrestricted flows. This ratio will be zero if the quota allocated

[17] We use nearly 100 years of unrestricted immigration for 18 country groups to predict what immigration would have been in the 1920s absent quota restrictions. In particular, we predict the number of entrants to the US every year as a quadratic function of time, where the mass migration is said to begin (and thus $t = 1$) when migration first crosses the threshold of 2,000 arrivals. The model also includes an indicator for recession years as declared by the NBER, which are known to substantially reduce immigration inflows (Spitzer, 2015). Country groups include the following and are based on the time series provided by *Historical Statistics*: Asia, Canada, Caribbean, Central Europe (Austria, Czechoslovakia, Hungary, Yugoslavia), Eastern Europe (Albania, Bulgaria, Romania), Germany, Great Britain (England, Scotland Wales), Greece, Ireland, Italy, Latin America, Portugal, Russian Empire (Estonia, Finland, Latvia, Lithuania, Poland, Russia), Scandanavia (Denmark, Norway, Sweden), Spain, Western Europe (Belgium, France, Luxembourg, Netherlands, Switzerland), Rest of World.

slots are greater or equal to the number of unrestricted flows, and it will be one if the quota is set equal to zero. The average ratio for the nine restricted countries/regions is 0.925 for $QE_3$, the average ratio for the nine unrestricted countries/regions is 0.07 and the average ratio is zero by definition for the four quota-exempted countries/regions (see Appendix Table 1).

Exposure to the national quota varies substantially across regions and between cities and rural areas. **Figure 5a** presents a heat map of quota exposure at the SEA level with darker shading reflecting higher exposure to the national quota (these figures are based on $QE_3$ but look similar for each measure of quota exposure). The map reflects the low concentration of immigrants in the South and the well-known immigration clusters throughout the Northeast, the Midwest and the West. **Figure 5b** shows the variation in quota exposure net of Census region indicators and a control for 1900 foreign born population share. Within each region, there are pockets of immigrants from quota-restricted countries in SEAs containing large cities (e.g., Chicago versus Southern Illinois). However, there is also variation in quota exposure across cities, even within the same state (e.g., Pittsburgh versus Erie, PA or Toledo vs. Dayton, OH). There are also some rural SEAs that have very high quota exposure (e.g., northern Minnesota or the Pacific Northwest).

We present all results for the full sample and separately for urban and rural subsamples. We consider an SEA to be urban if it had an above-median share of its population living in an urban area. Urban areas are classified by the Census to be any town with 2,500 or more residents. The median urban share at the SEA level was around 20 percent in 1900, with SEAs near the threshold including the iron range in northern Minnesota and areas in upstate New York. We also consider robustness to different thresholds for defining urban and rural areas.

### *B. Estimating the effect of quota exposure on immigration and internal migration*

Our empirical analysis addresses three questions. We start by asking whether local labor markets with higher quota exposure experienced larger declines in foreign-born population after the border closure. We then ask how the drop in immigration affected US-born workers and those from other unrestricted groups in terms of earnings and patterns of internal migration. Finally, we consider a set of supplementary outcomes relating to the manufacturing and agricultural sectors. The population values used in the analysis are aggregated to the SEA level

from underlying complete-count historical censuses (100% sample), which allows for accurate counts by demographic or occupation groups even for small areas.

For each outcome, we stack data from three Census decades: 1900 and 1910 before the policy and 1930 after the policy. We estimate the following equation:

$$y_{jt} = \alpha_j + \gamma_t + \beta\left(QE_j \times post_t\right) + \Gamma\left(FB_{j1900} \times post_t\right) + \varepsilon_{jt} \quad (2)$$

where $y_{jt}$ can include: the foreign-born share of the prime-age male workforce (16-65 years old), occupation-based earnings, net inflows of the foreign-born or the US-born (and other unrestricted groups) among prime-age men, and measures of wages, prices, and capital investments in the manufacturing and agricultural sectors.[18] The right-hand side uses the standard difference-in-differences form where we control for fixed attributes of each SEA ($\alpha_j$), a shared period effect for the decade after the policy ($\gamma_t$) and then the prime variable of interest, which is the interaction between exposure to the quota policy (*QE*) and the indicator ($post_t$) representing the period after the policy change. The coefficient of interest $\beta$ is identified by comparing labor markets with different shares of residents from restricted countries before and after the policy change.

Local areas can be more exposed to the quota policy because they have a higher foreign-born share of the population (*scale*) or a larger component of their foreign born population drawn from restricted countries (*composition*). In our preferred specification, we interact the initial foreign-born share of the population in an SEA (in 1900) with the post-policy indicator to control for differences in the size of the foreign-born population across locations, thereby identifying the effect of quota exposure solely from differences in composition of the immigrant population. We also allow each Census region to have its own post-policy trend.

Our proxy for net in-migration considers changes in population in an SEA over a decade (say, 1900 to 1910) normalized by initial population in the base year (here: 1900). This approach follows Peri and Sparber (2011) in dividing by initial population because final population can itself be an outcome. We consider net in-migration of the foreign-born from restricted European countries and then, separately, by unrestricted population born in the US or other countries in the

[18] In 1920, 80 percent of individuals between 16-65 reporting a gainful occupation were male. We investigate the effect of the border closure on the female labor force participation rate below.

Western Hemisphere. We note that the quota policy primarily restricted future immigration flows, rather than removing existing foreign-born population, and so net in-migration is a natural outcome to consider.

For prime-age men (15-65), the focus of our analysis, population changes in SEA *j* can occur through net migration or mortality. Ager, Feigenbaum, Hansen and Tan (2019) show that the border closure reduced mortality rates from infectious diseases and external causes in affected cities, suggesting that a portion of what we interpret as net in-migration to urban areas could be driven by lower death rates. However, the implied decline in mortality from Ager, et al.'s estimate is rather small, the equivalent of 0.05 deaths per 100 in the population, which could explain no more than 5 percent of our net in-migration estimates (=0.05/0.997, Table 2, column 2). Furthermore, we show in Appendix Table 9 that most of the net in-migration is driven by young men, ages 15-39, who tended to have low mortality rates even in the past.

Our main analysis of net in-migration outcomes excludes the World War I decade to focus on a period of open immigration (1900-10) relative to a period of border restriction (1920-30). As an alternative, we create a direct measure of a local area's exposure to the wartime immigration embargo, following the structure of equation (1). Here, we replace the treatment indicator $I(Restricted)_c$ with a country-specific ratio that varies from zero to one according to the share of unrestricted migration halted by the disruption of war activities (1915-19). This ratio will be zero if the war had no effect on immigration flows (as in from Canada), and will be one if the war entirely stifled in-migration during these years. The average ratio for the nine countries later restricted by the policy quotas is 0.59, and the average ratio is 0.45 for the nine countries unaffected by the later quotas (see Appendix Table 1). The correlation between wartime restrictions and exposure to the 1920s quota policy is 0.81 at the SEA level.

To incorporate the immigration shock from World War I into our analysis, we stack three decades (1900-10, 1910-20 and 1920-30) and estimate:

$$y_{jt} = \alpha_j + \gamma_t + \beta\left(QE_j \times post_t\right) + \Gamma\left(FB_{j1900} \times post_t\right) + \delta\left(WWI_j \times post_t\right) + \varepsilon_{jt} \qquad (3)$$

where we assign treatment to wartime reductions in immigration to the 1910-20 decade and exposure to the quota policy to the 1920-30 decade.

We also follow the advice of Goldsmith-Pinkham, Sorkin and Swift (2018, p. 2) in "build[ing] credibility for such an exposure design" by testing for correlates of initial quota exposure and testing for parallel pre-trends in the period of open immigration.[19]

First, we search for correlates of our quota exposure measure, the initial share of the population from restricted countries. However, we find that, after controlling for region and initial foreign born share, none of the other potentially relevant economic characteristics of locations are associated with our measure of quota exposure. In particular, we used a Lasso procedure that relates our quota exposure measures to a series of local attributes from the Censuses of Population, Agriculture and Manufacturing, controlling for Census region and initial foreign born share (Haines, 2010). None of the potential correlates, including log population, share urban, share black, and so on, are correlated with our measures of quota exposure.[20]

Second, as in any difference-in-differences specification, one concern is that labor markets more exposed to the quota policy were already on a different trajectory toward absorbing fewer immigrants over time. We ask: what would the estimates look like if the border had closed earlier? The anti-immigration coalition was building support during this period, starting with a proposed literacy test in 1891, followed by failed legislation in 1897, 1906, 1913 and 1915 (Fairchild, 1917). For this placebo experiment, we consider the decade 1890-1900 as

[19] Our approach bears some resemblance to more classic shift-share instruments by using initial immigrant settlement location to measure exposure to the quota policy. The original Bartik (1991) instrument calculated the share of employment in a location from each industry *j* and then imposed that local employment growth of industry *j* followed the national average. In our case, we could instead imagine calculating the share of the population in a location from each country of origin *c* and imposing that the local population growth from country *c* followed the national average (note: this set-up is slightly different from the Card (2001) instrument which first calculates the share of immigrants from country *c* that settle in *j*, and then allocates new *inflows* to locations, rather than imposing *growth rates*). Our method differs from this style of shift-share instrument in two ways: first, we show that our results hold when using $QE_1$, which collapses variation down to the share of the population in a location from *any* restricted country, rather than from specific countries *c*. Second, we use a reduced form approach that measures any changes to a local area after border closure, rather than directly predicting changes in immigration using changes in national population growth rates from each country *c*.

[20] A full list of 1900 correlates that we considered are: log total population, share urban, share black, share literate, share of the labor force in manufacturing sector, share of the labor force in agriculture, share of the labor force holding a white collar position, log mean wages in manufacturing, log mean farm value, log mean farm output per acre, share of farms owner-operated, share of farm land under cultivation, share of cultivated farm land planted in wheat, share of farm land planted in cotton and share of farm land planted in hay/corn.

the pre-period and 1900-10 as the (counterfactual) post-period. We conduct a similar difference-in-differences analysis for this "border closure that did not happen" and find no effect on immigration inflows or responsive in-migration by the US-born (results in Table 3 below).

## IV. A motivating puzzle: The effect of border closure on earnings of the US-born

The immigration quotas of the 1920s were intended to substantially reduce immigration to the US. We start in **Table 1** by documenting that local labor markets that were more exposed to the quota policy experienced declines in the foreign-born share among prime-age men (column 1). In particular, we estimate a version of equation (2) that uses the foreign-born share as a dependent variable and controls for trends by Census region. Our coefficient of interest is the interaction between initial exposure to the quota policy and an indicator for being after the border closure (=1930). Both in urban and rural areas, a 1 percentage point difference in quota exposure is associated with a 1 percentage point decline in the foreign born share after the border closure suggesting that immigrants from non- or less quota affected sending countries did not offset the reduced inflow from more restricting sending countries.

Yet, despite declines in the foreign-born workforce, there is no evidence that occupation-based earnings increased for US-born workers and other unrestricted groups, including immigrants from Canada, Mexico and the rest of the Western Hemisphere (column 2).[21] Rather, we find that occupation-based earnings of these groups declined after border closure by 0.5 percent for every 1 percentage point difference in quota exposure in urban areas and by 0.3 percent for every 1 percentage point difference in quota exposure in rural areas. This pattern is consistent with Tabellini (2019, Table 5), which focuses on the 180 largest US cities.

One possible explanation for falling earnings among unrestricted groups is that these earnings measures reflect changes in workforce composition after the border closure. If new entrants arrive in cities to take low-skilled jobs previously held by immigrants, this compositional change would be reflected as a decline in average occupation-based earnings. We test this hypothesis using linked Census data that follows men between the ages of 15-55 in 1900

[21] Our occupation-based earnings measure ("occupation score") is commonly used by economic historians, and assigns the median earnings to an occupation from the 1950 Census (the first year with complete income information). The drawback of this measure is that it will not capture any wage gains or losses accruing to US-born workers within occupations and that occupations are assumed to maintain the same earnings rank over time.

to the 1910 Census, and then separately men between the ages of 15-55 in 1920 to the 1930 Census. With linked data, we can separately analyze existing residents who remain in a location during the decade, and newcomers to the local area. We create these links by first and last name, age and state of birth, following the Abramitzky, Boustan and Eriksson algorithm (see Abramitzky, et al. 2019 for details on the matching procedure).

We start by documenting that occupation-based earnings declines are similar for the linked sample as for the full population (column 3). We then divide the linked sample into "stayers," who remain in a location over the decade, and "new arrivals" (column 4 and 5). We find that stayers experienced falling occupation-based earnings after the border closure, suggesting that the decline in earnings is not driven by compositional changes. Yet, interestingly, we see that the newcomers to these areas who arrive after the border closure (1920-30) appear to have higher occupation-based earnings than the newcomers who arrived in these areas before the quota policy (1900-10), our first evidence that the economy adapted to immigration restriction through internal migration and other responsive factor flows. We turn to economic adaption in the next section.

