ISSN 1936-5330

kc FED Research Working Papers

Immigration Disruptions and the Wages of Unskilled Labor in the 1920s

Elior Cohen and Jeff Biddle

September 2022
RWP 22-12
http://doi.org/10.18651/RWP2022-12

Federal Reserve Bank of Kansas City

Immigration Disruptions and the Wages of Unskilled Labor in the 1920s

Jeff Biddle
Michigan State University

Elior Cohen
Federal Reserve Bank of Kansas City

August 2022

Abstract: An era of mass immigration into the United States ended with the onset of World War I in Europe, followed by the passage of restrictive immigration laws in 1921 and 1924. We analyze various sources of wage data collected in the 1910-1929 period to explore the impact of this significant disruption of the flow of immigration on the wages of unskilled labor. Our approach to identification entails examining differences in wages across local labor markets and industries differentially exposed to the disruptions in immigration due to different ethnic compositions of their immigrant populations in the pre-war era. We find evidence strongly suggesting that during the 1920s, industries and regions more affected by the disruptions in immigration experienced larger reductions in flows of immigrants that resulted in increased wages of unskilled labor.

Acknowledgments: We received valuable feedback from seminar participants at the University of Notre Dame. The views do not necessarily represent the Federal Reserve Bank of Kansas City or the Federal Reserve System. All mistakes are our own.

I. Introduction

An era of mass immigration into the United States ended with the onset of World War I in Europe, as the flood of immigration from Europe to the U.S. was reduced to a trickle. Immigration was still below its pre-war level when the Immigration Act of 1921 created a system of immigration quotas based on country of origin that severely reduced immigration from southern and eastern Europe. The quotas were tightened and made permanent in 1924 and remained in effect for several decades. In this paper, we analyze various sources of wage data collected in the 1910-1929 period to explore the impact of these significant disruptions in immigration on the wages of unskilled labor. We focus on unskilled labor because of the evidence that the flow of unskilled labor to the U.S. was most significantly affected by the war and the subsequent quota laws. We find compelling evidence that during the 1920s, the wages of unskilled laborers were higher across labor markets and industries that were more likely to have been affected by the disruptions in immigration.

The question of how the immigration restrictions of the 1920s affected wages has been explored in several recent studies, with Abramitzky et al. (2022) being most closely related to our own. That paper argues that because the quotas of the 1920s restricted immigration from some countries far more than others and because immigrants to the U.S. have typically tended to settle in areas in which many of their countrymen have previously settled, labor markets with a high percentage of past immigrants from these more restricted countries (in Abramitzky et al.'s (2022) terminology, areas with higher "quota exposure") would have been more affected by the reduction of immigration. This logic motivates a difference-in-differences style analysis of census data from 1900-1930, in which various outcomes in areas that in 1900 had larger numbers of immigrants from countries that would ultimately be subject to binding quotas were compared to outcomes in areas with fewer such immigrants. The findings of Abramitzky et al. (2022) tend to validate this

identification strategy in that they are consistent with economic logic: between 1910 and 1930, the foreign-born percentage of the population declined more in higher quota-exposed areas, while migration into those areas increased, both from other regions of the U.S. and countries not subject to the quotas. In rural areas more exposed to the quotas, farmers were more likely to buy tractors and switch to less labor-intensive crops. But, using an "income score" measure based on occupation, age, and state of residence[1], the authors found no evidence that wages increased more between 1910 and 1930 in more exposed areas. Indeed, the results suggest the opposite.[2]

There is a coherent economic story consistent with these results, in which the 1930 Census data reflect a new equilibrium following the shocks to immigration of the late teens and early 1920s – reductions in immigration led to rising wages in certain labor markets, which touched off internal migration and immigration from countries without quotas to those markets and eliminated the wage differentials. By using actual wage data collected throughout the teens and the 1920s and an identification strategy based on that of Abramitzky et al. (2022), we can search for evidence of some of the short-term and localized wage movements suggested by this story.[3] In doing so, we contribute to a better understanding of the economic impact of the end of the age of mass migration to the U.S. and offer evidence relevant to the more general question of the impact of immigration on wages.

[1] Since pre-1940 censuses do not include wage or income information, the authors used data from the 1940 census to predict income using age, 3-digit occupation and current state of residence, then used that estimated model to impute income for workers in the earlier censuses.
[2] Similar results based on imputed wages are reported in Tabellini (2019) and Price, Vom Lehm, and Wilson (2020).
[3] This story strongly suggests that rising wages triggered the migratory flows documented by Abramitzky et al. (2022) but does not require it. Migration to areas with labor shortages caused by falling immigration could have been due to more aggressive recruiting efforts by employers, which would have raised their labor costs without raising wages. Also, during a period in which frequent reductions in weekly hours of work were a nagging problem for workers in low wage labor markets, a higher probability of gaining steady full employment in an area experiencing a shortage of unskilled labor might have stimulated migration to that area even in the absence of a higher wage.

We are able to provide insights on the relationship between immigration disruptions and wages because we collected and digitized extensive data on wages from multiple industries and regions between 1910 to 1929. Our most comprehensive source of wage data is a series of industry wage surveys conducted by the Bureau of Labor Statistics (BLS) between 1910 and 1929. Each survey reports data on wages, hours, and employment in a particular industry, with data reported for detailed occupations within the industry and different cities or states. Many industries were surveyed repeatedly over the period, with more important industries being surveyed more often. To analyze the wages of laborers in the construction industry, we combine data from two sources. The first is the trade journal *American Contractor*, which from 1920 to 1928 occasionally published reports of the wages for construction laborers in over 50 cities based on surveys of local building contractors. We supplement this with information from annual surveys conducted by the BLS of union wage scales in construction in various cities. We also use a BLS survey of wages paid to municipal street laborers in over 2500 cities and towns in 1928. Finally, we examine the wages of farm laborers using the United States Department of Agriculture's (USDA) surveys of wages for farm labor in each state conducted in 1910, 1913, and 1919-1929.

Our research strategy uses measures created by Abramitzky et al. (2022) to classify local labor markets as more or less exposed to the legislated immigration quotas of the 1920s, based on the historical country-of-origin composition of their immigrant population. Because some of our wage data pertain to specific industries at the state level, we develop a modified version of these measures by defining "relevant labor markets" for particular industries based on the geographical distribution of the industry's employment within the state. Although Abramitzky et al.'s "quota exposure" measures were designed to quantify the differential impact of the legislated immigration quotas of the 1920s on local labor markets, we argue that the measures serve as good proxies for

the combined impact of the disruptions in immigration induced by World War I and subsequent changes in immigration policy on local labor markets in the 1920s.

With these exposure measures in hand, we then estimate a difference-in-differences model where we define the treatment as the relevant labor market's exposure to immigration disruptions, conditional on the initial foreign-born share of that labor market and additional controls. This estimation is based on the identifying assumption that wages for unskilled labor in relevant labor markets with a greater or lesser share of their foreign-born workers from quota-restricted countries would be on a similar trend if the war and the 1920s changes in immigration policy had not occurred.

Our findings show that during the 1920s, the relative wages of unskilled workers increased faster in labor markets and industries more exposed to the disruptions in immigration. This finding is consistent across sectors and regions, from wages in manufacturing and construction industries concentrated in urban areas to wages in agriculture more concentrated in rural areas. Moreover, our event study analysis suggests that relative wages in more exposed labor markets and industries increased early in the 1920s and remained elevated throughout the decade, indicating that World War I was also an important factor in suppressing labor supply and putting upward pressure on wages.

These findings do not necessarily contradict Abramitzky et al. (2022). Their conclusions regarding incomes in high vs. low quota exposure areas are based on area-wide averages for all workers, while we are looking only at the wages of common laborers. Further, given how the Abramitzky et al. income measure is constructed, its average value over time in an area would be unaffected by changes in the wages of common laborers since such workers were almost all assigned to the same 3-digit occupational category. Our results highlight the importance of using

actual wages and examining within-occupation changes in wages when examining the impact of immigration on wages.

Our paper complements a large body of research documenting the wide-ranging social and demographic effects of the end of mass immigration. Early work includes Greenwood and Ward (2015), Massey (2016), and Ward (2017) that examine how the quotas of the 1920s changed the skill selection and probability of return migration for European immigrants, and Collins (1997) and Xie (2017) have studied the relationship between the border closure and the advent of the Great Black Migration. More recent studies show that immigration quotas reduced scientific discovery and patentable ideas (Doran and Yoon, 2020; Moser and San, 2020) but also had a small (but detectable) effect on dampening the spread of communicable diseases (Ager et al., 2020). Areas that experienced falling immigration after the border closure also became more receptive to redistribution (Tabellini, 2019).

In addition, this study relates to the literature that examines the wage effects of immigration. Past studies on the wage effects of immigration have provided mixed results. Borjas et al. (1996) and Borjas (2003), for example, present evidence that immigration has a pronounced negative impact on natives' wages, while Card (1990) and Ottaviano and Peri (2012) report at most minor effects. Borjas (2017) emphasizes the importance of analyzing the wage effects of immigration on the workers who are the closest substitutes to the immigrants whose arrival or departure has created the labor supply shock; we have followed that advice by looking specifically at the wages of unskilled laborers.

In the next section, we document how the size and nature of immigration flows to the U.S. changed from 1910-1929. We also described some of the perceptions of and reactions to these changes by economists and other interested parties. Section III describes the BLS industry survey

data that we use to analyze the effect of immigration reductions on workers' wages in mining and manufacturing, along with our empirical methods and the results they produce. Sections IV, V, and VI present in a similar way our analyses of the wages of construction laborers, municipal street laborers, and farm workers, respectively. Section VII concludes.

II. The Reduction in Immigration after 1914 and Contemporary Perceptions of its Effects

During the five years 1910-1914, immigration to the U.S. averaged over 1 million per year, with the overwhelming majority of this being what was called at the time "the new immigration," that is, immigration originating from southern, central, and eastern Europe.[4] During the first full year of World War I, the number of immigrants to the U.S. dropped to 327 thousand, and over the 1915-1918 period, it averaged about 250,000 per year. Immigration numbers rebounded somewhat immediately following the war but were still below half of the pre-war levels, averaging about 450,000 per year in 1919-1921.

In May of 1921, the Emergency Immigration Act went into effect. The Act established "quotas" on immigration based on country of origin, with the number of immigrants allowed annually from a country limited to 3 percent of the number of immigrants from that country living in the United States as of the 1910 Census. These quotas intended to drastically reduce the "new immigration," and they did so. Immigration from much of Asia had already been banned by the Immigration Act of 1917. In practice, the new quotas eliminated immigration from the rest of Asia, including China. The law placed no quotas on immigration from the Western hemisphere nations. The Immigration Act of 1924 lowered the rate for calculating a country's quota to 2 percent. It changed the base for the quota calculation to the number of immigrants from that country living

[4] This contrasted with the “old immigration”, from northwestern Europe (including Germany) and the British Isles. The new immigration was believed by many to be the source of serious economic, social, and political problems for the US (Leonard 2016, chapter 9 discusses these arguments).

in the United States as of the 1890 Census, which disproportionately tightened the quotas for the southern and eastern European countries.

Immigration to the U.S. actually rose in the 1922-1924 period to over half a million a year before dropping to about 300,000 per year over the 1925-1929 period following the passage of the 1924 Act. The composition of the immigration flows in terms of the nation of origin of the immigrants also changed drastically, as was intended by the drafters of the 1921 and 1924 Acts. This is shown in Figure 1, which follows Abramitzky et al. (2022) in dividing immigrants to the U.S. into three categories: those from the "high restriction" countries of Asia and of southern, eastern and central Europe (countries for which the quotas introduced in the 1920s were generally binding); those from "low restriction" countries of northern and western Europe (for which quotas often did not bind); and those from western hemisphere nations, which were not restricted by the Acts.[5] As the figure shows, immigration during the pre-war period (1910-1914) was dominated by the new immigration. During the war (1915-1918), immigration from all countries fell considerably, but the reduction was largest from the countries that would later be subject to binding quotas. This was also true in the years between the war and the imposition of the quotas, despite the rebound of immigration from high-restriction countries to nearly a third of its pre-war level. The imposition of quotas in 1921 reduced the new immigration again, while the unrestricted immigration from the western hemisphere (mainly from Canada and Mexico) rose above its pre-war level, and immigration from the low-restriction countries came close to pre-war levels. Finally, immigration from the unrestricted countries remained above pre-war levels following the 1924 Act, while immigration from the high-restriction countries dropped below 50,000 per year.

[5] The regions and countries assigned to the three categories can be seen in Appendix table 1.

Our identification strategy assumes that the reduction in immigration flows to the U.S. from high-restriction countries had different effects in different local labor markets because, during the first 15 years of the 20th century, these flows were a much more important feature of some local labor markets than others. Figure 2 shows the absolute change in the annual number of immigrants from the three types of countries – high restriction, low restriction, and unrestricted – from 1915 to 1929, relative to annual averages during the five pre-war years. The figure shows that it is not unreasonable to argue that the "treatment' we identify by our approach – a significant and permanent reduction in the number of immigrants from the restricted countries – commenced in 1915 and remained fairly steady throughout the 1920s. Compared to pre-war flows, the average annual "loss" of new immigrants from the restricted countries to the areas where they would have settled was over half a million per year in all the subperiods shown in the figure. The changes in flows from the low-restriction and unrestricted countries were small by comparison. In a sense, the quotas of the 1920s simply wrote into law and thus perpetuated a new immigration regime created by the war.[6]

Economists and other interested parties quickly became aware of the impact of the war on immigration to the U.S. They noted the effect on labor markets of the decline in immigration. Warne (1915) observed that the war had almost cut off immigration, especially from countries like Italy, which had been sending immigrants in large numbers just before the war. Economist E.R.A. Seligman commented in 1916, "the tendency toward an increase in the wage rate has been considerably strengthened by the falling off in immigration." Emmet (1917) and Gormly (1918)

[6] The idea that a single new immigration regime began in 1915 with the war and was maintained by the quota legislation appears in the literature of the 1920s. Discussions of the reduction in the labor force due to immigration commonly refer to both the war and the legislation (e.g.. Douglas 1926, Wolman 1929, Jerome (1934, 3-4). Baker (1925) speaks of 1915-1920 as "six years without immigration"; Alvin Hansen, writing in 1923, speaks of the "scarcity of labor resulting from the restricted immigration of the last eight years.", and Slichter writing in 1929, discusses the effects of the reduction of immigration "since 1915".

described the positive impact of war-related reductions in immigration on the fortunes of labor unions in New York's garment industry. Charles Barnes, an official of New York State's Employment Bureau, spoke to the 1918 meeting of the AEA about employers' widespread complaints of "labor shortages." Most such shortages, he believed, resulted from the low wages and poor conditions the complaining employers offered. However, in the case of jobs requiring "laborers of strong physique," he opined that "there would seem to be a good reason to believe that there is an actual shortage in this line. Immigration of Huns, Poles, and Slavs has practically ceased. Many Greek and Italian reservists returned to their countries soon after the outbreak of the war. We have depended largely upon these races for our laborers, and very few native-born Americans go into this field (Barnes 1918, 150)".

In the immediate post-war years, various commentators took stock of the social and economic impacts of the war-induced reduction in immigration and speculated regarding the future of immigration to the U.S. Most believed that the reduction of immigration had increased wages but disagreed on whether that was a good thing, the extent to which the pre-war patterns would resume, and whether immigration should be permanently restricted in some way. Boris Emmet, an economist and expert on labor issues in the garment trade, discussed in a series of articles an issue of relevance to this paper – the differing effect of the war-related reductions in immigration on different labor markets (See, e.g., Emmet 1917, 1918).

During the years following the legislative imposition of quotas, there was a broad consensus among economists that limitations on immigration were placing upward pressure on wages. This was the opinion, for example, of Alvin Hansen (1923, 1925), William Berridge (1923), and Paul Douglas (1926), the period's leading compiler and analyst of wage statistics.[7] The

[7] See also, for example, Holmes (1924) and Soule et. al. (1926). Slichter (1929) is a dissenting opinion.

accumulating immigration statistics were making obvious another important change in immigration to the U.S. – a reduction in the proportion of unskilled workers among the admitted immigrants. As noted in the *Monthly Labor Review* (US BLS 1927):

> An equally significant although less observed change has occurred in the occupational character of the immigration. Broadly speaking, the tendency has been toward a sharp decrease in the proportion of unskilled laborers and a very sharp increase in the proportion of those with skilled trades, professions, or business training. This appears in striking manner when comparison is made between the four pre-war years, 1911 to 1914, and the two most recent years, 1925 and 1926 . . . (D)uring the pre-war period, 1911 to 1914, the average annual immigration of skilled laborers (154,317) was only about one-third as great as that of the unskilled (426,859), whereas in the period 1925, 1926 the average number of the skilled (55,673) was substantially as great as that of the unskilled (55,870)."

The disproportionate reduction in the supply of unskilled workers was even more marked if one looked at net migration figures.[8] This aspect of the immigration of the 1920s led Leo Wolman (1929, p. 439) to conduct an empirical test of the "common belief" that "the restriction of immigration, first by the war and later by legislation" had lowered the differential between skilled and unskilled wages. Still, the aggregate national wage indexes he examined provided only "partial support" for the hypothesis.

Thus, economists and others widely believed that the reductions in immigration that began in 1915 raised wages, particularly the wages of unskilled workers. We present evidence supporting this belief by analyzing wage data collected during 1910-1929 for four types of unskilled workers -- laborers in mining and manufacturing industries, construction laborers, municipal workers hired to clean and repair streets, and farm laborers. For each type of labor, we rely on different sources of wage data, necessitating different empirical procedures for each of the four analyses. However, in all four, we rely on the logic underlying the identification strategy employed in Abramitzky et

[8] Modern analyses of this phenomenon are provided by Greenwood and Ward (2015), Massey (2016), and Ward (2017)

al. (2022). It is based on the observation that in the decades before the war, the new immigrants from the countries of southern, eastern, and central Europe tended to cluster in certain regions and communities, with each new wave of immigrants being attracted to those communities in which previous immigrants from their town or region had settled. The assumption is that labor markets drawing their workers from such areas before 1915 were the labor markets that were more exposed to the immigration disruptions, that is, more likely to be affected by negative labor supply shocks when overall immigration was reduced by the war and then the quotas. An empirical implication of this logic is that if the reductions in immigration led to higher wages, wages for unskilled labor would have been higher in labor markets with higher exposure in the years following the war.

In the following four sections, we describe our tests of this hypothesis for each of the four types of labor for which we have data. The tests require a wage measure, a definition of the relevant local labor market corresponding to each wage observation, and a measure of quota exposure for each labor market. The measures and definitions we employ in each analysis are described at the beginning of each section, followed by a description of our empirical procedures and their results.

III. Wages for Unskilled Labor in Manufacturing and Mining

A. Wage Measures, Labor Market Definitions, and Quota Exposure Measures

Early in the 20th century, the Bureau of Labor Statistics (BLS) began conducting periodic surveys of wages, hours, and employment in various industries. The BLS would collect payrolls from samples of employers in an industry to create standardized measures of weekly earnings, hours (usual and actual), and hourly wages for a variety of narrowly defined occupations in the industry and then would report average values of these variables for several regions, states, or

cities.[9] The detailed descriptions provided by the BLS of how the data were collected and the variables defined support a conclusion that these data are accurate even by modern standards. We draw on surveys conducted from 1910 through 1929.

For most industries, surveys report data for a low-wage occupation with the title "laborer"; for the remaining industries, we chose the average wage for a large occupation at or near the bottom of the industry wage scale as the wage for unskilled labor in that industry.[10] We construct a sample that includes wages for 21 unskilled occupations in 19 industries.[11] We will subsequently refer to each occupation as a separate "industry."[12] The sample consists of over 1200 wage observations, each corresponding to a specific industry-jurisdiction-year combination, thus denoted w_{ijt}, where jurisdiction can be a state or a city, depending on the industry. Table 1 lists the industries and associated occupations included in the sample. Column 2 lists the number of observations contributed to the sample by each industry, and Column 4 the years for which data for that industry were reported in a survey.

As described earlier, our identification strategy requires us to classify labor markets as more or less exposed to the war and policy-induced disruptions in immigration based on the historical country-of-origin composition of their immigrant population. To that end, we first define the "relevant labor market" (denoted RLM in figures and tables) underlying each observation w_{ijt} as the area that supplied the unskilled labor to the establishments surveyed by the BLS in industry i and jurisdiction j. In the teens and twenties, unskilled workers were most likely to get to work on foot, or by trolly if they lived in a larger city, making the county where an establishment was

[9] For example, there were frequent surveys of sawmills in over 20 states – between 1910 and 1930, there were surveys done in 1910, 1911, 1912, 1913, 1915, 1919, 1921, 1923, 1925, and 1928.
[10] If, for an occupation, separate wages were reported for males and females, we used the male wage.
[11] Each industry in the data has one occupation with the exception of the coal industry, for which wages of three unskilled occupations were included: pick miners, laborers working inside the mine, and laborers working outside of the mine.
[12] Thus, the three coal mining occupations will be treated as separate "industries".

located probably the best empirically feasible approximation to the relevant labor market for that establishment. For most of the wage observations, however, jurisdiction *j* is a state, which creates a problem because we do not know the locations of the establishments surveyed by the BLS. Our response is to use census data to estimate the probability that a particular county was part of the relevant labor market of one of the BLS-surveyed establishments contributing data underlying the average wage observation in an industry. The early 20th century censuses recorded the industry of each working person surveyed. A county in state *j* in which no people were working in industry *i* was clearly not part of the relevant labor market underlying the wage observation for industry *i* in that state. In contrast, a county in which fifty percent of the state's total employment in industry *i* resided was very likely part of the relevant labor market for one or more of surveyed establishments in that state. Based on that logic, when a wage observation is reported at the state level, we include counties in state *j* as part of the relevant "*ij*" labor market with a probability weight based on the percentage of the state's total employment in industry *i* found in that county. We use the full count census of 1910 to construct these weights, which we denote α_{ijc},[13]

Next, we create county-specific exposure measures. For this, we use a set of "quota intensity" measures created by Abramitzky et al. (2022) of the extent to which the legislated quotas of 1921 and 1924 restricted immigration to the U.S. from each of 18 sending regions during the 1922-1930 period. Each measure is a ratio defined as the difference between an estimate of what the unrestricted flow from a region would have been in the absence of quotas and quota slots for that region, normalized by the unrestricted flow. The unrestricted flow from a region is estimated

[13] Column 1 of Table 1 shows the 3-digit industry codes from the 1950 coding system used to create the weights for the industries in our sample for which the data was reported by state. Arguably, 1920 data would provide a better approximation to the labor market underlying the "*ij*" observations at the time wages began to react to the reduction in immigration, but the reduction might also have altered the geographic distribution of the industry's employment as well, raising endogeneity concerns. Fortunately, using weights based on 1920 rather than 1910 data has very little effect on the results.

with a model that predicts immigration in the 1920s based on historical immigration flows for several decades prior to 1915. This ratio will be zero if the number of allocated slots for a region is greater than or equal to the estimate of the unrestricted flow from that region. It will be one if the quota is set equal to zero. The average ratio for the nine "high restriction" countries/regions is 0.925, the average ratio for the nine "low restriction" countries/regions is 0.07, and the average ratio is zero by definition for the four quota-exempted countries/regions (see Appendix Table 1; details on the model used to estimate unrestricted flows are found in Abramitzky et al. (2022).