## V. Economic adaption to the border closure

### *A. The effect of the quota policy on inflow of immigrants and unrestricted population*

Local labor markets that were more exposed to the quota policy experienced falling foreign-born share of the workforce after the border closure. This section documents that, in urban areas, the falling foreign born share is due both to a decline in immigrant entry from Europe and to a corresponding increase in in-migration of the US-born and other unrestricted groups. By contrast, in rural areas, a decline in immigrant entry is associated with slower entry of the US-born.

**Table 2** examines our measures of net in-migration: changes in foreign-born population from Europe and changes in unrestricted population, relative to 1900 population. The first column presents results from a specification that includes only SEA and decade fixed effects, the second column adds Census region trends, and the third column adds trends by initial foreign born share of the population (our preferred specification). For urban areas, we find that a 1 percentage point difference in quota exposure is associated with the entry of 1.6 fewer working-age immigrant men per 100 initial residents after the border closure, or 800 fewer immigrants for

a typical city of 50,000 residents. For rural areas, we find 3.0 fewer immigrant entrants per 100 residents in areas exposed to the quota policy after the border closure. **Appendix Figure 1** contains the corresponding scatter plots for the association between quota exposure and in-migration in each decade. The difference-in-difference coefficients reported in Table 2 (column 3) correspond to subtracting the slopes of this relationship in 1920-30 relative to 1900-10.

We next ask how workers unrestricted by the quota policy responded to the reduction in immigration flow after the border closure. This group includes US-born workers but also immigrants from the Western Hemisphere (Canada, Mexico and the Caribbean). In urban areas, a 1 percentage point difference in quota exposure is associated with 2.4 *new entrants* per 100 in the population. By contrast, in rural areas, we find a *net outflow* of 2.5 residents per 100. In other words, the loss of immigrants with the border closure appeared to attract other workers to urban areas, but discouraged workers from settling in rural areas.[22] The effect on worker inflows depends on whether firms adjust to the loss of immigrant labor by substituting towards (unrestricted) labor or towards capital. We demonstrate later in the paper that farmers shifted toward capital-intensive production in response to the border closure, which can help to explain why workers are repelled from rural areas.

We explore the possibility of pre-trends in immigration or internal migration before the policy change, whereby areas exposed to the quota policy may have already been losing in-migration or attracting the US-born. **Table 3** conducts a similar difference-in-differences exercise where the pre-period is 1890-1900 and the (counterfactual) post-period is 1900-10. Because the micro-data from the 1890 Census was destroyed in a fire, we rely on aggregate tables to calculate changes in all foreign-born men, ages 18-44 (rather than men from restricted countries, age 16-65, which is our preferred measure). The first panel of Table 3 reproduce results from the actual policy experiment using this alternate dependent variable; coefficients look nearly identical to the main results in Table 2.

The second panel of Table 3 then considers the placebo experiment: what if the border had closed in the 1900s, instead of the 1920s? Focusing first on entry from restricted European

[22] Mechanically, it cannot be the case that all US-born entrants to urban areas with higher quota exposure are the same migrants deterred from entering affected rural areas. Although our estimated migration responses, denominated as new arrivals (or departures) per 100 in the population, are similar in magnitude (but of opposite sign) in the two subsamples, the urban population is much larger and so the implied inflows are larger in magnitude.

countries, we see no pre-trend toward declines in immigration in areas exposed to the quota policy in the decades before the policy was enacted. For rural areas, the coefficients are actually positive, suggesting that areas with high quota exposure were accelerating in their immigrant inflow from the 1890s to the 1900s. In urban areas, estimates are negative but not statistically significant and only half the magnitude (or less) of the coefficients for the actual policy years. Turning then to unrestricted populations, we see no association in rural areas between quota exposure and net arrivals or departures in the decades before the policy. In urban areas, if anything, the US-born and other unrestricted groups were *leaving* urban areas with greater exposure to the quota policy in the 1900s, relative to the 1890s, suggesting that the arrivals observed after the border closure were a reversal of trend.

**Table 4** incorporates the World War I decade, 1910-20, into the analysis. We now consider two periods after the era of open borders: 1910-20, when the war temporarily dampened migration, and 1920-30, the beginning of the period of restrictive quotas. We interact the 1910-20 decade with an area's exposure to war-related immigration declines and, as before, we interact the 1920-30 decade with an area's exposure to the quota policy. In both urban and rural areas, we find that one percentage point of war exposure reduces in-migration by around half as much as one point of exposure to the quotas (0.7-0.9 immigrants per 100 in the population, compared to 1.9-2.1 immigrants per 100). These smaller wartime effects are reasonable, given that the war only deterred migration for half of the decade. Correspondingly, we see smaller (and not statistically significant) associations between wartime losses in immigration and entry of the unrestricted population into urban areas and departures of the unrestricted population from rural areas. We continue to find sizeable migration responses to the quota policy from the unrestricted population, with the wartime effects around one-quarter to one-third of the size of the quota coefficients. We suspect that there was less factor mobility in response to a wartime shock that was widely expected to be temporary as compared to a permanent shift in policy.

*B. The effect of the quota policy on demographic and occupation groups*

Contemporary policymakers intended the quota policy to benefit native-born white workers. **Table 5** subdivides the unrestricted sample into separate categories: white US-born, non-white US-born (primarily black), Canadian, and other Western Hemisphere (primarily Mexican). In urban areas, the majority of net new inflows are white US-born residents, including

both second-generation immigrants and US-born men of US-born parentage. However, there is also a sizeable response from immigrants from the Western Hemisphere, who together accounted for around a quarter of the new inflow.[23] In rural areas, we find a net outflow of the white US-born population with immigrant parents (second-generation immigrants) and US-born population of native parentage (third-generation plus), as well as of Canadian immigrants. The only population that moves in to rural areas with high quota exposure after the border closure are Mexican immigrants, a group that was used as substitute farm labor.[24]

The estimated effect of the border closure on Mexican workers is consistent with the qualitative history. In Chicago, immigrants were replaced with "blacks and Mexicans… [contributing to] the increasing presence of these two groups within Chicago's factories during the decade [1920-29]" Cohen (1990, p. 165). Moralez (2018) likewise describes recruiting efforts to bring Mexican workers to Gary and East Chicago, Indiana. Mexican immigrants also pursued opportunities in rural areas in the 1920s. Luebke (1977, p. 421) documents that "after World War I, Chicanos or Mexican-Americans gradually replaced Russian Germans in the sugar beet fields as migrant workers" (see also Wang, 1975, p. 649). Around 500,000 Mexican immigrants entered the US from 1920 to 1930; Lee, Peri and Yasenov (2017) document that more than 400,000 individuals of Mexican descent, some of them US citizens, were deported to Mexico during the Great Depression.

In the report of the Dillingham Commission, convened by Congress in 1907 to study immigration policy, drafters predicted that immigration restriction would reduce the number of low-skilled workers in the US economy, allowing manufacturing to evolve in the direction of higher skilled, higher productivity forms of manufacturing activity.[25] **Table 6** explores this

[23] In a specification that does not control for initial foreign born population in the SEA, we also find a sizeable in-migration response from black internal migrants (consistent with Collins, 1997), but this relationship disappears after allowing for trends by initial foreign born share.

[24] **Appendix Table 2** subdivides these responses by age category, focusing on young workers (15-39) versus older workers (40-65). Internal migration and immigration are far more common among the young than the old. Correspondingly, we find that 95 percent of immigrant losses and 75 percent of responsive inflows are concentrated among young workers.

[25] The Commission Report states that "competition of these [low-skilled] immigrants has had little, if any, effect on the highly skilled trades, nevertheless, through lack of industrial progress and by reason of large and constant reinforcement from abroad, it has kept conditions in the semiskilled… occupations from advancing" (Dillingham, 1911, p. 38). The idea here is that the

possibility by subdividing the quota-affected and unrestricted population by occupation category. Consistent with the expectations of the Dillingham Commission report, we find that, in urban areas, more than 80 percent of immigrant losses were from low-skilled blue collar positions.[26] Unrestricted workers completely replaced immigrant losses from gainful employment (1.3 immigrant losses and 1.5 unrestricted entrants per 100 residents). However, new entrants were indeed more skilled and so only 50 percent of losses from low-skilled blue collar positions were filled, suggesting some scope for wage gains in the manufacturing sector due to compositional changes in skill. In rural areas, around 60 percent of immigrant losses are from farming, but significant losses occurred in every occupational category. Corresponding losses of unrestricted workers also took place in every occupational category.

Another possible margin of economic adjustment to the loss of immigrant workers is the entry of women into the labor force. We see no evidence of this channel in action. **Appendix Table 3** conducts a similar net in-migration analysis looking at prime-age women, rather than prime-age men. We find detectable but far smaller reductions in the entry of foreign-born women into affected labor markets after the border closure (from -0.1 to -0.3 women per 100 in the population in urban and rural areas, respectively). Consistent with responsive internal migration for men, we see some entry of unrestricted women into urban areas (but this relationship is not statistically significant) and some departures from rural areas. However, **Appendix Table 4** documents no association between quota exposure and the share of women in the labor force, either in urban or in rural areas.

*C. Robustness to alternative measures*

In this section, we return to the full sample results from Table 2 and consider the sensitivity of our results to various measurement and specification choices. **Appendix Table 5**

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availability of low-skilled labor encouraged firms to use low-skilled intensive technologies, and that firms would shift to more high-skilled intensive forms of production after the border closed.

[26] Low-skilled blue collar work includes common labor, dock workers and porters, and high-skilled blue collar positions include factory operatives and foreman. Our complete coding scheme is listed here: White Collar is Professional (0-99), Managerial (200-290), Clerical (300-390), Sales (400-420, 450-490); Farm is Farmers (100), Farm Managers (123), Farm Laborer (810-840); Blue Collar - Low Skilled is Hucksters and Peddlers (430), Operative (600-690), Service - Household 700-720), Service - Non-Household (730-761, 763-770, 780, 783-784, 790), Laborer (910-975); Blue Collar - High Skilled is Crafts (500-595), Service, Non-Household (762, 771-773, 781-782, 785); and No Occupation is Non-Occupational Response (979-999)

replaces Census region time trends with state time trends. Patterns look similar for all outcomes, but the inflow of unrestricted workers to urban areas is no longer statistically significant after controlling for trends by *both* state and initial foreign born population. The average state has 9 rural SEAs but fewer than 5 urban SEAs and so this demanding set of controls lacks statistical power. **Appendix Table 6** subdivides European immigrants into two groups: high restriction countries from Southern and Eastern Europe, and low restriction countries from Northern and Western Europe (see Figure 4). As expected, most of the decline in immigrant entry is driven by high restriction countries (more than 100 percent in urban areas, and 63 percent in rural areas). **Appendix Tables 7** and **8** replace our preferred measure of quota exposure ($QE_3$) with our two alternate measures ($QE_1$ and $QE_2$). Results are nearly unchanged when using $QE_1$, which considers Southern and Eastern European countries to be treated by the policy (and to an equal degree) and Northern and Western European countries to be untreated. Results are weaker when using $QE_2$, particularly for unrestricted population in urban areas. However, as we described above, $QE_2$ is unlikely to reflect true migration patterns, which were trending downward for the older sending countries during this period. For the rest of the paper, we rely on our third measure of quota exposure $QE_3$, but we document results for all quota exposure measures in a supplementary online appendix.

Our primary definition of urban and rural areas splits all SEAs in the country at the median for urban share (around 20 percent urban in 1900). However, areas close to the median urbanicity retained a substantial farm sector and thus shared some economic features with rural areas. **Appendix Table 9** instead subdivides SEAs into terciles by urban share, including roughly 150 SEAs in each category. For areas with high quota exposure, SEAs in the most urban tercile gain unrestricted residents after the border closure (2.5 per 100 residents), SEAs in the most rural tercile lose residents (-3.6 per 100 residents), while SEAs in the middle tercile exhibit a weaker relationship between quota exposure and net in-migration. The core differences between urban and rural areas do not seem to be an artifact of our urban definition.

Our primary labor market definition is based on SEAs, which are groupings of economically integrated counties (around 3.5 counties in urban areas and 8.5 counties in rural areas). **Appendix Table 10** instead uses counties themselves to define a labor market. We caution that, in many cases, counties are too small to be considered labor markets on their own and will likely be influenced by immigration into neighboring counties (for example, Boston,

MA is in Suffolk county while neighboring Cambridge, MA is in Middlesex county). We continue to find falling in-migration to both urban and rural counties exposed to the quota policy, although the coefficients are around half as large as for SEAs (Table 2). Likewise, we see inflows of the unrestricted population to urban counties, but we do not find net out-migration of the unrestricted population from rural counties. This is the only specification where one of our core results is overturned (although note that the estimate is not statistically significant and indeed the standard error is large enough to be consistent with a very wide range of true effects).

Finally, **Appendix Table 11** re-estimates our main specification from Table 2 after dropping three sets of outliers: first, the highest and lowest 2.5 percent of the quota exposure measure; and then the highest and lowest 2.5 percent of the net in-migration rate of European immigrants and of the unrestricted population. In each case, we continue to see similar declines in in-migration of European immigrants, as well as net inflows of the unrestricted population to cities. We again see point estimates that suggest net outflows of unrestricted population from rural areas, but the estimates are not statistically different from zero. Given that our finding about net out-migration from rural areas is sensitive to the exclusion of outliers, we think that a more circumspect conclusion is warranted: namely, we conclude that there is no evidence that US-born workers and other unrestricted groups are *attracted* to rural areas after the border closure. This finding is consistent with concerns of contemporary farmers who worried that US-born workers would not replace their farm labor force primarily composed of the foreign-born.

## VI. Effects of border closure on the manufacturing and agricultural sectors

Thus far, we have documented that, in urban areas, there was near one-for-one replacement of immigrant workers lost after the border closure, but that new entrants were higher skilled on average that the immigrants that they replaced. By contrast, rural areas lost both new immigrants and net inflow of the US-born following immigration restriction. In this section, we consider the effects of these labor flows on the key sector in each location: manufacturing in urban areas and agriculture in rural areas. We use data from the Censuses of Manufactures and of Agriculture, each of which was collected every five to ten years. Our pre-policy periods include 1899 and 1909 for the agricultural data and 1909 and 1914 for the manufacturing data. Our post-policy periods are 1924 and 1929; we exclude 1919 as it follows immediately after World War I.

We start by considering the urban manufacturing sector in **Table 7**, using hand-collected data from the Census of Manufactures. We focus on two measures of wages within the manufacturing sector, a direct measure of average wages per worker (the total wage bill divided by the number of workers) and a more indirect measure of total output per worker, an indicator of labor productivity that should scale with wages. Relatedly, we also look at a measure of capital per worker, log horsepower per manufacturing worker (note that the horsepower measure is not available in 1925 and so 1929 is our only post-policy observation for this outcome). We use a balanced panel of 246 cities that had more than 10,000 inhabitants in 1909.

We find no robust association between quota exposure and average wages, output per worker, or horsepower per worker in the manufacturing sector.[27] If anything, the border closure seemed to increase wages per worker in manufacturing, perhaps because the manufacturing sector shifted toward employing more high-skilled US-born workers instead (compositional change). A one percentage point difference in quota exposure is associated with a 0.5 to 0.9 percent increase in wages, although this association is not statistically significant. This pattern is consistent with Goldin's (1994) finding that manufacturing wages fell in areas with a growing immigrant population. We also note that the (weak) rise in wages within manufacturing is not inconsistent with a broad decline in occupation-based earnings (Table 1). First, occupation-based earnings cover the full economy, rather than only the manufacturing sector (the manufacturing sector accounts for around 30 percent of employment in urban areas). Second, the Census of Manufactures includes all workers – both US-born and foreign-born – whereas the occupation-based earnings sample is based only on the US-born. Third, the Census of Manufactures captures wage gains within an occupation, or shifts between occupations with different initial rates of pay, whereas occupation-based earnings only measures shifts between occupations.

**Table 8** provides suggestive evidence that farmers adapted to the loss of immigrant farm labor by shifting into more capital-intensive production, thereby reducing employment opportunities for domestic workers as well. We measure the share of cultivated land planted in labor-intensive (hay and corn) versus capital-intensive (wheat) cereals, following LaFortune,

[27] This finding is consistent with the null result on manufacturing wages in Tabellini (2019, Table A8).

Tessada and Gonzalez-Velosa (2015).[28] We find that rural areas with more quota exposure were more likely to plant capital-intensive wheat and less likely to plant labor-intensive cereals after the policy. Farmers also shift away from the use of draft animals (horses and mules), which are direct substitutes for new gasoline-powered tractor technology.[29] Consistent with a decline in the demand for farm labor, farm wages decline by around 3 percent after the border closure for a one percentage point shift in quota exposure. However, we see no effect of the shift away from labor-intensive production on average farm values indicating that the quota system did not impede the profitability of farming.

## V. Conclusions

In the United States, the era of open immigration with Europe ended abruptly in the 1920s. A series of restrictive acts introduced immigration quotas that were particularly targeted at immigrants from Southern and Eastern Europe. The quotas effectively limited the annual number of immigrants admitted to the United States by more than 75 percent.

Given the substantial reduction of immigrant labor, a simple model would predict that wages for the existing workforce would increase. Yet, we find that the occupation-based earnings of US-born workers in labor markets exposed to the quota policy *fell* after the border closure. We then document how the economy adjusted to the decline in immigrant workers to explain this puzzling result. Once the immigrant flow into US cities declined, US-born workers and unrestricted immigrants from Mexico and Canada started entering in larger numbers, replacing the immigrant workers at a nearly one-to-one rate. The new arrivals into cities were more skilled, on average, than the immigrants that they replaced, making them closer substitutes to the existing US-born workers. In contrast, when immigration into rural areas declined, farmers shifted to a more capital-intensive agriculture, which in turn discouraged US-born and other unrestricted workers from living there.

[28] We exclude cotton, the other labor-intensive crop in the LaFortune classification, because the ability to grow cotton is strongly tied to environmental conditions, but results look similar if we include it or if we focus only on the Northeast and Midwest.

[29] The Census of Agriculture only collected data on tractor usage starting in 1925. We regress the change in tractors in a rural SEA on the change in horses and mules from 1925 to 1930 and find a coefficient of -0.078 (s.e. = 0.009).

It is rare to find such drastic changes in immigration policy and so this historical episode has important lessons for contemporary policy. Substantially walling off the US economy to new immigration did open up some employment opportunities for US-born workers who moved to urban areas to take jobs previously held by immigrant workers. However, using immigration restriction to raise the earnings of US-born workers more broadly is unlikely to be effective given the many factors that can substitute for immigrant workers. In the early twentieth century, restricting immigration from Europe encouraged labor flows from Mexico and Canada into urban areas, and the investment in new capital in rural areas. Today, these sources of substitutability may be automation in the manufacturing sector or the off-shoring of high-skilled tasks like computer programming or legal services.

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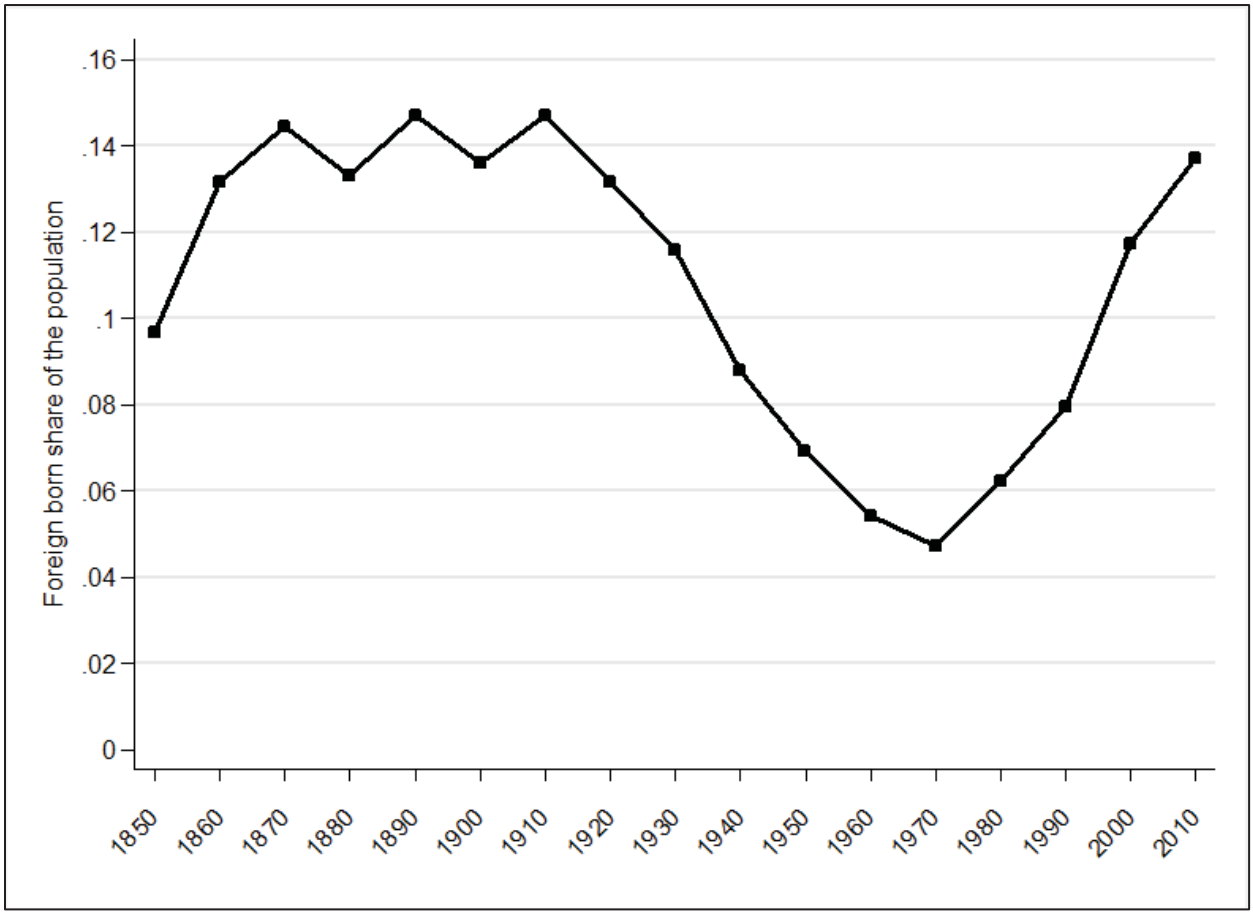
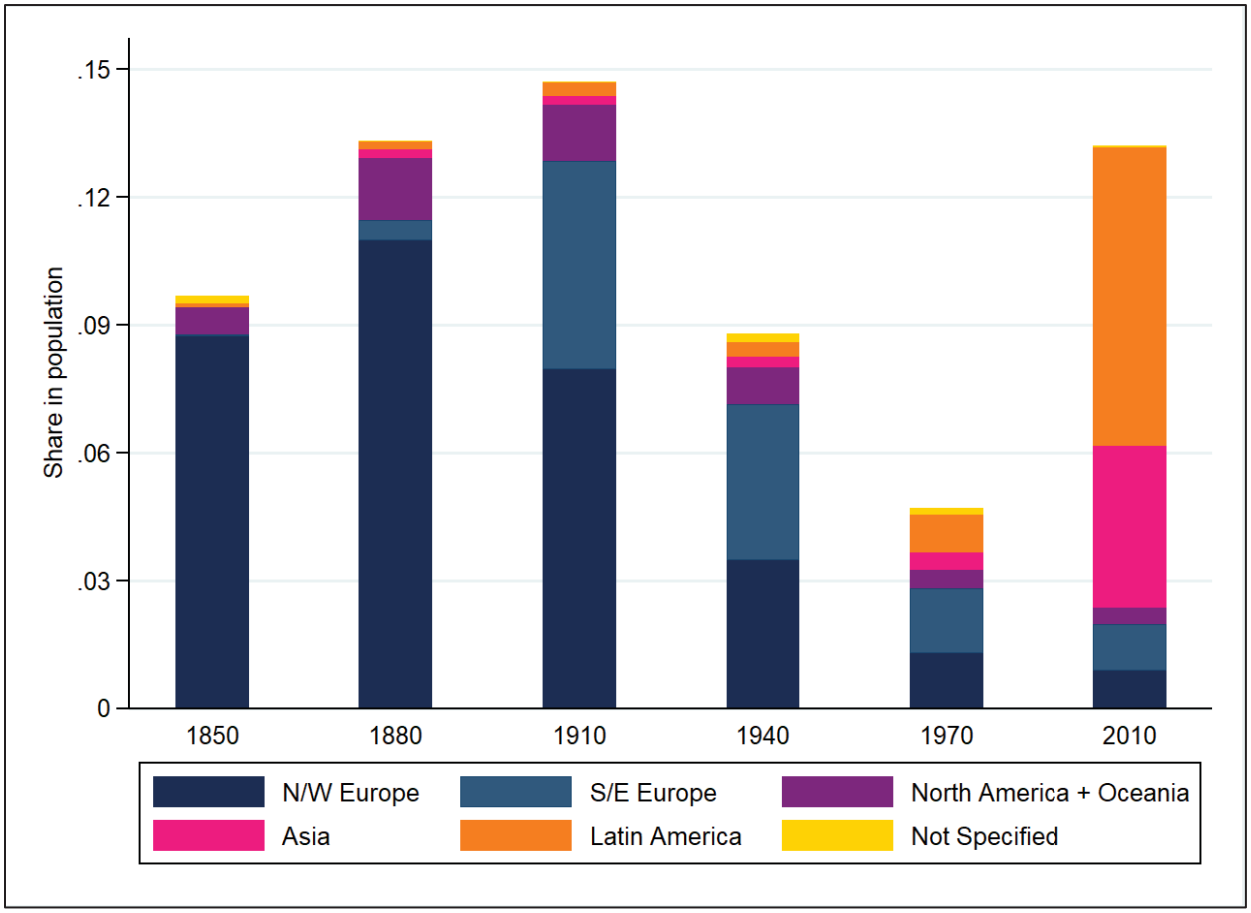
***Figure 1.*** **Foreign-Born Stock as a Percentage of the US Population (1850-2010)**