The quota exposure measure for a county then weights the foreign-born proportion of the county's male prime-aged (16-65) labor force from each sending region by the quota intensity ratio for that region:

$$q_c = \sum_r \frac{FB_{rc1910}}{LF_{c1910}} \times QI_r \qquad (1)$$

where q_c is the quota exposure measure for county c, FB_{rc1910} is the number of foreign-born males from region r in the prime-aged labor force in county c in the 1910 census, LF_{c1910} is the prime-aged male labor force in the county, and QI_r is the quota intensity ratio for region r, as described above. The quota exposure measure for county c would be larger the larger its 1910 populations born in regions with higher quota intensity levels QI.

For wage observations reported at the state level, our quota exposure measure for an industry's relevant labor market is then the weighted average of the q_c values for the counties in that state, using the α_{cij} industry employment weights:

$$QE_{ij} = \sum_{c \in j} \alpha_{cij} \times q_c \qquad (2)$$

If, as in the meat packing and men's clothing industries, the jurisdiction is a city, the quota exposure measure for the observation is simply the quota exposure measure for the county in which the city is located, that is, $QE_{ij} = q_c$ as defined in equation (1).

While Abramitzky et al.'s (2022) quota exposure measures, upon which ours are based, were intended to capture the differential impact of the legislated immigration quota, we have argued that they provide a good proxy for the overall effect of the war plus the legislated quotas on local labor markets. Additional support for this argument is provided by the fact that Abramitzky et al. (2022) also constructed measures of how World War I restricted immigration flows from various sending regions, analogous to QI_r described above (see Appendix Table 1). We used them to calculate a "war exposure" measure we_c for each county, and the correlation between q_c and we_c is .87.

B. Empirical Procedures

Our empirical analysis begins by confirming that relevant labor markets with higher exposure to immigration disruptions lost more immigrant workers during the 1920s. Following that, we show evidence that the drop in immigration had a more positive effect on short-term wages for low-skilled occupations that historically relied more heavily on immigrant labor from regions that the changes in immigration policy would later restrict. To do so, we estimate various versions of the following equation:

$$(3) \quad y_{ijt} = \delta_{ij}^{0} + \delta_{i}^{1} + \gamma_t + \beta\left(QE_{ij} \times Post_t\right) + \Gamma\left(FB_{ij1910} \times Post_t\right) + \varepsilon_{ijt}$$

where j indexes jurisdiction and y_{ijt} is either the foreign-born share of the prime-age male workforce in the relevant labor market of industry *i* in jurisdiction *j* in year *t* or the real hourly wage rate (in 1929 prices) for unskilled workers in the relevant labor market of industry *i* in jurisdiction *j* in year *t*.[14] The primary variable of interest is the interaction between the quota exposure measure *QEij* and the post indicator ($Post_t$) representing the period after the diminution in the flow of immigration that had commenced with the war had had time to affect labor markets.

[14] When the outcome variable is the foreign-born share, we follow Abramitzky et al. (2022) and do not control for the initial foreign-born share in the relevant labor market.

The coefficient of interest β is identified by comparing relevant labor markets with different shares of workers from restricted regions before and after that point. General correlations between wages and ethnic composition of the *ij* labor force unrelated to the changes in immigration regime are absorbed by the labor market fixed effects $\delta^0 ij$, while general trends in unskilled wages are captured by the time fixed effects γ_t. In addition, we control for industry-specific fixed effects $\delta^1{}_i$. Along with our main estimation equation (3), we also perform an event-study type analysis by estimating the following specifications:

$$(4) \quad y_{ijt} = \delta_{ij}^0 + \delta_i^1 + \gamma_t + \Gamma\left(FB_{ij1910} \times Post_t\right) + \sum_k \beta_k \left(QE_{ij} \times I_k\right) + \varepsilon_{ijt}$$

where I_k are indicators that receive the value 1 if the year of the observation is k, and zero otherwise. The years in our analysis vary by industry and region and range from 1910 to 1929.

Relevant labor markets can be more exposed to the border closure policy because they have a higher foreign-born share of workers or a larger share of their foreign-born population from the restricted regions. In our specification, we interact the initial (1910) foreign-born share of the relevant labor market's population with the post-policy indicator to control for differential trends by initial foreign-born share, thereby identifying the effect of quota exposure from differences in the composition of the immigrant population.[15]

The identifying assumption of our analysis is that, conditional on controls for industry and initial foreign-born share, relevant labor markets with more immigrants from restricted regions would have followed similar wage trends absent the disruptions in immigration. We provide two pieces of evidence to support this assumption: (1) a Lasso procedure to search for other correlates of the quota exposure measure and (2) an event study analysis that tests for the existence of pre-

[15] Areas with different foreign-born shares in 1910 might have different wage trends if, for example, immigrants were more drawn to areas with more robust economies.

trends in the evolution of wages by interacting the quota exposure measure with individual year dummies.

There is some ambiguity about when the "post" period should be designated to have begun. As discussed above, the war significantly reduced immigration starting in 1915, so labor markets with high quota exposure would also have been more affected by the war-related reductions in immigration. However, it is also reasonable to suppose that it took some time for the war-related reductions in immigration to have discernable differential effects on wages in various local markets, as they did not (appreciably) remove previous immigrants from the labor force but only stopped the inflow of new immigrant labor to offset natural attrition. So arguably, the post period should not be considered to start immediately in 1915 or even 1916. For the regressions based on equation (3) specification, we have chosen 1920 as the beginning of the "post" period. However, our event study specifications, which include interactions of the quota exposure measure with single-year dummies, provide more fine-grained evidence on the temporal evolution of the impact on wages of the immigration reductions that began in 1915 and provide a check on our decision about the beginning of the post period.

C. Results

Column 1 of Table 2 shows the mean quota exposure measure for the overall sample and each of the 21 industries in the dataset. All the industries in our dataset were exposed to immigration disruptions to some extent, with the mean exposure at 6.2 percent. However, there is a considerable variation in mean exposure by industry, ranging from a high of 12 percent in men's clothing to a low of 3.4 percent for sawmill workers. Table 2 also provides information from the BLS data on mean hourly real wages by industry before and after the border closure policies of the 1920s. The mean hourly wage for pre-1920 observations was 34 cents per hour, expressed in

1929 prices. The mean hourly real wage was 46 cents on average for the post-1920 observations, implying a 35 percent increase in real wages. Table 2 also shows that industries with higher values of the quota exposure measure tended to experience higher wage growth. The correlation coefficient between the quota exposure measure and earnings growth rate is .56. Some notable examples include the men's clothing, cardboard box, and wool industries, which had an above-mean wage increase. At the same time, industries such as sawmill and hosiery with below mean exposure also had a below mean wage increase.

Column 1 of Table A2 considers the relationship between our relevant labor market by industry quota exposure measure and a series of economic and demographic controls from the 1910 census, including log total population, share urban, share black, share literate, the share of the labor force in the manufacturing sector, the share of the labor force in agriculture, the share of the labor force holding a white-collar occupation, log mean farm value, log mean farm output per acre, the share of owner-operated farms, the share of farmland under cultivation, the share of cultivated farmland planted in wheat, the share of farmland planted in cotton and share of farmland planted in hay/corn. None of these controls are selected by a Lasso procedure, with the exception of the share of the labor force in agriculture. We show that our results are robust to including this control in our analysis.

To test the key assumption that real hourly wages followed a similar pre-1920 trend in RLM-by-industry pairs with different levels of the exposure measure, we restrict our sample to the years 1910-1920. We first regress real hourly wages on the quota exposure measure, a linear trend, and the interaction between the trend and the exposure measure (Table A3, column 1). We then estimate nonlinear pre-policy trends by replacing the linear trend with dummy variables for 1911

to 1920 (Table A3, column 2). In neither case do we find significant evidence of a trend in real wages related to the exposure measure prior to 1921.

Panel A of Table 3 begins by confirming that RLM-Industry pairs with higher quota exposure measures experienced larger declines in their foreign-born share. We find that a one standard deviation increase in exposure (5 percentage points) is associated with a 2.3 percentage point decrease in RLM-Industry foreign-born share, representing a 7.8 percent decrease from the 1910 baseline. These estimates remain stable when controlling for linear trends of the 1910 RLM characteristics selected by the Lasso exercise in Table A2 and when including industry-by-year interactions.

Panel B of Table 3 documents that RLM-industry pairs that were more exposed to disruptions in immigration as measured by our QE_{ij} variable experienced greater increases in hourly wages in the 1920s, consistent with a scenario in which the emergence of labor shortages in those labor markets led to wage increases in the short term. Our preferred specification in column 1 of panel B indicates that a one standard deviation increase in exposure to disruptions in immigration increased real hourly wages by 4.56 cents relative to a pre-policy mean hourly wage of 34 cents (approximately a 13 percent increase). The estimates are robust to controlling for 1910 RLM characteristics and when controlling for nonlinear industry trends.[16]

Figure 3 shows event study estimates of the effect of exposure to immigration disruptions on real hourly wages. The pre-1920 estimates confirm the results of Table A2 that RLM-industry pairs with different exposure to immigration disruptions did not experience different trends in mean hourly wages in the pre-1920 years. The positive coefficients in the post-1920 years are consistent with the hypothesis that hourly wages for unskilled laborers were higher in markets

[16] All three specifications also produce a significant estimate of β when the log of the hourly wage is used as the dependent variable.

more affected by reductions in immigration, a relationship that had emerged by 1920 and persisted throughout the decade.

IV. Laborers in Construction

A. Wage Measure, Labor Market Definition, and Quota Exposure Measure

Throughout the 1920s, the trade journal *American Contractor* surveyed construction contractors in many cities, asking for the wages paid in their city to workers in the various construction trades. Wages are also reported for "laborers"; these are generally the lowest wages reported.

These data are not as reliable as the BLS industry survey data for at least two reasons. First, they are contractors' responses to a survey rather than having been collected by trained BLS agents from payroll records using a standardized approach. Second, the survey respondents often reported a range of wages rather than a single wage. We used the midpoints of these ranges, which introduces additional measurement error. We use data from over 50 cities and reports for Oct. 1920, Oct. 1921, May 1922, Oct. 1922, June 1925, Oct. 1925, May 1926, Sept. 1926, April 1927, July 1927, May 1928, and Oct. 1928. When there is more than one observation for a city in a given calendar year, we use the highest wage for that year, so that each observation corresponds to a unique city-year pair. The quota exposure measure we use for this sample is q_c for the county in which the city of the wage report is located.

American Contractor did not begin publishing wage surveys prior to 1920, and thus the surveys provide no information on geographic wage differentials for construction laborers in the pre-war period. For that reason, we use a second data source on construction wages. During the teens and the 20s, the BLS did annual surveys of labor union leaders in various cities, asking for "union scale of wages and hours of labor." Construction trade unions were among those surveyed,

and union officials in many cities reported a union wage for "building laborers." These data are also less reliable than the BLS industry surveys as indicators of actual wages paid. As the BLS noted when publishing the information:

> The union scale, as the term is here used, is a definite statement of wages and hours of labor agreed to by an employer and an organization of union men and under which union men actually are working. The union scale fixes the limit in only one direction. It establishes a minimum wage below which a member of the union will not work and a maximum of hours beyond which he will not work at the regular rate of pay. This report shows such minimum wages and maximum hours as are established in the scale. In certain cities and trades, however, workmen are paid more than the union scale, and in some instances employees work regularly less than the scale of hours."
>
> and
>
> No scale for any trade is published here unless it was so well established that at least 50 per cent of the members of the union were receiving the scale or above it. Information obtained on this question indicates that an insignificant number of union members were working for less than the scale, while a considerable number were receiving more than the scale. Some trades were not organized in certain cities, and some were organized only in part. When organized in part, with a scale in force for such men as were organized, the scale is published (BLS 1919, 11-12)

Cities drop in and out of the survey over the years, and it seems likely that one reason for this is changes in the extent of unionization in various cities. We use data for 45 cities between 1910-1915 and 1920-1928. Our quota exposure measure is q_c for the county in which the city is located.

We find that the relationship between laborers' wages and quota exposure at the city level in the 1920-28 union scale data is similar to that found in the *American Contractor* data. This suggests that the BLS union scale data and the *American Contractor* data accurately reflect the true pattern of geographic wage differentials, so we can use the 1910-1915 union scale data to estimate the relationship between construction laborers' wages and quota exposure during the pre-war period.

B. Empirical Procedures

The *American Contractor* data includes records from 1920 to 1928, after the immigration disruptions had started. Therefore, we cannot estimate an equation in equation (3) style that requires us to have both pre- and post-policy observations. Instead, we estimate a cross-sectional regression equation that examines the relationship between real hourly wages for different occupations in the construction industry in the post-1920 period. Specifically, we estimate the following equation:

$$(5) \quad y_{cst} = \alpha_s + \gamma_t + \beta QE_{cs} + \Gamma FB_{cs1910} + \varepsilon_{cst}$$

where y_{cst} is mean real hourly wages for construction laborers, hod carriers, or bricklayers, in city c in state s in year t. We control for state fixed effects α_s and time fixed-effects γ_t in addition to the city's foreign-born share of construction workers in 1910.

Our empirical analysis for the construction union sample is identical to the analysis we perform on the BLS manufacturing and mining data and includes a difference-in-differences estimation of equation (3) and an event study estimation of equation (4) at the city level.

To determine which city-level controls to include in our estimation, columns 2-3 of Table A2 consider the relationship between city and industry (construction) exposure measure and a series of economic and demographic controls from the 1910 census. The variables selected by a Lasso procedure for the *American Contractor* sample are the share of agricultural workers and cultivated farmland in the county where the city is located. For the construction union sample, the variables selected by the Lasso procedure are the log of the total population, the share of urban population, and the share of workers in agriculture in the county where the city is located. We show that our results are robust to including these controls in our analysis.

C. Results

Table A4 lists the cities for which our construction worker data are available by source and coverage. Overall, data on wages in the construction industry is available for 77 different cities, with 58 cities represented in the *American Contractor* data, 45 cities in the union scale data, and 35 cities included in both surveys.

The local labor markets represented in our construction wage data had varying exposure to immigration disruptions. Column 1 of Table 4 shows that the overall mean exposure measure is 7.2 percent for the cities in the *American Contractor* sample. The average exposure for the cities with a higher-than-median exposure measure is 12.3 percent, while the average for cities below the median is 2.5 percent. The corresponding measures for the union scale sample are 7.6 percent, 11.9 percent, and 3.5 percent.

Table 4 also provides information on mean hourly real wages before and after the border closure policies of the 1920s. Panel A shows wage data from the American Contractor sample. The mean real wage was 52.6 cents in 1920 (column 2) and 53.5 cents in 1928 (column 3), implying a 1.66 percent increase in hourly wages. The data also reveal the relationship between the exposure measure and wage growth. When splitting the sample into cities below and above median exposure, we find that cities with above-median exposure experienced almost 9 percent growth in real wages in this period, compared to a drop of approximately 5 percent for cities with below-median exposure. We find a similar pattern in Panel B, which shows summary statistics from the union wage scale data before and after 1920 (columns 2-4 in panel B). We find that cities with above-median exposure to the immigration disruptions also experienced a more considerable union wage scale growth, consistent with increased bargaining power for labor unions because of a reduction in labor supply.

Column 1 of Table 5 shows that cities with higher disruption exposure measures experienced larger declines in the share of foreign-born workers in the construction industry. We find that a one standard deviation increase in the exposure measure (6 percent) is associated with a 2.3 percentage point decrease in the city's foreign-born share of construction workers, representing a 10 percent decrease from the 1910 baseline.

Columns 2-4 of Table 5 document that cities that were more exposed to the reduction in immigration experienced increases in hourly wages in the 1920s for unskilled construction occupations, suggesting labor shortages in such markets that were addressed by wage increases in the short term. All estimates are for the post period (1920-1928) and therefore we cannot include city fixed effects in addition to the city's quota exposure measure. Thus, we include state fixed effects instead. In addition, we control for the relevant city characteristics selected by the Lasso procedure in column 2 of Table A2, in addition to a control of the city's population. For example, Column 2 indicates that a one standard deviation increase in the exposure measure increased the real hourly wages of common laborers in construction by 10.3 cents relative to a pre-policy mean hourly wage of 48 cents (approximately 21 percent increase). Columns 3-4 of Table 5 suggest that the wages of less skilled workers were affected more than the wages of more skilled workers by the reduction in immigration, in keeping with economists' expectations at the time. Cities with higher quota exposure measures experienced increases in real hourly wages for hod-carries and no changes in wages for bricklayers, considered semi-skilled and high-skilled occupations in the construction industry, respectively. However, both estimates are statistically insignificant, and the suggested relative increases associated with a one standard deviation increase in the quota exposure measure in real hourly wages were approximately 15 percent for hod-carriers and 1.8

percent for bricklayers, which is considerably lower compared to the 21 percent increase in real hourly wages of unskilled laborers.

Panels A-C of Figure 4 show the year-by-year estimates of exposure to immigration disruptions on the real hourly wages of laborers, hod-carriers, and bricklayers, respectively. The figures complement Table 5 by showing that the year-by-year coefficients are positive and significant for laborers but insignificant (yet positive) for hod-carriers and bricklayers. This result would follow logically from the disproportionate reduction of unskilled immigration in the post-quota era noted by contemporary observers.

Next, we examine the union scale sample. Since the union scale sample contains both pre- and post-policy periods, we can use it to examine the validity of our identification strategy, much as we did with the BLS manufacturing and mining wage data. Columns 5 and 6 of Table 5 show that cities in the construction union sample with higher exposure to immigration disruptions experienced more significant drops in their foreign-born share of workers in construction and experienced a larger increase in their construction laborers union wage scale, consistent with our findings in the *American Contractor* sample.

The identification assumption of our empirical specification requires that union wage scales follow a similar pre-1920 trend between cities with different levels of exposure to the policy. In testing this assumption, we restrict our sample to the available pre-policy years 1910-1915. We first regress union wage scales on border closure exposure measure, a linear trend, and the interaction of the last two variables (Table A3, column 3). We then estimate nonlinear pre-policy trends by replacing the linear trend with dummy variables for 1911 to 1915 (Table A3, column 4). In both cases, we find that construction union wage scales followed the same pre-policy trend across cities with different levels of quota exposure.

Figure 5 shows event study estimates of the effect of the reduction in immigration on construction union scale wages. The pre-1920 estimates confirm the results of Table A3 that cities with different exposure measures did not experience different trends in union wage scales in the pre-1920 years. The positive coefficients in the post-1920 years are consistent with the positive effect of immigration reductions on wages. They indicate that construction union wage scales increased early in the 1920s and remained elevated for high-exposure cities throughout this decade.

VI. Municipal Street Laborers

In 1928, The BLS conducted a survey of the wage rates and hours of work for unskilled workers hired by municipalities to clean and repair streets. The bulletin containing the results of the survey begins thusly:

> The entrance wage rates and regular hours of labor of unskilled street laborers directly hired by more than 2,600 cities and towns in the United States are here presented. The rates shown are those paid by the municipalities to common laborers when first engaged on the construction, repairing, or cleaning of streets. Higher rates may be paid for greater skill or after a period of service. The questionnaires for this inquiry were sent out by the United States Bureau of Labor Statistics, under date of October 31, 1928, to all cities and towns having a population of 2,500 or over according to the 1920 census. About 93 per cent of these municipalities replied. (BLS 1929, 1)

In most cases, a municipality would report one wage rate. When more than one wage rate was reported, we used the lowest wage, and when a range was reported, we used the bottom of the range. Our exposure variable for these wage data was q_c for the county in which the city was located. Towns and villages which overlapped or were very close to a county line in 1930 were excluded from the sample, leaving over 2300 cities and towns with usable wage data.

Table 6 provides information on the mean quota exposure measure and mean hourly street laborer wage in 1928 for the sample of cities and towns, in column 1 for the full sample, and in

columns 2-5 for the policy exposure quartiles. The sample contains 2,361 cities and towns with an average exposure measure of 5.4 percent and mean hourly wage of 43 cents. The scope of municipalities in the sample is large: the average population is 24,890 but ranges from 2500 to 6.1 million (New York City). Columns 2-5 show that cities with a higher exposure measure also had higher wages for street laborers. For example, a city in the bottom quartile of exposure, such as Tulsa, OK, had a mean quota exposure measure of 0.2 percent and an average hourly wage of 31 cents compared to a city in the top quartile (such as New York City), that had mean quota exposure of 14 percent and an average hourly wage of 52 cents.

Figure 6 shows the relationship between quota exposure and hourly wages by exposure quantile. The vertical axis on the left demonstrates that the exposure measure increases exponentially by quantiles. The vertical axis on the right shows that hourly wages of street laborers increase linearly in quota exposure quantile, suggesting that cities and villages whose labor supply was more affected by the disruptions in immigration due to the war and the quota legislation had to pay higher wages to their lowest-skilled employees in the late 1920s.

Figure 7 further documents that towns and villages more exposed to disruptions in immigration also had higher hourly wages for street laborers. The graph depicts the partial relationship between exposure and hourly wages of street laborers after controlling for the variables selected by a Lasso procedure, whose results are presented in column 4 of Table A2, along with state fixed effects. The figure suggests that a percentage point increase in a town's exposure increased hourly wages for street laborers by .66 percent.