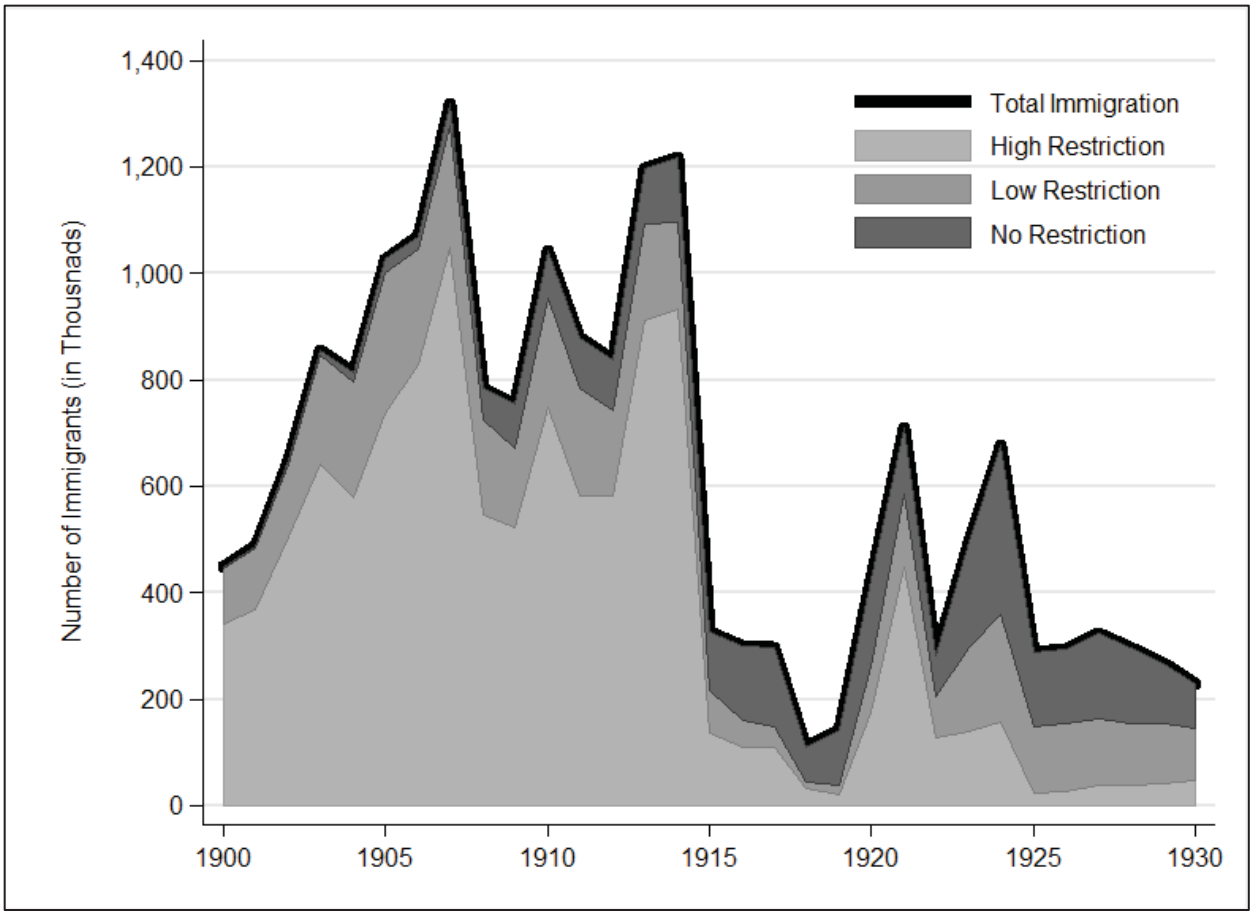

*Source:* Authors' calculations based on Integrated Public-Use Microdata Series (IPUMS) samples of US Census (Ruggles et al. 2010).

***Figure 2*. Sending Regions Within the Foreign-Born Population (1850-2010)**




*Source:* Authors' calculations based on Integrated Public-Use Microdata Series (IPUMS) samples of US Census (Ruggles et al. 2010).

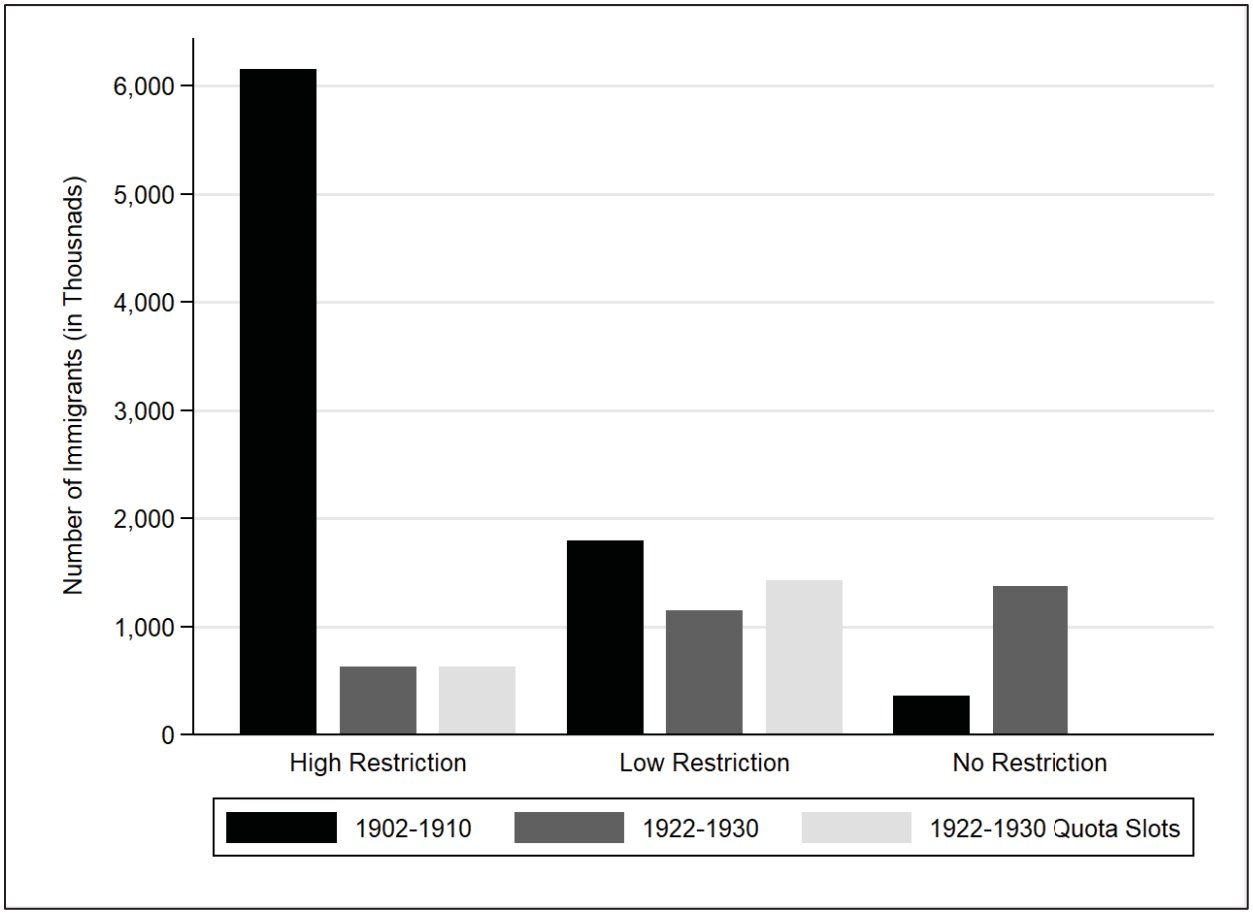
***Figure 3.*** **Annual Immigrant Flows to the US by Quota Restriction Categories, 1900-1930**




*Notes:* Annual immigrant flows (in thousands) to the US from 1900 to 1930, separated into three categories: high restriction, low restriction, and no restriction. See Appendix Table 1 for a list of countries and their classification.

*Source:* Historical Statistics of the United States, "Immigrants, by country of last residence–Europe: 1820–1997."

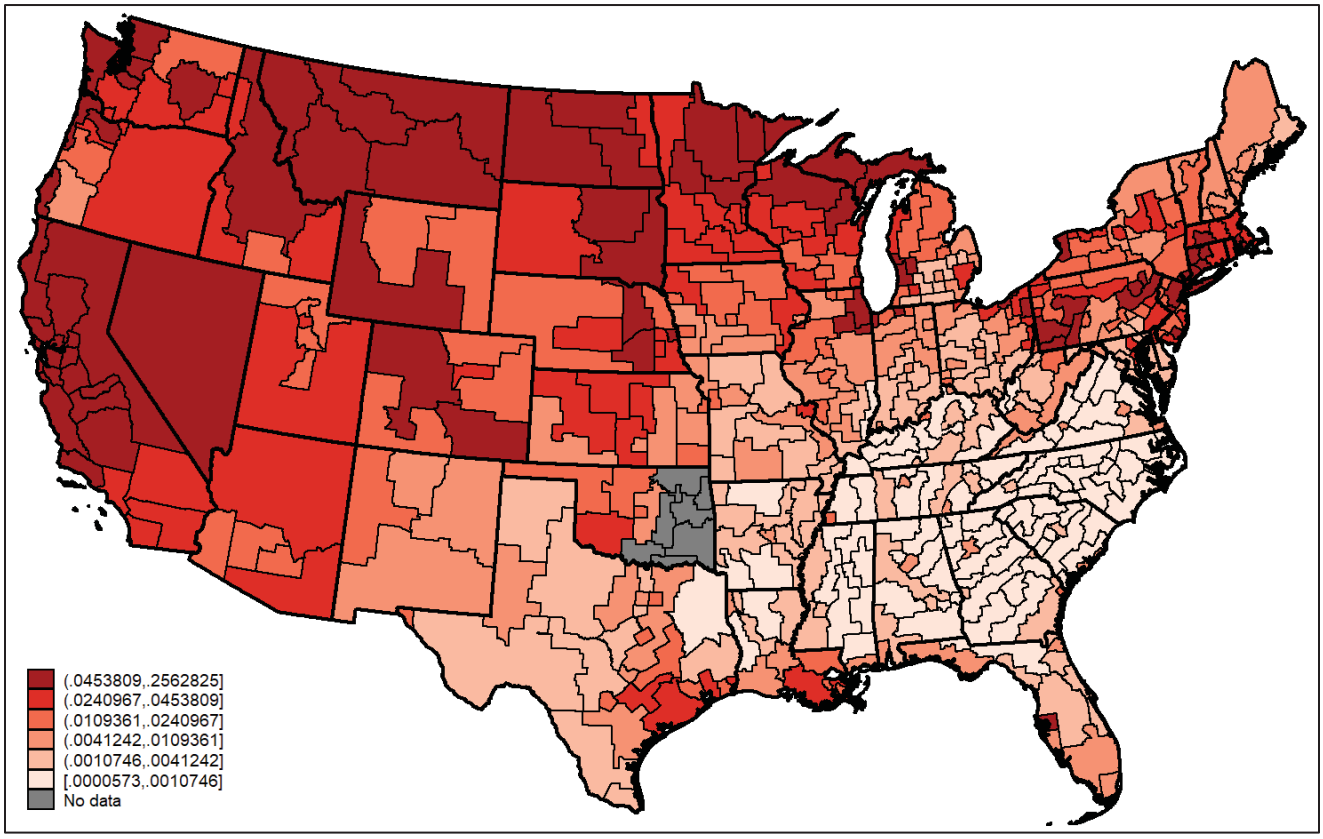
***Figure 4.*** **Decadal Immigrant Flows to the US by Quota Restriction Categories**




*Notes:* Decadal immigrant flows (in thousands) to the US from 1902 to 1910 in blue, from 1922-1930 in red, and decadal quota slots in green, separated into three categories: high restriction, low restriction, and no restriction. See Appendix Table 1 for a list of countries and their classification.