VI. Wages of Farm Labor

A. Wage Measure, Labor Market Definition, and Quota Exposure Measure

Sporadically during the teens and then regularly starting in the early 1920s, the United States Department of Agriculture (USDA) compiled statistics on the average wages of agricultural laborers by state based on information provided by an extensive network of volunteer reporters. Average wages for each of the 48 states were reported for 1910, 1913, and annually from 1919. We use the figure reported for "average monthly earnings (without board)," expressed in 1929 dollars. For 1923-1929, statistics were given for several months of the year, and we used the October wage. For analysis purposes, we created one pre-war wage variable from each state: the average of the 1910 and 1913 wages.

To define the state's quota exposure variable, we sought to use a population that closely approximated the labor pool from which farmers in the state hired workers. So, rather than defining the variable over the state's entire labor force, we define it based on those in the state who were classified as "farm laborers" (1950 Census occupation code 820) in the 1910 full count census. Thus, the quota exposure variable for state s is defined as

$$Q.E._s = \sum_r \frac{FBFW_{rs1910}}{FW_{s1910}} XRM_r \qquad (6)$$

where $FBFW_{rs1910}$ is the number of farm workers from region r working in state s in 1910, FW_{s1910} is the total number of farm workers in state *s* in 1910, and RM_r is the restriction measure for region *r*, as defined before.

The rationale for defining the quota exposure variable using the population of farm workers is that the ethnic composition of farm workers in a state can be quite different from the ethnic composition of the state's labor force. A possible concern with this approach is that some

unskilled workers doing something other than farm labor could be part of the relevant labor market for farm workers even in the short run.

B. Empirical Procedures and Results

Table 7 presents the results of regressions of the same form as equation (3), with each observation corresponding to a state-year combination. The exposure variable is defined as in equation (6), and the foreign-born share variable is defined over the state's population of farm workers—the bottom rows of the table show summary statistics for the wage and exposure variables.

Column 1 of Table 7 confirms that states with an agriculture industry that had greater exposure to the immigration disruptions experienced larger declines in the share of foreign-born workers in agriculture. We find that a one standard deviation increase in a state's exposure (9 percent) is associated with a 1.7 percentage point decrease in the state's foreign-born share of farm workers, representing an 11.4 percent decrease from the 1910 baseline. Columns 2-3 of Table 7 document that states whose farm labor supply was likely more affected by the disruptions in immigration experienced larger increases in farm wages in the 1920s. Our preferred estimate in column 3, which includes the selected state controls by a Lasso procedure (Table A2, column 5), suggests that a one standard deviation increase in the quota exposure measure increased the real hourly wages by 2.9 cents relative to a pre-policy mean hourly wage of 64 cents (approximately 4.6 percent increase).

Figure 8 shows event study estimates of the effect of immigration reductions on a state's mean farm wages. The coefficients on the pre-war and 1919 wages are small and statistically insignificant, consistent with the identification assumption that states with different exposure to the immigration reductions did not experience different trends in farm wages in the pre-1920 years.

The positive coefficients in the post-1920 years are consistent with a positive effect of exposure to immigration reductions on wages. However, they become significant only in the second half of the decade. These results support the conclusion that immigration reductions led to rising wages of farm labor, which provides one causal explanation for Abramitzky et al.'s (2022) finding of a positive relationship between a rural area's quota exposure and both the level of farm mechanization and share of farm acreage planted with less labor-intensive crops in the 1920s.

VII. Conclusion

This paper explores the effect on the wages of unskilled labor of the substantial disruptions to immigration to the United States caused by World War I and subsequent "quota" legislation of 1921 and 1924. To identify the effect of these immigration reductions on workers' wages, we rely on the insight of past researchers that the size of the negative labor supply shock experienced by a local labor market as a result of the war and policy-related immigration reductions would have depended on the ethnic composition of the labor force in that market prior to the disruption of immigration. We apply this identification strategy to various sources of historical data on the actual wages being paid during the period 1910-1929 to unskilled laborers, the group whose wages were most likely to have been affected by the disruptions to immigration.

We have described our analyses of wages paid to laborers in the mining and manufacturing industry, wages paid to construction workers, wages of street cleaners and repair workers hired by municipalities, and wages of farm laborers. All four analyses support the same conclusion: during the 1920s, unskilled workers in labor markets that experienced larger adverse shocks to their labor supply as a result of the disruption to immigration were being paid higher wages. This result is robust to the inclusion of a variety of pre-war labor market characteristics that might have been correlated with wages or wage growth in the pre-war period. We also showed that this pattern of

geographic wage differentials did not exist before the war and that the post-war pattern was not a result of differential trends across labor markets in the pre-war period.

Our finding of higher wages in areas more affected by the reductions in immigration is consistent with the finding of earlier researchers that by 1930, these areas had received more significant inflows of internal migrants and immigrants from countries unaffected by the immigration quotas imposed in the early 1920s. They are also consistent with evidence that farmers in rural areas that lost more immigrant labor due to the quotas were quicker to mechanize and shift to less labor-intensive crops. A matter for future research is whether these increases in the wages of unskilled labor contributed to the wave of mechanization in manufacturing that was a source of comment and concern among economists and policymakers in the 1920s (Woirel 2006).

References

Abramitzy, Ram, Philipp Ager, Leah Platt Boustan, Elior Cohen, and Casper Worm Hansen (2022). "The Effect of Immigration Restrictions on Local Labor Markets: Lessons from the 1920s Border Closure," *American Economic Journal: Applied Economics.*

Ager, Philipp, James J Feigenbaum, Casper Worm Hansen, and Hui Ren Tan. 2020. "How the Other Half Died: Immigration and Mortality in U.S. Cities." National Bureau of Economic Research Working Paper 27480.

Baker, O. E. 1924. "The Potential Supply of Wheat." Economic Geography 1, no. 1: 15-52

Barnes, Charles B. 1918. "Employment and the Labor Market." *The American Economic Review* 8, no. 1: 171–76.

Berridge, William A. 1923. "Industrial Employment in the Present Business Cycle." *The Review of Economics and Statistics* 5, no. 4 (1923): 292–300.

Borjas, George J. 2017. "The Wage Impact of the Mariolitos: A Reappraisal," *Industrial and Labor Relations Review,* 70, no. 5:1077-1110.

Borjas, George J. 2003. "The Labor Demand Curve Is Downward Sloping: Reexamining the Impact of Immigration on the Labor Market." *The Quarterly Journal of Economics* 118, no. 4: 1335–74.

Borjas, George J., Richard B. Freeman, and Lawrence F. Katz. 1996. "Searching for the Effect of Immigration on the Labor Market." *The American Economic Review* 86, no. 2: 246–51.

Card, David. 1990. The Impact of the Mariel Boatlift on the Miami Labor Market. *Industrial and Labor Relations Review*, Vol. 43, No. 2: 245-257.

Collins, William J. 1997. "When the Tide Turned: Immigration and the Delay of the Great Black Migration." The Journal of Economic History, 57(3): 607-
632.

Doran, Kirk, and Chungeun Yoon. 2020. "Immigration and invention: Evidence
from the quota acts." Unpublished manuscript.

Douglas, Paul H. 1926. "The Movement of Real Wages and Its Economic Significance." The American Economic Review, vol. 16, no. 1: 17–53.

Emmet, Boris. 1918. "Trade Agreements in the Women's Clothing Industry of Chicago." *Monthly Review of the U.S. Bureau of Labor Statistics* 6, no. 2 (1918): 65–76.

Emmet, Boris. 1917. "Trade Agreements in the Women's Clothing Industry in New York City." *Monthly Review of the U.S. Bureau of Labor Statistics* 5, no. 6: 19–39.

Gormly, Matthew. 1918. "Trade Agreements in the Men's Clothing Industry of New York City." *Monthly Review of the U.S. Bureau of Labor Statistics* 6, no. 1 (1918): 18–26.

Greenwood, Michael J., and Zachary Ward. 2015. "Immigration quotas, World War I, and emigrant flows from the United States in the early 20th century." *Explorations in Economic History*, 55: 76-96.

Hansen, Alvin H. 1925. "Factors Affecting the Trend of Real Wages." *The American Economic Review* 15, no. 1: 27–42.

Hansen, Alvin H. 1923. "The Outlook for Wages and Employment." The American Economic Review 13, no. 1: 27–44.

Holmes, C. L. 1924. "The Economic Future of Our Agriculture." Journal of Political Economy 32, no. 5: 505–25.

Jerome, Harry. 1934. The Mechanization of Industry. New York: NBER.

Leonard, Thomas. 2016. *Illiberal Reformers: Race, Eugenics, and American Economics in the Progressive Era*. Princeton: Princeton University Press.

Massey, Catherine G. 2016. "Immigration quotas and immigrant selection." Explorations in Economic History, 60: 21-40.

Moser, Petra, and Shmuel San. 2020. "Immigration, Science, and Invention. Lessons from the Quota Acts." Available at SSRN 3558718.

Ottaviano, Gianmarco I. P., and Giovanni Peri, 2012. "Rethinking The Effect Of Immigration On Wages," Journal of the European Economic Association, European Economic Association, 10, no. 1: 152-197

Price, Joseph, Christian vom Lehn, and Riley Wilson. 2020. "The Winners and Losers of Immigration: Evidence from Linked Historical Data." National Bureau of Economic Research Working Paper 27156.

Edwin R. A. Seligman. "The Economic Influence of the War on the United States." *The Economic Journal* 26, no. 102 (1916): 145–60.

Slichter, Sumner H. 1929. "The Current Labor Policies of American Industries." *The Quarterly Journal of Economics* 43, no. 3: 393–435.

Soule, George, David A. McCabe, Magnus W. Alexander, and Paul F. Brissenden. 1926. "The Movement of Real Wages-Discussion." The American Economic Review 16, no. 1: 59–70.

Tabellini, Marco. 2019. Gifts of the Immigrants, Woes of the Natives: Lessons from the Age of Mass Migration." The Review of Economic Studies, 87(1): 454-486.

United States Bureau of Labor Statistics. 1929. Wages and Hours: Common Street Laborers 1928. Bulletin 484. Washington DC: USGPO.

United States Bureau of Labor Statistics. 1927. "Changes in Occupational Character of Immigration Since the War." *Monthly Labor Review* 24, no. 2: 1–7.

United States Bureau of Labor Statistics. 1919. Union Scale of Wages and Hours of Labor, May 15 1918. Bulletin 259. Washington DC: USGPO.

United States Bureau of the Census. 1960. Historical Statistics of the United States : Colonial Times to 1957 https://fraser.stlouisfed.org/title/1208, accessed on June 11, 2022.

Ward, Zachary. 2017. "Birds of passage: Return migration, self-selection and immigration quotas." *Explorations in Economic History*, 64: 37-52.

Woirel, Gregory R. (2006) "New Data, New Issues: The Origins of the Technological Unemployment Debates". *History of Political Economy* 38 (3): 473–496.