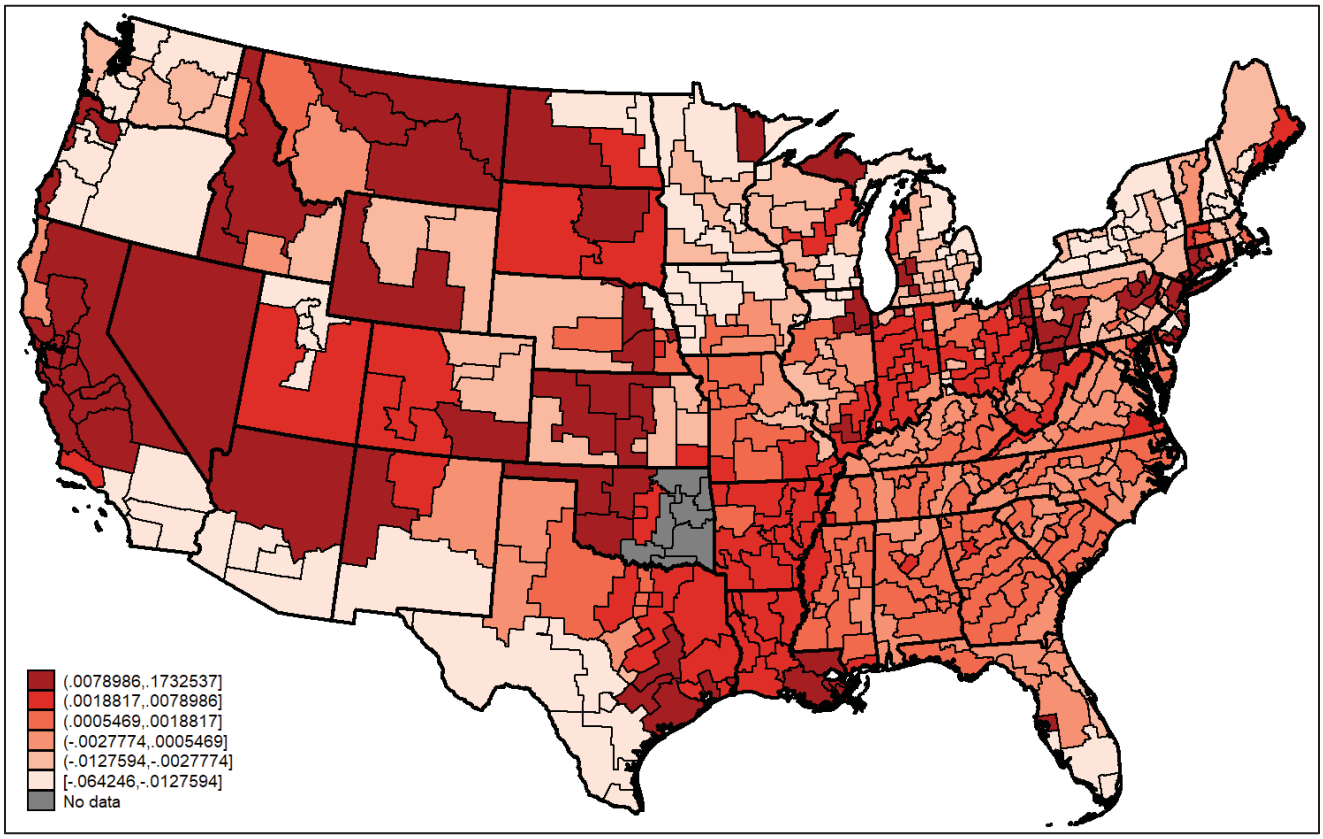
*Source:* Historical Statistics of the United States, "Immigrants, by country of last residence–Europe: 1820–1997." Ferenzi and Wilcox (1929).

***Figure 5A.*** **SEA Quota Exposure Measure QE-3**




*Notes:* The figure plots the 460 SEAs used in the analysis and assigns a darker red color to SEAs with higher quota exposure measure QE-3 (see text for definition of the exposure measure).

***Figure 5B.*** **SEA Quota Exposure Measure QE-3, Controlling for Census Region and 1900 Foreign Born Share**




*Notes:* The figure plots the residuals from a regression of quota exposure measure QE-3 on census region indicators and 1900 foreign-born share and assigns a darker red color to SEAs with larger residuals.

**Table 1: The Border Closure Policy "Puzzle"**

| | Foreign-Born Share | Log Occupational Score | | | |
|---|---|---|---|---|---|
| | Full Count | Full Count | Matched Sample - Overall | Matched Sample - Stayers | Matched Sample - Newcomers |
| | (1) | (2) | (3) | (4) | (5) |
| **I. Full Sample (SEAs = 460)** | | | | | |
| Quota Exposure x 1930 | -1.235*** | -0.509*** | -0.481*** | -0.505*** | 0.301*** |
| | (0.160) | (0.0759) | (0.0848) | (0.0993) | (0.0860) |
| **II. Urban Only (SEAs = 230)** | | | | | |
| Quota Exposure x 1930 | -1.260*** | -0.624*** | -0.574*** | -0.694*** | 0.141 |
| | (0.113) | (0.100) | (0.119) | (0.139) | (0.107) |
| **III. Rural Only (SEAs = 230)** | | | | | |
| Quota Exposure x 1930 | -1.190*** | -0.283** | -0.300** | -0.290** | 0.362*** |
| | (0.365) | (0.122) | (0.126) | (0.132) | (0.125) |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| SEA Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Time Trends | No | Region | Region | Region | State |
| Controls | 1900 Foreign Born Share | 1900 Foreign Born Share | 1900 Foreign Born Share | 1900 Foreign Born Share | 1900 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2). Panel I presents results for the full sample of 460 SEAs, panel II presents results for the urban sample of 230 SEAs, and Panel III presents results for the rural sample of the remaining 230 SEAs. The dependent variables in these specifications are the foreign-born share and the log of the average occupational score among working-age males (Age 15-65). In all specifications, each SEA has three observation for the years 1900, 1910, and 1930. All specifications include SEA fixed effects and Census region time trends. Column 1 presents results where the dependent variable is the foreign-born share among working age males. Columns 2-5 present results where the dependent variable is the log of the average occupational score among working age males, where column 2 uses data on all US-born and individuals from countries who were not restricted by the quota system using the full count census, while columns 3-5 use data from the matched sample described in the text. Column 3 considers all matched US-born individuals, column 4 considers US-born individuals from the matched sample who reside in the same SEA at the beginning and at the end of the decade, and column 5 considers US-born individuals who resided in the SEA at the end of the decade but did not reside in the SEA at the beginning of the decade. Robust standard errors, clustered at the SEA level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

**Table 2: The Effect of Border Closure Exposure on Net Migration Rates**

| | (1) | (2) | (3) |
|---|---|---|---|
| **I. Full Sample (SEAs = 460)** | | | |
| Net Migration Rate, Restricted Population | -3.068*** | -2.580*** | -2.225*** |
| | (0.290) | (0.370) | (0.453) |
| Net Migration Rate, Unrestricted Population | -1.531** | -0.269 | 0.327 |
| | (0.598) | (0.818) | (1.263) |
| **II. Urban Sample (SEAs = 230)** | | | |
| Net Migration Rate, Restricted Population | -2.830*** | -2.394*** | -1.611** |
| | (0.443) | (0.527) | (0.633) |
| Net Migration Rate, Unrestricted Population | -0.292 | 0.997** | 2.407** |
| | (0.538) | (0.475) | (0.940) |
| **III. Rural Sample (SEAs = 230)** | | | |
| Net Migration Rate, Restricted Population | -3.281*** | -2.848*** | -3.002*** |
| | (0.308) | (0.373) | (0.410) |
| Net Migration Rate, Unrestricted Population | -4.061*** | -2.267* | -2.545* |
| | (0.926) | (1.172) | (1.311) |
| Decade Fixed Effects | Yes | Yes | Yes |
| SEA Fixed Effects | Yes | Yes | Yes |
| Time Trends | No | Region | Region |
| Controls | No | No | 1900 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2). Panel I presents results for the full sample of 460 SEAs, panel II presents results for the urban sample of 230 SEAs, and Panel III presents results for the rural sample of the remaining 230 SEAs. The dependent variables in these specifications are the decadal change in quota restricted and unrestricted working-age male population over total working-age male population in the beginning of the decade. In all specifications, each SEA has one observation for the 1900-1910 decade and another observation for the 1920-1930 decade. Column 1 presents results from a specification that includes SEA and decade fixed effects. Column 2 adds census region time trends. Column 3 adds trends by initial (1900) foreign-born share. Robust standard errors, clustered at the SEA level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

**Table 3: The Effect of Border Closure Exposure on Net Migration Rates - Placebo Tests**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | **Actual Experiment** | | **Placebo Experiment** | |
| **I. Full Sample (SEAs = 459)** | | | | |
| Net Migration Rate, Restricted Population | -2.847*** | -2.671*** | 0.111 | 0.124 |
| | (0.456) | (0.545) | (0.374) | (0.518) |
| Net Migration Rate, Unrestricted Population | -0.362 | -0.190 | -0.150 | -1.328 |
| | (0.852) | (1.161) | (1.082) | (2.006) |
| **II. Urban Sample (SEAs = 229)** | | | | |
| Net Migration Rate, Restricted Population | -2.605*** | -2.030*** | -0.232 | -0.993 |
| | (0.645) | (0.767) | (0.503) | (0.691) |
| Net Migration Rate, Unrestricted Population | 1.111** | 1.992** | -1.550*** | -2.558*** |
| | (0.512) | (0.841) | (0.591) | (0.798) |
| **III. Rural Sample (SEAs = 230)** | | | | |
| Net Migration Rate, Restricted Population | -3.043*** | -3.411*** | 0.134 | 1.253** |
| | (0.510) | (0.519) | (0.537) | (0.505) |
| Net Migration Rate, Unrestricted Population | -2.551** | -3.218*** | -0.149 | 0.412 |
| | (1.165) | (1.124) | (2.941) | (3.782) |
| Decade Fixed Effects | Yes | Yes | Yes | Yes |
| SEA Fixed Effects | Yes | Yes | Yes | Yes |
| Time Trends | Region | Region | Region | Region |
| Controls | No | 1890 Foreign Born Share | No | 1890 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2). Panel I presents results for the full sample of 459 SEAs, panel II presents results for the urban sample of 229 SEAs, and Panel III presents results for the rural sample of the remaining 230 SEAs. The dependent variables in these specifications are the decadal change in quota restricted and unrestricted working-age male population age 18-44 over total working-age male population age 18-44 in the beginning of the decade. All specifications include SEA fixed effects and census region and 1890 foreign-born share time trends. Columns 1 and 2 present results for the actual timing of the experiment - 1900-1910 and 1920-1930, while columns 3 and 4 presnt results for a placebo test where the decades compared are 1890-1900 to 1900-1910. Robust standard errors, clustered at the SEA level, in parenthesis. *** $p<0.01$; ** $p<0.05$; * $p<0.1$.

**Table 4: The Effect of Exposure to Border Closure on Net Migration Rate - Robustness to World War I**

| | WWI Effect (N = 690) |
|---|---|
| | (1) |
| **I. Urban Sample (SEAs = 230)** | |
| *Restricted Population:* | |
| Quota Exposure X (1920-1930) | -0.781*** |
| | (0.169) |
| WWI Exposure X (1910-1920) | -1.994*** |
| | (0.429) |
| *Unrestricted Population:* | |
| Quota Exposure X (1920-1930) | 0.236 |
| | (0.193) |
| WWI Exposure X (1910-1920) | 0.899** |
| | (0.409) |
| **II. Rural Sample (SEAs = 230)** | |
| *Restricted Population:* | |
| Quota Exposure X (1920-1930) | -0.875*** |
| | (0.329) |
| WWI Exposure X (1910-1920) | -2.138*** |
| | (0.326) |
| *Unrestricted Population:* | |
| Quota Exposure X (1920-1930) | -0.396 |
| | (0.746) |
| WWI Exposure X (1910-1920) | -1.200 |
| | (0.910) |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2). Panel I present results for the urban sample, and Panel II present results for the rural sample. The dependent variables in these specifications are the decadal change in quota restricted and unrestricted working-age male population over total working-age male population in the beginning of the decade. In column 5, the observations for the 1910-1920 decade are added to the analysis. Column 1 presents the results of the main specification from Table 1. Column 2 replaces census region time trends with state time trends. Column 3 adds the 1900 foreign-born share time trends. Column 4 removes SEAs from the Southern census regions. Column 5 includes World War I exposure measure interacted with the 1910-1920 decade indicator. All specifications include SEA and decade fixed effects, census region time trends, and initial urban/rural characteristics according to sample. Robust standard errors, clustered at the SEA level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

**Table 5: The Effect of Exposure to Border Closure on Net Migration Rates of Various Population Groups**

| | Urban Sample (SEAs = 230) | Rural Sample (SEAs = 230) |
|---|---|---|
| | (1) | (2) |
| Net Migration Rate: | | |
| Restricted Population | -1.611** | -3.002*** |
| | (0.633) | (0.410) |
| Unrestricted Population | 2.407** | -2.545* |
| | (0.940) | (1.311) |
| Native Born White 3rd+ Generation | 0.692 | -1.605** |
| | (0.603) | (0.781) |
| Native Born White 2nd Generation | 1.156*** | -1.124*** |
| | (0.279) | (0.405) |
| Native Born Non-White | 0.0263 | -0.0794 |
| | (0.125) | (0.0964) |
| Born in Canada | 0.100** | -0.132*** |
| | (0.0470) | (0.0490) |
| Other Unrestricted Foreign-Born | 0.433*** | 0.334 |
| | (0.146) | (0.209) |
| Decade Fixed Effects | Yes | Yes |
| SEA Fixed Effects | Yes | Yes |
| Time Trends | Region | Region |
| Controls | 1900 Foreign Born Share | 1900 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2) for various populations. Column 1 lists the dependent variables in these specifications that are defined as the decadal change in working-age male population change for the relevant population group over total working-age male population in the beginning of the decade. Column 2 present results for the urban sample of 230 SEAs, and column 3 presents results for the rural sample of the remaining 230 SEAs. In all specifications, each SEA has one observation for the 1900-1910 decade and another observation for the 1920-1930 decade. All specifications include SEA and decade fixed effects, census region time trends, and initial (1900) foreign-born share time trend. Robust standard errors, clustered at the SEA level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

**Table 6: The Effect of Exposure to Border Closure on Net Migration Rate by Occupation Groups**

| | Urban Sample (SEAs = 230) | | Rural Sample (SEAs = 230) | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | **Restricted Population** | **Unrestricted Population** | **Restricted Population** | **Unrestricted Population** |
| Net Migration Rate: | | | | |
| Total Population | -1.611** | 2.407** | -3.002*** | -2.545* |
| | (0.633) | (0.940) | (0.410) | (1.311) |
| Any Gainful Occupation | -1.314** | 1.495** | -2.370*** | -2.128* |
| | (0.570) | (0.762) | (0.361) | (1.189) |
| Blue-Collar Low-Skilled | -1.093** | 0.516* | -0.496* | -0.297 |
| | (0.429) | (0.310) | (0.272) | (0.247) |
| Blue-Collar High-Skilled | -0.0441 | 0.522** | -0.107*** | -0.165 |
| | (0.0862) | (0.220) | (0.0285) | (0.129) |
| White-Collar | -0.0384 | 0.210 | -0.125*** | -0.434** |
| | (0.0443) | (0.224) | (0.0264) | (0.180) |
| Farming | -0.155** | 0.207* | -1.374*** | -1.003 |
| | (0.0670) | (0.125) | (0.449) | (0.806) |
| No Gainful Occupation | -0.297** | 0.913** | -0.631*** | -0.417* |
| | (0.141) | (0.364) | (0.0589) | (0.235) |
| Decade Fixed Effects | Yes | Yes | Yes | Yes |
| SEA Fixed Effects | Yes | Yes | Yes | Yes |
| Time Trends | Region | Region | Region | Region |
| Controls | 1900 Foreign Born Share | 1900 Foreign Born Share | 1900 Foreign Born Share | 1900 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2) for various occupation categories. The dependent variables in these specifications are defined as the decadal change in working-age male population reporting an occupation in a specific occupation group over total working-age male population in the beginning of the decade. The occupation groups are defined using the census of population occupation codes as described in the text. Columns 1 and 2 present results for the urban sample of 230 SEAs, and columns 3 and 4 present results for the rural sample of the remaining 230 SEAs. Odd-numbered columns show the coefficients of interest for the quota-restricted population, and even-numbered columns show the coefficients of interest for the quota-unrestricted populations. In all specifications, each SEA has one observation for the 1900-1910 decade and another observation for the 1920-1930 decade. All specifications include SEA and decade fixed effects, census region time trends, and initial (1900) foreign-born share time trends. Robust standard errors, clustered at the SEA level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

**Table 7: The Effect of Exposure to Border Closure on the Manufacturing Sector**

| | **Log Wage per Worker** | **Log Output per Worker** | **Log Horsepower per Worker** |
|---|---|---|---|
| | (1) | (2) | (3) |
| Quota Exposure x Post | 1.042 | 0.512 | -0.115 |
| | (0.676) | (0.640) | (1.989) |
| Sample | Urban | Urban | Urban |
| Number of SEAs | 203 | 203 | 203 |
| Number of Observations | 812 | 812 | 609 |
| Decade Fixed Effects | Yes | Yes | Yes |
| SEA Fixed Effects | Yes | Yes | Yes |
| Time Trends | Region | Region | Region |
| Controls | 1900 Foreign Born Share | 1900 Foreign Born Share | 1900 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2). The variable Post is an indicator for post-quota years, 1925 and 1929. The sample in this analysis includes 203 SEAs from the urban sample that have available data in the census of manufacturers in each of the years 1909, 1914, 1925, and 1929. Column 1 reports the result where the dependent variable is log average wage per worker in manufacturing. Column 2 reports the result where the dependent variable is log average value of manufacturing output per worker. Column 3 reports the result where the dependent variable is log average horsepower per worker in manufacturing. All monetary values are expressed in 1929 dollars. In columns 1 and 2, each SEA has four observations, one for each of the years 1909, 1914, 1925, and 1929. In column 3, each SEA has three observations, one for each of the years 1909, 1914, and 1929. All specifications include SEA and year fixed effects. The specifications include region and initial (1900) foreign-born share time trends. Robust standard errors, clustered at the SEA level, in parenthesis. *** $p<0.01$; ** $p<0.05$; * $p<0.1$.

**Table 8: The Effect of Exposure to Border Closure on the Agriculture Sector**

| | Log Farm Land Value | Share Labor Intensive Crops | Share Capital Intensive Crops | Log Mules and Horses per Worker | Log Wages per Worker |
|---|---|---|---|---|---|
| | (1) | (1) | (1) | (1) | (1) |
| Quota Exposure x Post | -0.290 | -0.723 | 0.994*** | -2.302** | -2.923** |
| | (1.750) | (0.490) | (0.318) | (1.085) | (1.423) |
| Sample | Rural | Rural | Rural | Rural | Rural |
| Number of SEAs | 230 | 230 | 230 | 230 | 230 |
| Number of Observations | 920 | 920 | 920 | 920 | 920 |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| SEA Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Time Trends | Region | Region | Region | Region | Region |
| Controls | 1900 Foreign Born Share | 1900 Foreign Born Share | 1900 Foreign Born Share | 1900 Foreign Born Share | 1900 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2). The sample in this analysis includes 230 SEAs from the rural sample that have available data in the census of agriculture in each of the years 1900, 1910, 1925, and 1930. The variable Post is an indicator for post-quota years, 1925 and 1930. Column 1 reports the result where the dependent variable is log farmland value. Column 2 reports the result where the dependent variable is the share of cultivated land planted in labor-intensive crops, which we define as hay and corn. Column 3 reports the result where the dependent variable is the share of cultivated land planted in capital-intensive crops, which we define as wheat. Column 4 reports the result where the dependent variable is log ratio of horses and mules to farm workers, where the number of farm workers is computed as the number of working-age males in farming occupations. Column 5 reports the result where the dependent variable is log labor expendituress to farm workers All dollar values are expressed in 1929 dollars. Across all specifications, each SEA has four observations, one for each of the years 1900, 1910, 1925, and 1930. All specifications include SEA fixed effects, census region and 1900 foreign-born share time trends. Robust standard errors, clustered at the SEA level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

# The Effects of Immigration on the Economy:
# Lessons from the 1920s Border Closure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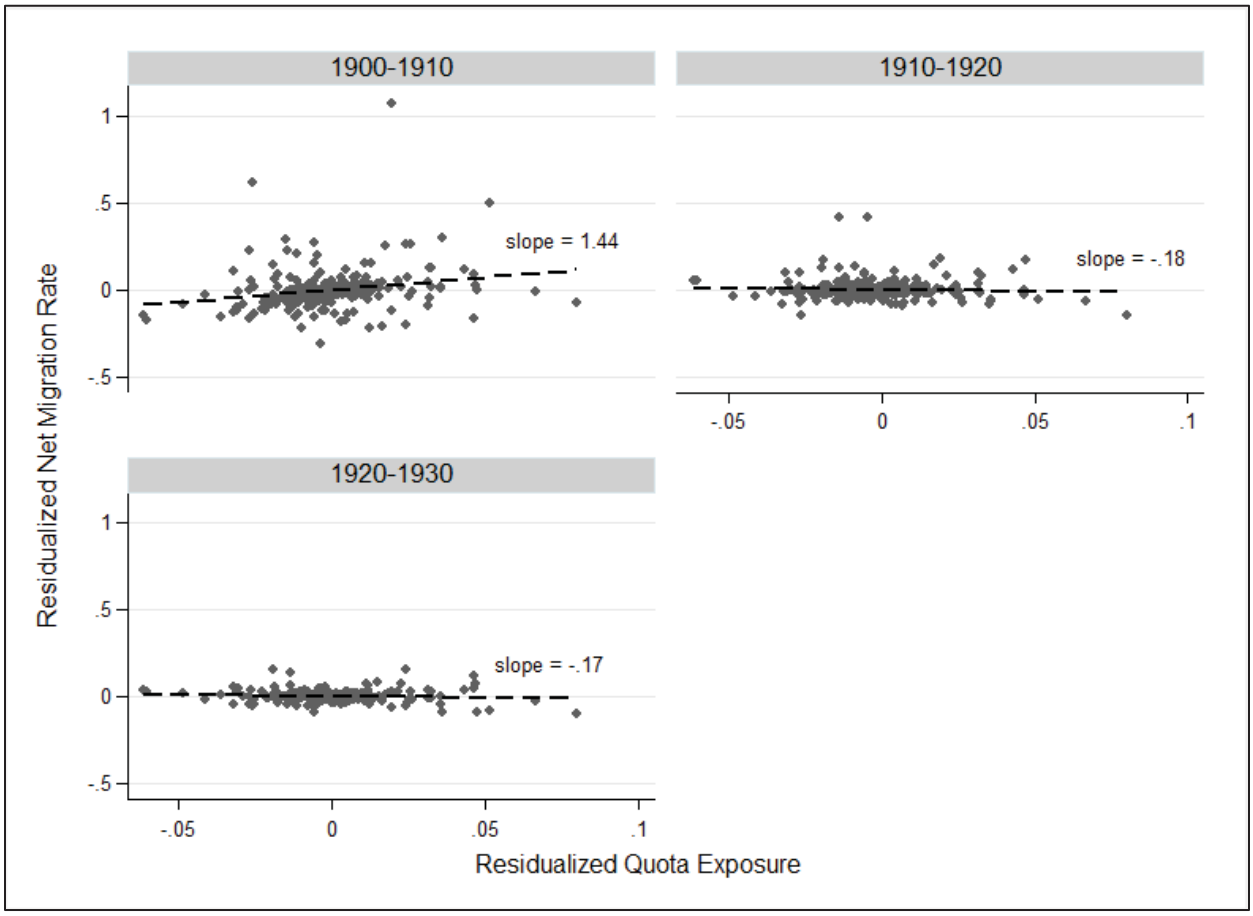
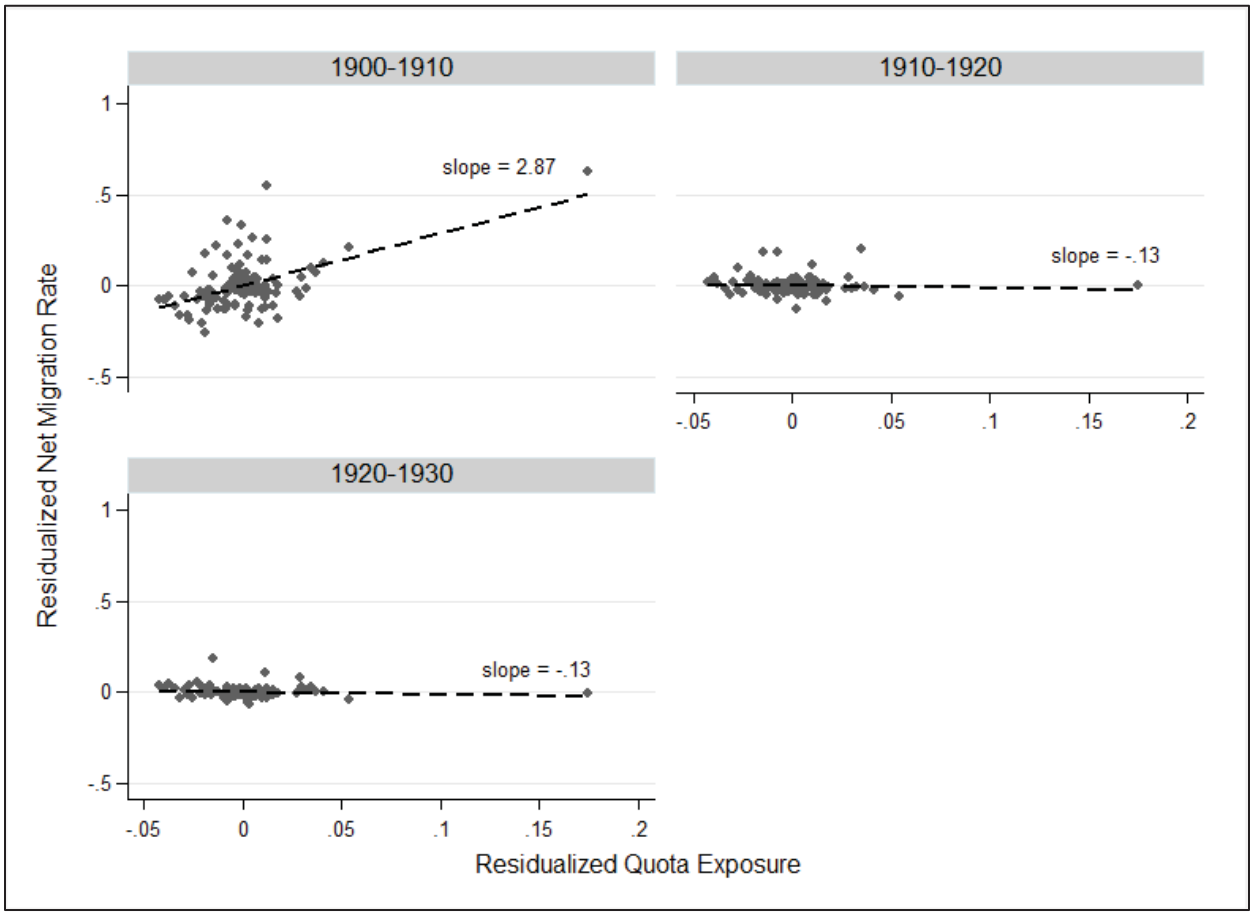
## Appendix Material – For Online Publication Only