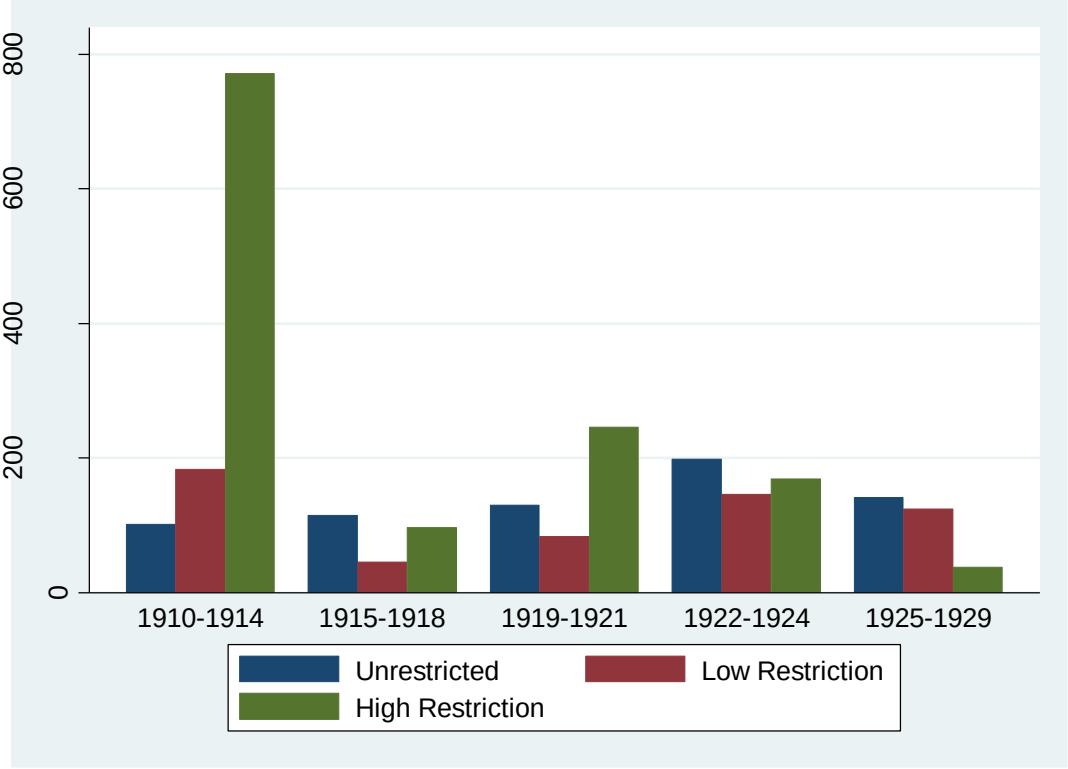
Wolman, Leo. 1929. "Labor". Chapter 6 in Committee on Recent Economic Changes of the President's Conference on Unemployment. *Recent Economic Changes in the United States*, Vol. 2. New York: NBER

Xie, Bin. 2017. "The effects of immigration quotas on wages, the great black migration,

and industrial development." IZA Discussion paper No. 11214, Available at SSRN 3092558.
Warne, Frank Julian. "The War and Immigration." *The Annals of the American Academy of Political and Social Science* 61 (1915): 30–39.

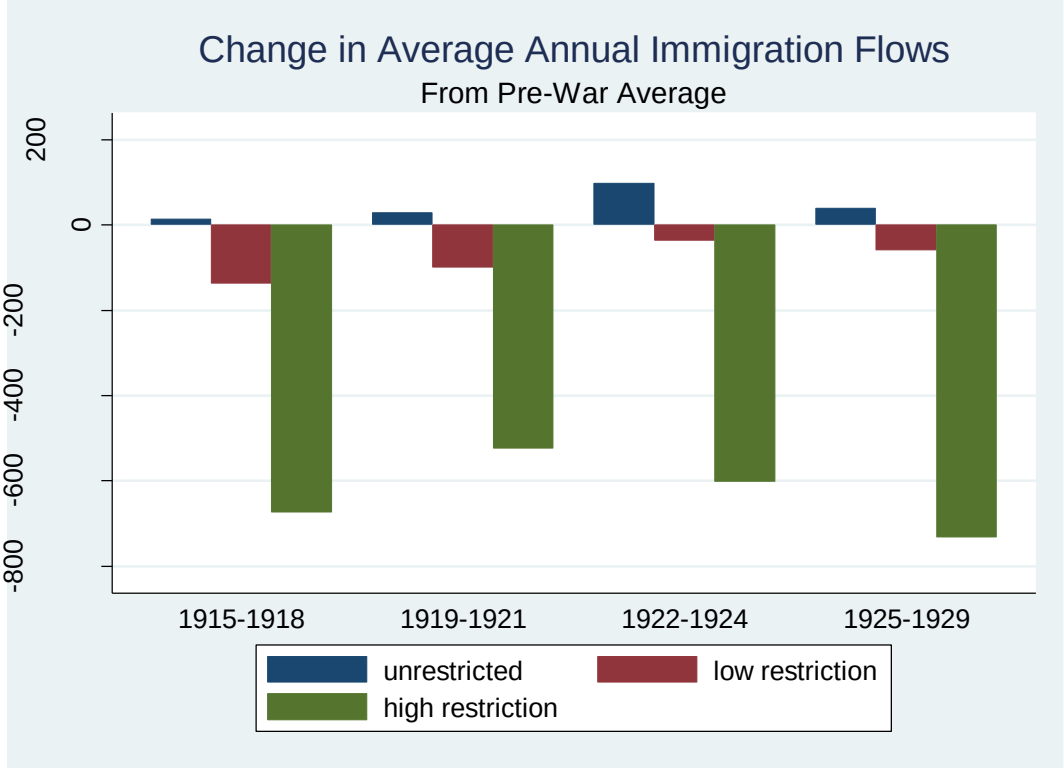
Figures

Figure 1: Immigrant Flows to the U.S. by Quota Restriction Category



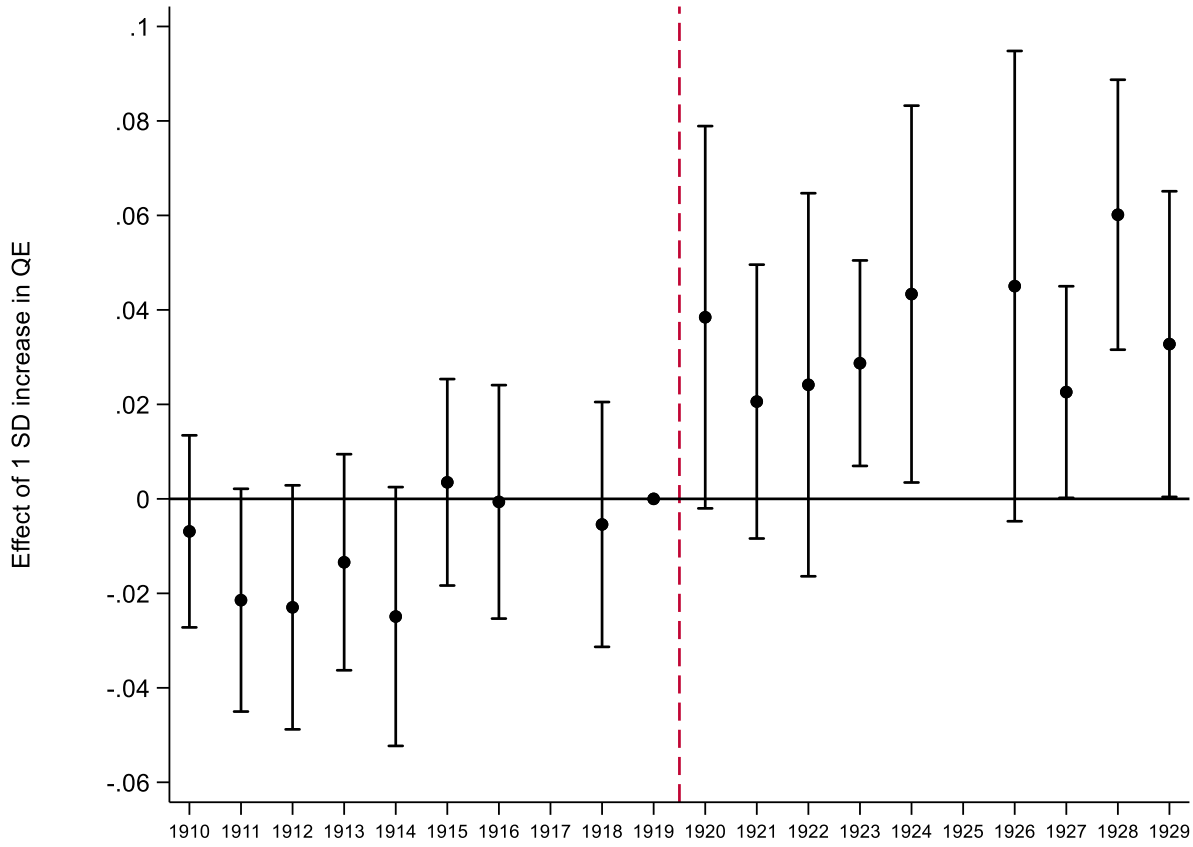
Source: Historical Statistics of the United States: Colonial Times to 1957, Series C-88-116. Series C 88-114. "Immigrants, by Country: 1820 to 1957". See Appendix Table 1 for a list of countries/regions and their classification.

Figure 2: Change in Average Annual Immigration Flows by Quota Restriction Category



Source: Historical Statistics of the United States: Colonial Times to 1957, Series C-88-116. Series C 88-114. "Immigrants, by Country: 1820 to 1957". See Appendix Table 1 for a list of countries/regions and their classification.

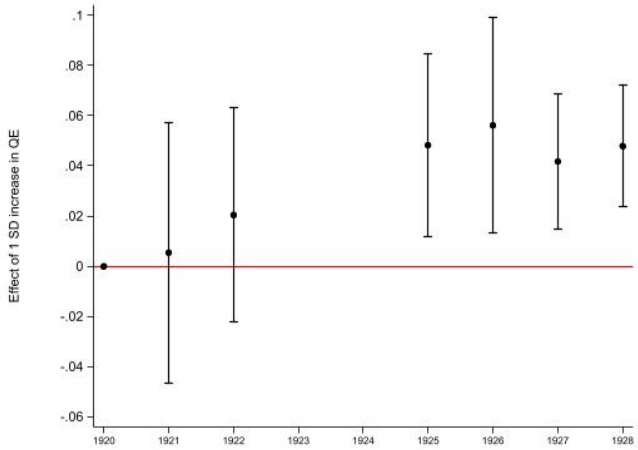
Figure 3: Event-Study Estimates of Quota Exposure on Real Hourly Wages - Manufacturing and Mining



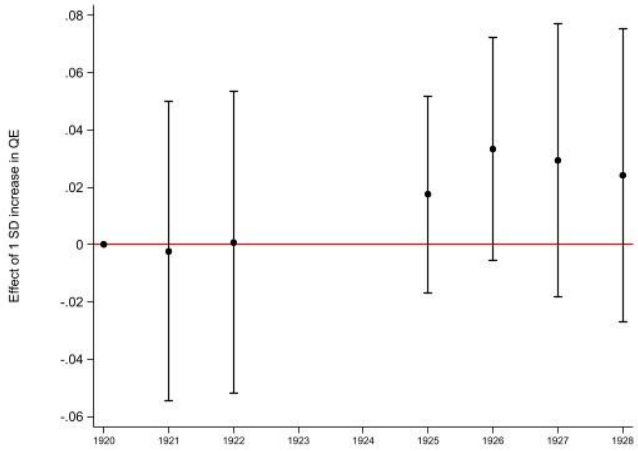
Notes: The figure plots the event-study coefficients of the interaction between quota exposure measure and year from equation (4) scaled by the standard deviation of the relevant labor market exposure measure. The regressions include relevant labor market fixed effects, year fixed effects, industry fixed effects, and the controls selected by the Lasso procedure in Table A2. The vertical bars show 95% confidence intervals. Standard errors are clustered at the relevant labor market level.

Figure 4: The Effect of Quota Exposure on Hourly Wages - Construction

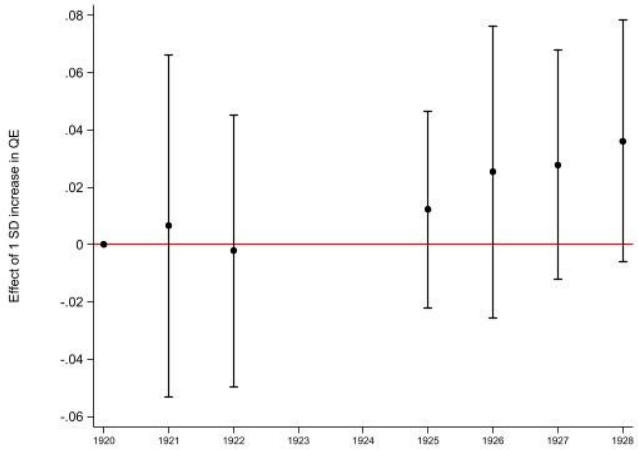
A. Laborers (Low-Skill)



B. Hod-Carriers (Medium-Skill)

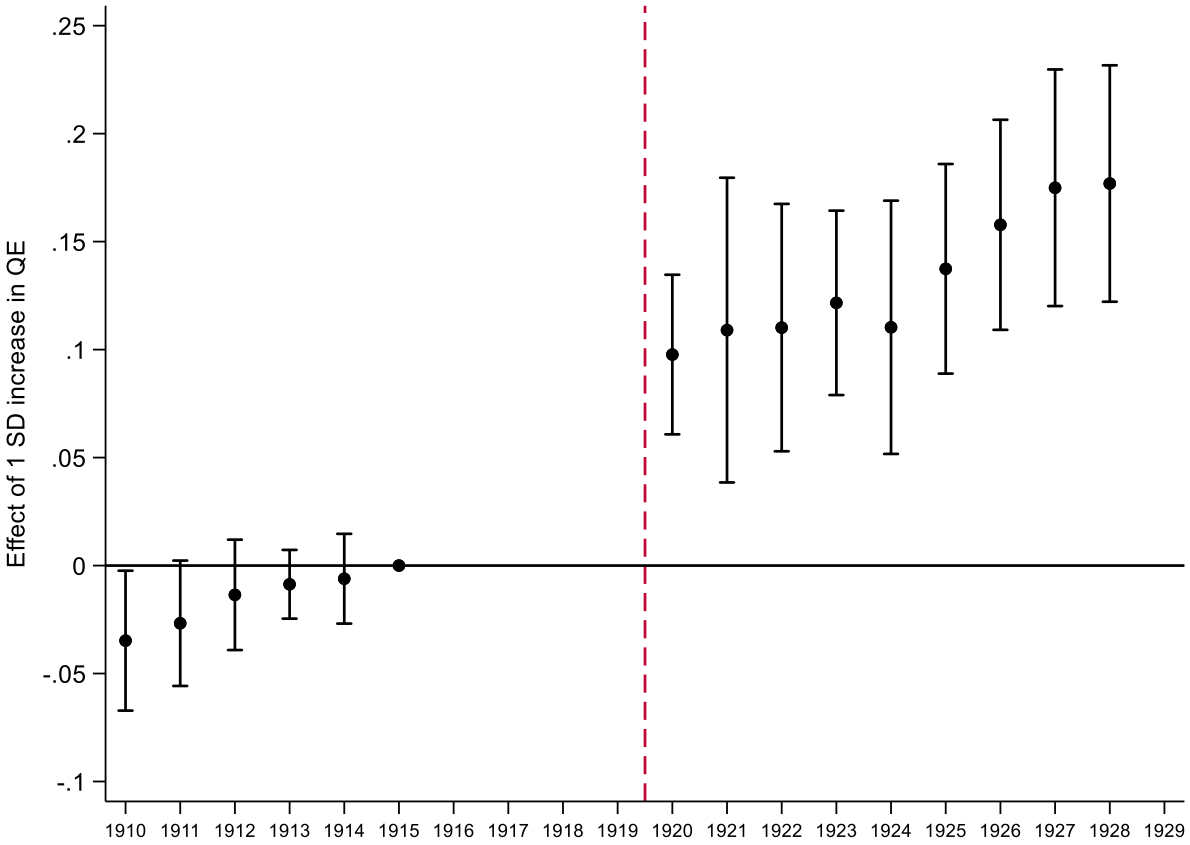


C. Bricklayers (High-Skill)



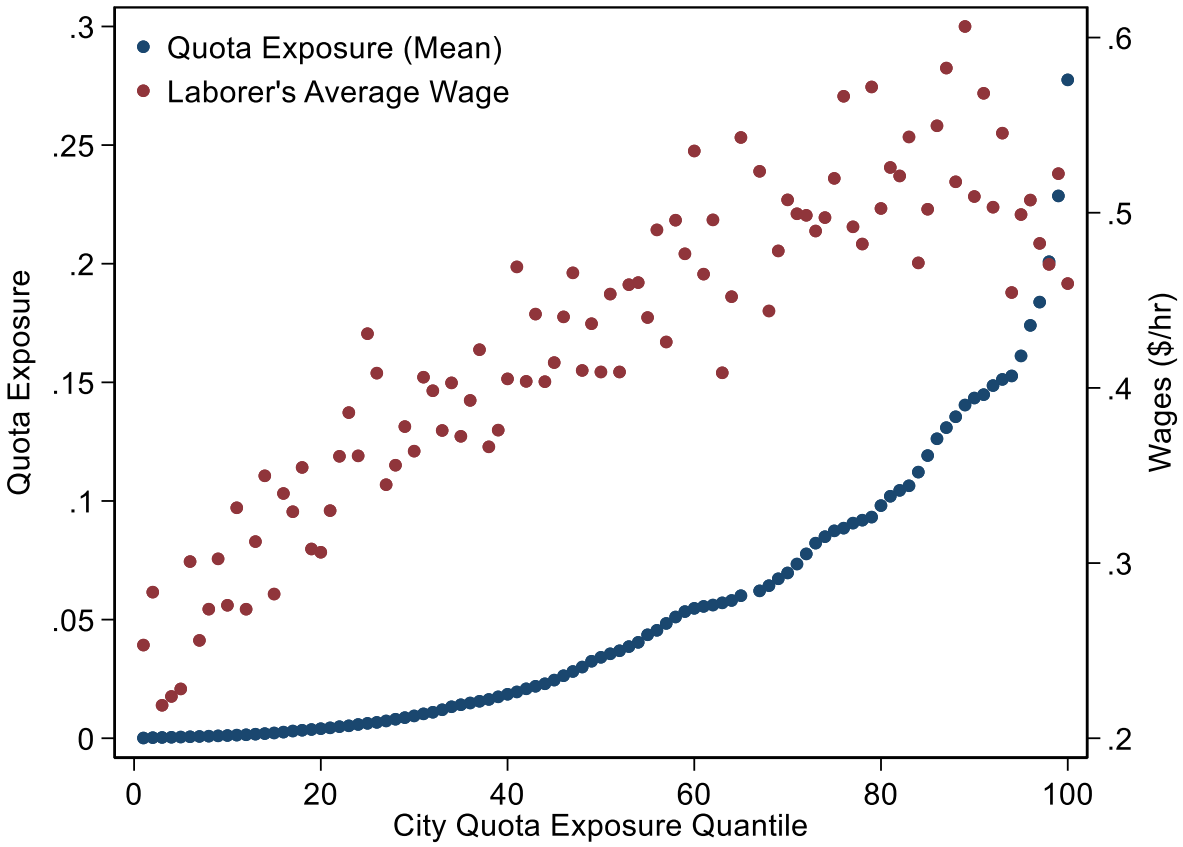
Notes: The figure plots the event-study coefficients of the interaction between quota exposure measure and year from equation (4) scaled by the standard deviation of the city exposure measure. The regressions include state fixed effects, year fixed effects, and the controls selected by the Lasso procedure in Table A2. The vertical bars show 95% confidence intervals. Standard errors are clustered at the city level.

Figure 5: The Effect of Quota Exposure on Construction Union Scale Wages



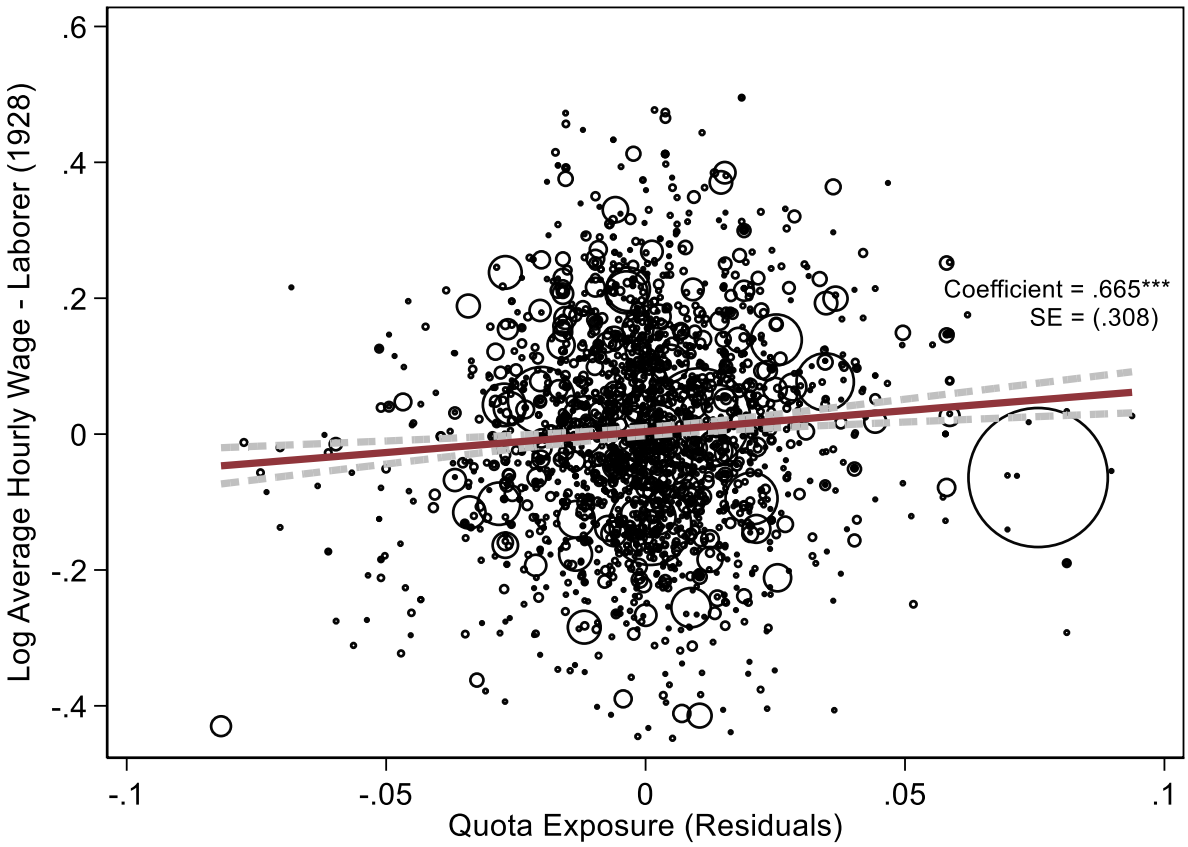
Notes: The figure plots the event-study coefficients of the interaction between quota exposure measure and year from equation (4) scaled by the standard deviation of the city exposure measure. The regressions include city fixed effects, year fixed effects, and the controls selected by the Lasso procedure in Table A2. The vertical bars show 95% confidence intervals. Standard errors are clustered at the city level.