***Appendix Figure 1.*** **The Relationship Between Quota Exposure Net Migration Rate of Foreign Born from Countries with Quota Restrictions – Urban Sample**




*Notes:* The figure plot the relationship between quota exposure and decadal change in quota-restricted working age male population for the 230 urban SEAs used in the analysis for each of the three decades between 1900-1930. The variables plotted are the residuals from a set of regressions of the decadal population change and the quota exposure measure on census region fixed effects and 1900 foreign-born share.

***Appendix Figure 2.*** **The Relationship Between Quota Exposure Net Migration Rate of Foreign Born from Countries with Quota Restrictions – Rural Sample**




*Notes:* The figure plot the relationship between quota exposure and decadal change in quota-restricted working age male population for the 230 rural SEAs used in the analysis for each of the three decades between 1900-1930. The variables plotted are the residuals from a set of regressions of the decadal population change and the quota exposure measure on census region fixed effects and 1900 foreign-born share.

**Appendix Table 1: Quota and World War I Exposure Measures by Country**

| Country Group | (1) Quota Exposure 1 | (2) Quota Exposure 2 | (3) Quota Exposure 3 | (4) World War I Exposure |
|---|---|---|---|---|
| **I. High-Restriction Countries** | | | | |
| Asia | 1 | 0.912 | 0.947 | 0.496 |
| Central Europe | 1 | 0.935 | 0.968 | 0.978 |
| Eastern Europe | 1 | 0.830 | 0.935 | 0.957 |
| Greece | 1 | 0.935 | 0.965 | 0.502 |
| Italy | 1 | 0.921 | 0.962 | 0.887 |
| Portugal | 1 | 0.840 | 0.945 | 0.411 |
| Rest of World | 1 | 0.640 | 0.686 | 0.000 |
| Russia | 1 | 0.834 | 0.933 | 0.950 |
| Spain | 1 | 0.867 | 0.980 | 0.140 |
| **II. Low-Restriction Countries** | | | | |
| Germany | 0 | 0.000 | 0 | 0.919 |
| Ireland | 0 | 0.133 | 0 | 0.789 |
| Scandinavia | 0 | 0.540 | 0.100 | 0.675 |
| United Kingdom | 0 | 0.293 | 0 | 0.795 |
| Western Europe | 0 | 0.497 | 0.559 | 0.716 |
| **III. Non-Restriction Countries** | | | | |
| Canada | 0 | 0 | 0 | 0 |
| Caribbean | 0 | 0 | 0 | 0.112 |
| Latin America | 0 | 0 | 0 | 0 |
| Mexico | 0 | 0 | 0 | 0 |

*Notes:* This table presents the list of countries used in the paper to construct the quota exposure measures and the World War I exposure measure. Column 1 lists the different 18 country groups used in the analysis. Columns 1-3 present the country-specific quota exposure measure, according to the equations described in the text. Column 4 presents the country-specific WWI exposure measure, constructed as described in the text. Panel I lists the high-restriction country groups, Panel II lists the low-restriction country groups, and Panel III lists the non-restriction country groups, as decribed in the text.

**Appendix Table 2: The Effect of Exposure to Border Closure on Net Migration Rates by Age Group**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| **Population Group** | **Urban Sample (SEAs = 230)** | | **Rural Sample (SEAs = 230)** | |
| | **"Young" Workers** | **"Old" Workers** | **"Young" Workers** | **"Old" Workers** |
| Net Migration Rate: | | | | |
| Restricted Population | -1.561*** | -0.0499 | -2.454*** | -0.548*** |
| | (0.512) | (0.152) | (0.295) | (0.150) |
| Unrestricted Population | 1.800*** | 0.607** | -2.020** | -0.524 |
| | (0.689) | (0.261) | (0.972) | (0.362) |
| Native Born White 3rd+ Generation | 0.600 | 0.0912 | -1.212** | -0.393* |
| | (0.444) | (0.168) | (0.590) | (0.203) |
| Native Born White 2nd Generation | 0.845*** | 0.311*** | -0.865*** | -0.259** |
| | (0.231) | (0.0713) | (0.327) | (0.108) |
| Native Born Non-White | 0.0201 | 0.00625 | -0.0507 | -0.0287 |
| | (0.104) | (0.0236) | (0.0800) | (0.0232) |
| Born in Canada | 0.0225 | 0.0778** | -0.180*** | 0.0475 |
| | (0.0390) | (0.0369) | (0.0513) | (0.0438) |
| Other Unrestricted Foreign-Born | 0.313*** | 0.120** | 0.288* | 0.109* |
| | (0.119) | (0.0478) | (0.165) | (0.0607) |
| Decade Fixed Effects | Yes | Yes | Yes | Yes |
| SEA Fixed Effects | Yes | Yes | Yes | Yes |
| Time Trends | Region | Region | Region | Region |
| Controls | 1900 Foreign Born Share | 1900 Foreign Born Share | 1900 Foreign Born Share | 1900 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2) for various populations. Each row lists the dependent variable in the specifications that are defined as the decadal change in working-age male population change for the relevant population group over total working-age male population in the beginning of the decade. Columns 1 and 2 present results for the urban sample of 230 SEAs, and columns 3 and 4 present results for the rural sample of the remaining 230 SEAs. Columns 1 and 3 consider the decadal change in "Young Workers", defined as individuals age 15-39, over the total working age male population in the beginning of the decade. Columns 2 and 4 consider the decadal change in "Old Workers", defined as individuals age 40-65, over the total working age male population in the beginning of the decade. In all specifications, each SEA has one observation for the 1900-1910 decade and another observation for the 1920-1930 decade. All specifications include SEA and decade fixed effects, census region time trends, and 1900 foreign-born share time trends. Robust standard errors, clustered at the SEA level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

**Appendix Table 3: The Effect of Border Closure Exposure on Net Migration Rates of Females**

| | (1) | (2) | (3) |
|---|---|---|---|
| **I. Full Sample (SEAs = 460)** | | | |
| Net Migration Rate, Restricted Population | -1.878*** | -1.825*** | -1.731*** |
| | (0.239) | (0.308) | (0.432) |
| Net Migration Rate, Unrestricted Population | -2.065*** | -0.688 | -0.275 |
| | (0.616) | (0.845) | (1.315) |
| **II. Urban Sample (SEAs = 230)** | | | |
| Net Migration Rate, Restricted Population | -1.642*** | -1.494*** | -1.206*** |
| | (0.235) | (0.259) | (0.314) |
| Net Migration Rate, Unrestricted Population | -1.079* | 0.297 | 1.385 |
| | (0.572) | (0.531) | (1.122) |
| **III. Rural Sample (SEAs = 230)** | | | |
| Net Migration Rate, Restricted Population | -2.317*** | -2.411*** | -2.448*** |
| | (0.376) | (0.468) | (0.562) |
| Net Migration Rate, Unrestricted Population | -4.640*** | -2.692** | -2.561* |
| | (0.945) | (1.221) | (1.507) |
| Decade Fixed Effects | Yes | Yes | Yes |
| SEA Fixed Effects | Yes | Yes | Yes |
| Time Trends | No | Region | Region |
| Controls | No | No | 1900 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2). Panel I presents results for the full sample of 460 SEAs, panel II presents results for the urban sample of 230 SEAs, and Panel III presents results for the rural sample of the remaining 230 SEAs. The dependent variables in these specifications are the decadal change in quota restricted and unrestricted working-age female population over total working-age female population in the beginning of the decade. In all specifications, each SEA has one observation for the 1900-1910 decade and another observation for the 1920-1930 decade. Column 1 presents results from a specification that includes SEA and decade fixed effects. Column 2 adds census region time trends. Column 3 adds trends by initial (1900) foreign-born share. Robust standard errors, clustered at the SEA level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

**Appendix Table 4: The Effect of Border Closure Exposure on Female Labor Force Participation**

| | (1) | (2) | (3) |
|---|---|---|---|
| Quota Exposure x 1930 | -0.0121 | -0.0622 | -0.0451 |
| | (0.0404) | (0.0515) | (0.0504) |
| Sample | Full | Urban | Rural |
| Number of SEAs | 460 | 230 | 230 |
| Year Fixed Effects | Yes | Yes | Yes |
| SEA Fixed Effects | Yes | Yes | Yes |
| Time Trends | Region | Region | Region |
| Controls | 1900 Foreign Born Share | 1900 Foreign Born Share | 1900 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2). Column 1 presents result for the full sample of 460 SEAs, column 2 presents result for the urban sample of 230 SEAs, and column 3 presents result for the rural sample of the remaining 230 SEAs. The dependent variable in these specifications is the share of unrestricted females with gainful occupation among the unrestricted working-age female population. In all specifications, each SEA has three observations for each of the years 1900,1910, and 1930. All specifications include SEA and year fixed effects, and trends by census region and initial (1900) foreign-born share. Robust standard errors, clustered at the SEA level, in parenthesis. *** $p<0.01$; ** $p<0.05$; * $p<0.1$.

**Appendix Table 5: The Effect of Exposure to Border Closure on Net Migration Rates - Robustness to State Time Trends**

| | (1) | (2) | (3) |
|---|---|---|---|
| **I. Full Sample (SEAs = 460)** | | | |
| Net Migration Rate, Restricted Population | -3.068*** | -2.723*** | -2.405*** |
| | (0.290) | (0.424) | (0.424) |
| Net Migration Rate, Unrestricted Population | -1.531** | 0.0202 | -0.204 |
| | (0.598) | (0.664) | (1.023) |
| **II. Urban Sample (SEAs = 230)** | | | |
| Net Migration Rate, Restricted Population | -2.830*** | -2.654*** | -1.986*** |
| | (0.443) | (0.512) | (0.505) |
| Net Migration Rate, Unrestricted Population | -0.292 | 0.768** | 1.247 |
| | (0.538) | (0.391) | (0.961) |
| **III. Rural Sample (SEAs = 230)** | | | |
| Net Migration Rate, Restricted Population | -3.281*** | -2.766*** | -2.820*** |
| | (0.308) | (0.369) | (0.366) |
| Net Migration Rate, Unrestricted Population | -4.061*** | -2.125 | -2.669** |
| | (0.926) | (1.344) | (1.184) |
| Decade Fixed Effects | Yes | Yes | Yes |
| SEA Fixed Effects | Yes | Yes | Yes |
| Time Trends | No | State | State |
| Controls | No | No | 1900 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2). Panel I presents results for the full sample of 460 SEAs, panel II presents results for the urban sample of 230 SEAs, and Panel III presents results for the rural sample of the remaining 230 SEAs. The dependent variables in these specifications are the decadal change in quota restricted and unrestricted working-age male population over total working-age male population in the beginning of the decade. In all specifications, each SEA has one observation for the 1900-1910 decade and another observation for the 1920-1930 decade. Column 1 presents results from a specification that includes SEA and decade fixed effects. Column 2 adds state time trends. Column 3 adds trends by initial (1900) foreign-born share. Robust standard errors, clustered at the SEA level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

**Appendix Table 6: The Effect of Exposure to Border Closure on Net Migration Rates - Breaking Quota Restricted Group to High and Low**

| | (1) | (2) | (3) |
|---|---|---|---|
| **I. Full Sample (SEAs = 460)** | | | |
| Net Migration Rate: "High" Restricted Population | -2.227*** | -2.028*** | -1.965*** |
| | (0.215) | (0.263) | (0.286) |
| Net Migration Rate: "Low" Restricted Population | -0.840*** | -0.552*** | -0.260 |
| | (0.159) | (0.197) | (0.305) |
| Net Migration Rate, Unrestricted Population | -1.531** | 0.0202 | -0.204 |
| | (0.598) | (0.664) | (1.023) |
| **II. Urban Sample (SEAs = 230)** | | | |
| Net Migration Rate: "High" Restricted Population | -2.243*** | -2.251*** | -1.972*** |
| | (0.321) | (0.390) | (0.451) |
| Net Migration Rate: "Low" Restricted Population | -0.586*** | -0.143 | 0.361 |
| | (0.176) | (0.178) | (0.255) |
| Net Migration Rate, Unrestricted Population | -0.292 | 0.997** | 2.407** |
| | (0.538) | (0.475) | (0.940) |
| **III. Rural Sample (SEAs = 230)** | | | |
| Net Migration Rate: "High" Restricted Population | -1.927*** | -1.647*** | -1.964*** |
| | (0.200) | (0.241) | (0.239) |
| Net Migration Rate: "Low" Restricted Population | -1.354*** | -1.202*** | -1.038*** |
| | (0.236) | (0.212) | (0.247) |
| Net Migration Rate, Unrestricted Population | -4.061*** | -2.267* | -2.545* |
| | (0.926) | (1.172) | (1.311) |
| Decade Fixed Effects | Yes | Yes | Yes |
| SEA Fixed Effects | Yes | Yes | Yes |
| Time Trends | No | Region | Region |
| Controls | No | No | 1900 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2). Panel I presents results for the full sample of 460 SEAs, panel II presents results for the urban sample of 230 SEAs, and Panel III presents results for the rural sample of the remaining 230 SEAs. The dependent variables in these specifications are the decadal change in quota restricted and unrestricted working-age male population over total working-age male population in the beginning of the decade. In all specifications, each SEA has one observation for the 1900-1910 decade and another observation for the 1920-1930 decade. Column 1 presents results from a specification that includes SEA and decade fixed effects. Column 2 adds state time trends. Column 3 adds trends by initial (1900) foreign-born share. Robust standard errors, clustered at the SEA level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

**Appendix Table 7: The Effect of Exposure to Border Closure on Net Migration Rates - Quota Exposure**

| | (1) | (2) | (3) |
|---|---|---|---|
| **I. Full Sample (SEAs = 460)** | | | |
| Net Migration Rate, Restricted Population | -3.157*** | -2.604*** | -2.156*** |
| | (0.306) | (0.372) | (0.423) |
| Net Migration Rate, Unrestricted Population | -1.519** | -0.343 | 0.0978 |
| | (0.623) | (0.848) | (1.171) |
| **II. Urban Sample (SEAs = 230)** | | | |
| Net Migration Rate, Restricted Population | -2.804*** | -2.347*** | -1.517** |
| | (0.451) | (0.543) | (0.613) |
| Net Migration Rate, Unrestricted Population | -0.166 | 1.043** | 2.177** |
| | (0.512) | (0.488) | (0.850) |
| **III. Rural Sample (SEAs = 230)** | | | |
| Net Migration Rate, Restricted Population | -3.536*** | -2.951*** | -2.884*** |
| | (0.382) | (0.287) | (0.309) |
| Net Migration Rate, Unrestricted Population | -4.339*** | -2.531** | -2.660** |
| | (1.024) | (1.037) | (1.083) |
| Decade Fixed Effects | Yes | Yes | Yes |
| SEA Fixed Effects | Yes | Yes | Yes |
| Time Trends | No | Region | Region |
| Controls | No | No | 1900 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2). Panel I presents results for the full sample of 460 SEAs, panel II presents results for the urban sample of 230 SEAs, and Panel III presents results for the rural sample of the remaining 230 SEAs. The dependent variables in these specifications are the decadal change in quota restricted and unrestricted working-age male population over total working-age male population in the beginning of the decade. In all specifications, each SEA has one observation for the 1900-1910 decade and another observation for the 1920-1930 decade. Column 1 presents results from a specification that includes SEA and decade fixed effects. Column 2 adds census region time trends. Column 3 adds trends by initial (1900) foreign-born share. Robust standard errors, clustered at the SEA level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

**Appendix Table 8: The Effect of Exposure to Border Closure on Net Migration Rates - Quota Exposure Measure**

| | (1) | (2) | (3) |
|---|---|---|---|
| **I. Full Sample (SEAs = 460)** | | | |
| Net Migration Rate, Restricted Population | -2.298*** | -2.064*** | -2.219*** |
| | (0.228) | (0.302) | (0.393) |
| Net Migration Rate, Unrestricted Population | -1.413*** | -0.474 | -0.185 |
| | (0.443) | (0.510) | (0.936) |
| **II. Urban Sample (SEAs = 230)** | | | |
| Net Migration Rate, Restricted Population | -2.461*** | -2.282*** | -2.282*** |
| | (0.326) | (0.380) | (0.460) |
| Net Migration Rate, Unrestricted Population | -0.632 | 0.169 | 0.958 |
| | (0.495) | (0.336) | (0.857) |
| **III. Rural Sample (SEAs = 230)** | | | |
| Net Migration Rate, Restricted Population | -2.041*** | -1.854*** | -2.533*** |
| | (0.358) | (0.508) | (0.741) |
| Net Migration Rate, Unrestricted Population | -2.852*** | -1.642* | -2.802** |
| | (0.715) | (0.954) | (1.393) |
| Decade Fixed Effects | Yes | Yes | Yes |
| SEA Fixed Effects | Yes | Yes | Yes |
| Time Trends | No | Region | Region |
| Controls | No | No | 1900 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2). Panel I presents results for the full sample of 460 SEAs, panel II presents results for the urban sample of 230 SEAs, and Panel III presents results for the rural sample of the remaining 230 SEAs. The dependent variables in these specifications are the decadal change in quota restricted and unrestricted working-age male population over total working-age male population in the beginning of the decade. In all specifications, each SEA has one observation for the 1900-1910 decade and another observation for the 1920-1930 decade. Column 1 presents results from a specification that includes SEA and decade fixed effects. Column 2 adds census region time trends. Column 3 adds trends by initial (1900) foreign-born share. Robust standard errors, clustered at the SEA level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

**Appendix Table 9: The Effect of Exposure to Border Closure on Net Migration Rates by Urban Terciles**

| | (1) | (2) | (3) |
|---|---|---|---|
| **I. Rural Tercile (SEAs = 154)** | | | |
| Net Migration Rate, Restricted Population | -3.210*** | -2.971*** | -3.323*** |
| | (0.313) | (0.367) | (0.374) |
| Net Migration Rate, Unrestricted Population | -4.050*** | -2.272* | -3.634*** |
| | (1.004) | (1.244) | (1.157) |
| **II. Mid Tercile (SEAs = 153)** | | | |
| Net Migration Rate, Restricted Population | -3.224*** | -2.166*** | -1.491 |
| | (0.606) | (0.686) | (0.918) |
| Net Migration Rate, Unrestricted Population | -3.001** | 0.169 | 1.719 |
| | (1.210) | (1.382) | (1.954) |
| **III. Urban Tercile (SEAs = 153)** | | | |
| Net Migration Rate, Restricted Population | -2.737*** | -2.331*** | -1.604** |
| | (0.519) | (0.621) | (0.712) |
| Net Migration Rate, Unrestricted Population | 0.467 | 1.054* | 2.551*** |
| | (0.630) | (0.546) | (0.948) |
| Decade Fixed Effects | Yes | Yes | Yes |
| SEA Fixed Effects | Yes | Yes | Yes |
| Time Trends | No | Region | Region |
| Controls | No | No | 1900 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2). Panel I presents results for the 155 SEAs in the lower tercile of the 1900 SEA urban share, panel II presents results for the 154 SEAs in the second tercile of the 1900 SEA urban share, and Panel III presents results for the 155 SEAs in the top tercile of the 1900 SEA urban share. The dependent variables in these specifications are the decadal change in quota restricted and unrestricted working-age male population over total working-age male population in the beginning of the decade. In all specifications, each SEA has one observation for the 1900-1910 decade and another observation for the 1920-1930 decade. Column 1 presents results from a specification that includes SEA and decade fixed effects. Column 2 adds census region time trends. Column 3 adds time trends by 1900 foreign-born share. Robust standard errors, clustered at the SEA level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

**Appendix Table 10: The Effect of Exposure to Border Closure on Net Migration Rate - County**

| | (1) | (2) | (3) |
|---|---|---|---|
| **I. Full Sample (Counties = 2,814)** | | | |
| Net Migration Rate, Restricted Population | -2.154*** | -1.834*** | -1.469*** |
| | (0.236) | (0.262) | (0.372) |
| Net Migration Rate, Unrestricted Population | -1.024 | -0.278 | 1.594 |
| | (0.895) | (0.517) | (3.335) |
| **II. Urban Sample (Counties = 841)** | | | |
| Net Migration Rate, Restricted Population | -2.079*** | -1.787*** | -1.188*** |
| | (0.198) | (0.248) | (0.381) |
| Net Migration Rate, Unrestricted Population | 0.167 | 1.446*** | 1.290** |
| | (0.305) | (0.423) | (0.627) |
| **III. Rural Sample (Counties = 1,973)** | | | |
| Net Migration Rate, Restricted Population | -2.141*** | -1.887*** | -1.588*** |
| | (0.346) | (0.372) | (0.476) |
| Net Migration Rate, Unrestricted Population | -1.934* | -1.070 | 1.761 |
| | (1.092) | (0.675) | (4.420) |
| Decade Fixed Effects | Yes | Yes | Yes |
| County Fixed Effects | Yes | Yes | Yes |
| Time Trends | No | Region | Region |
| Controls | No | No | 1900 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2). Panel I present results for the full sample of 2,814 Counties, panel II present results for the urban sample of 841 Counties, and Panel III present results for the rural sample of the remaining 1,973 Counties. The dependent variables in these specifications are the decadal change in quota restricted and unrestricted working-age male population over total working-age male population in the beginning of the decade. In all specifications, each county has one observation for the 1900-1910 decade and another observation for the 1920-1930 decade. Column 1 presents results from a specification that includes county and decade fixed effects. Column 2 adds census region time trends. Column 3 adds a 1900 Foreign-Born Rate time trend. Robust standard errors, clustered at the county level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

**Appendix Table 11: The Effect of Exposure to Border Closure on Net Migration Rates - Robustness to Outliers**

| Outliers Excluded: | Quota Exposure | Quota Restricted Net Migration Rate | Quota-Unrestricted Net Migration Rate |
|---|---|---|---|
| | (1) | (2) | (3) |
| **I. Full Sample** | | | |
| Net Migration Rate, Restricted Population | -1.984*** | -2.312*** | -2.318*** |
| | (0.574) | (0.471) | (0.471) |
| Net Migration Rate, Unrestricted Population | 1.919* | 0.217 | 0.150 |
| | (1.025) | (1.301) | (1.276) |
| **II. Urban Sample** | | | |
| Net Migration Rate, Restricted Population | -1.749** | -1.700** | -1.715** |
| | (0.682) | (0.680) | (0.717) |
| Net Migration Rate, Unrestricted Population | 2.767** | 2.395** | 2.200** |
| | (1.076) | (0.981) | (1.022) |
| **III. Rural Sample** | | | |
| Net Migration Rate, Restricted Population | -2.154*** | -2.309*** | -2.916*** |
| | (0.811) | (0.652) | (0.467) |
| Net Migration Rate, Unrestricted Population | -1.031 | -1.474 | -2.295 |
| | (2.393) | (1.912) | (1.442) |
| Decade Fixed Effects | Yes | Yes | Yes |
| SEA Fixed Effects | Yes | Yes | Yes |
| Time Trends | No | Region | Region |
| Controls | No | No | 1900 Foreign Born Share |

*Notes:* This table presents the coefficient of interest from the continuous difference-in-differences specification (equation 2). Panel I present results for the full sample of 460 SEAs, panel II present results for the urban sample of 230 SEAs, and Panel III present results for the rural sample of the remaining 230 SEAs. The dependent variables in these specifications are the decadal change in quota restricted and unrestricted working-age male population over total working-age male population in the beginning of the decade. In all specifications, each SEA has one observation for the 1900-1910 decade and another observation for the 1920-1930 decade. Column 1 presents results from a specification that excludes SEAs from the bottom and top 2.5% of quota exposure distribution. Column 2 excludes SEAs who were in the bottom or top 2.5% distribution of the quota-restricted net migration rate in either 1900-1910 or 1920-1930, and column 3 repeats column 2 for the distribution of quota-unrestricted net migration rate. All specification include SEA fixed effects and census region and 1900 foreign-born rate time trends. Robust standard errors, clustered at the SEA level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.