Figure 6: The Relationship Between Quota Exposure and Hourly Wages by Exposure Quantile



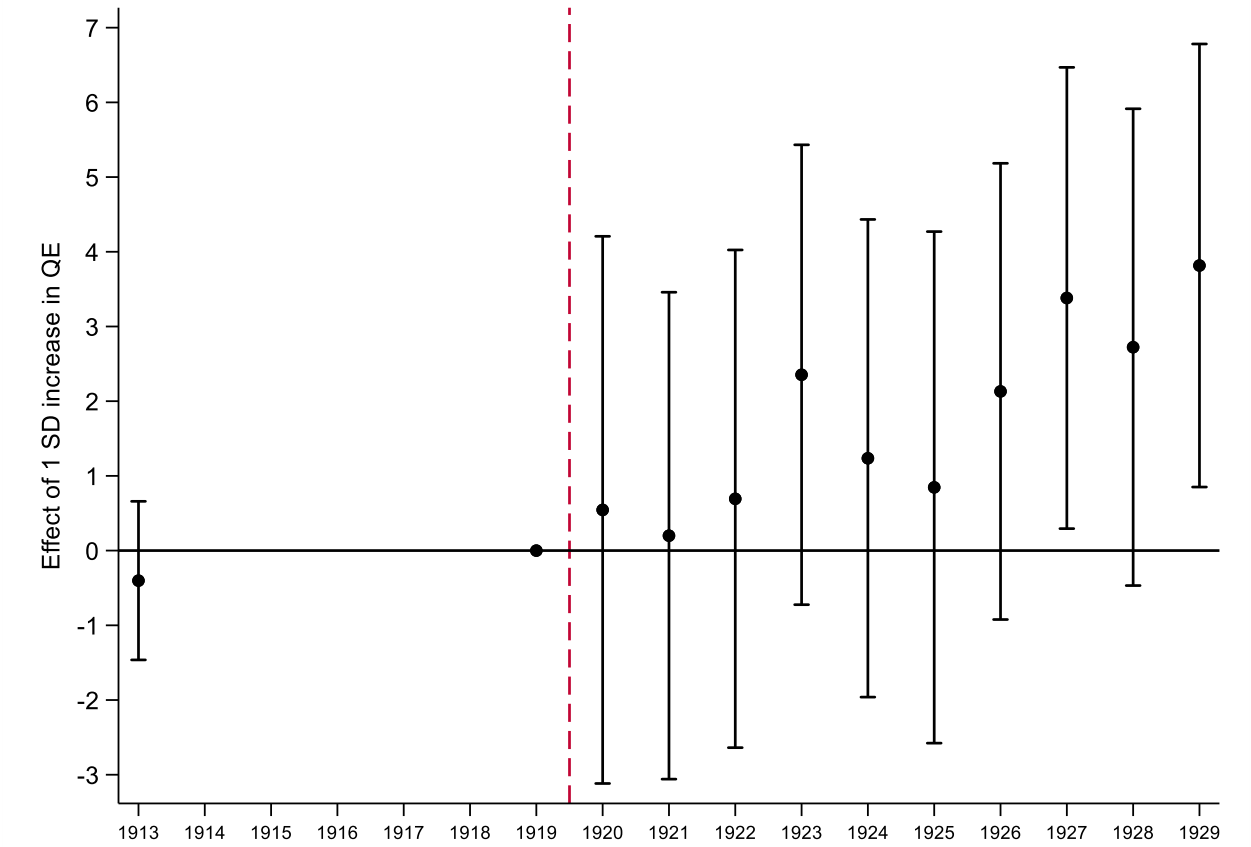
Notes: The figure plots the relationship between city policy exposure quantile and policy exposure mean (blue) and municipal street laborers' average wage in 1928 (red) for each quantile, respectively. Each of the 2,361 cities in towns from the municipal street laborers sample is assigned into quantiles.

Figure 7: The Relationship Between Quota Exposure and Municipal Street Laborers' Wages - Residual Plot



Notes: The figure plots the relationship between policy exposure measure and log average hourly wage in 1928 for municipal street laborers. The policy exposure and wages for each city or town are adjusted for the set of controls selected by the Lasso procedure we performed for the sample in column 4 of Table A2, the 1910 foreign-born share of the city/town, and state fixed effects. The red line presents the fitted linear relationship between the residuals of policy exposure and log average hourly wages. The dashed grey lines are 95% confidence intervals.

Figure 8: The Effect of Quota Exposure on Farm Laborers' Wages



Notes: The figure plots the event-study coefficients of the interaction between quota exposure measure and year from equation (4) scaled by the standard deviation of state exposure measure. The regressions include state fixed effects, year fixed effects, and the controls selected by the Lasso procedure in column 5 in Table A1. The vertical bars show 95% confidence intervals. Standard errors are clustered at the state level.

Table 1: BLS Industry Survey Data Scope and Coverage

Industry: Occupation	1950 Industry Code	Observations	RLMs	Years Covered
	(1)	(2)	(3)	(4)
Auto: laborers	376	28	7	1919, 1922, 1925, 1928
Boxes: laborers	457	17	11	1919, 1925
Cement: laborers	317	4	4	1929
Coal: In-mine laborers (216)	216	48	10	1919, 1922, 1924, 1926, 1929
Coal: pick miners (216)	216	43	9	1919, 1922, 1924, 1926, 1929
Coal: Outside of mine laborers (216)	216	48	10	1919, 1922, 1924, 1926, 1929
Cotton Textiles: doffers	439	99	12	1911-1914, 1916, 1918, 1922, 1924, 1926, 1928
Foundries: laborers	337, 358	123	28	1919, 1923, 1925, 1927, 1929
Furniture: laborers	309	41	17	1915, 1919, 1929
Hosiery & Underwear: "other occupations"	436	73	16	1910-1914, 1922, 1926, 1928
Iron Mines: laborers, outside mine	206	3	3	1924
Machine Shops: laborers	337, 358	123	28	1919, 1923, 1925, 1927, 1929
Meat Packing: laborers (maintenance and repair)	NA	5	1	1921, 1923, 1925, 1927, 1929
Men's clothing: basters (coat)	NA	59	7	1911-1914, 1919, 1922, 1924, 1926, 1928
Metal Mining: laborers (outside mine)	206	4	4	1924
Mill Work (Wood): laborers	308	66	12	1910-1913, 1915, 1919
Quarries: laborers	236	4	4	1929
Railcar Manufacture: laborers	379	63	17	1910-1913
Sawmills: laborers	307	211	23	1910-1913, 1915, 1919, 1921, 1923, 1925, 1928
Shoes: cutters, trimming, hand	488	81	12	1910-1914, 1920, 1922, 1924, 1926, 1928
Woolen Textiles: dyehouse laborers	439	87	9	1910-1914, 1916, 1918, 1920, 1922, 1924, 1926, 1928
Observations				1,230
Number of Relevant Labor Markets				45
Number of Industries				21
Number of RLM-Industry Pairs				244

Notes: Column 2 shows the number of observations in the sample for each industry. Column 3 shows the number of RLMs (state or city) that have at least one observation for the industry, and columns 4 shows the years where data is available for each industry.

Table 2: Quota Exposure Measure and Pre- and Post-Policy Mean Real Wages (1929 Prices) by industry

	Mean Exposure	Pre-1920	Post-1920	% Change
	(1)	(2)	(3)	(4)
Overall	0.062	$0.34	$0.46	35.3%
Industry:				
Auto	0.092	$0.42	$0.51	20.5%
Boxes	0.109	$0.34	$0.44	29.3%
Cement	0.053		$0.40	
Coal In	0.053	$0.54	$0.65	20.6%
Coal Miner	0.055	$0.76	$0.71	-6.5%
Coal Out	0.053	$0.46	$0.57	22.7%
Cotton	0.044	$0.22	$0.34	57.0%
Foundry	0.066	$0.43	$0.43	0.3%
Furniture	0.065	$0.29	$0.37	26.8%
Hosiery	0.044	$0.35	$0.38	8.5%
Iron Mine	0.156		$0.45	
Machinery Shop	0.066	$0.42	$0.42	-0.8%
Meat	0.074		$0.45	
Men Clothing	0.119	$0.45	$0.84	88.8%
Metal Out	0.091		$0.55	
Mill Work	0.072	$0.32		
Quarry	0.069		$0.40	
Railcar	0.056	$0.31		
Sawmill	0.034	$0.30	$0.30	0.3%
Shoes	0.070	$0.41	$0.47	15.0%
Wool	0.090	$0.33	$0.46	40.3%
Observations			1,230	
Number of RLMs			45	
Number of Occupations			21	
Number of RLM-Occupation Pairs			244	

Notes: Column 1 shows the industry's average quota exposure measure level. Columns 2 and 3 show the pre- and post-1920 mean hourly earnings (in 1929 prices) for the different industries in the sample. Column 4 shows the percent change in mean hourly earnings between the periods.

Table 3: Relationship Between Quota Exposure and RLM-Industry Foreign-Born Shares and Wages

Outcome:	Mean Wages (1929 Prices, RLM-Industry)		
	(1)	(2)	(3)
A. Foreign-Born Share:			
Quota Exposure X Post 1920	-0.459***	-0.456***	-0.521***
	(0.165)	(0.165)	(0.169)
RLM-Industry Foreign Born Share - Mean		0.335	
RLM-Industry Quota Exposure - Mean		0.065	
RLM-Industry Quota Exposure - SD		0.050	
Observations (RLM-Industry Pair)		570	
B. Mean Wages (1929 Prices):			
Quota Exposure X Post 1920	0.950***	0.954***	0.475***
	(0.241)	(0.244)	(0.172)
Number of RLMs		45	
Number of Industries		21	
Number of RLM-Industry Pairs		190	
RLM-Industry Pre-Treatment Wage - Mean		0.339	
RLM-Industry Quota Exposure - Mean		0.062	
RLM-Industry Quota Exposure - SD		0.048	
Observations (RLM-Industry Pair)		1,230	
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
RLM Fixed Effects	Yes	Yes	Yes
1910 RLM Characteristics Linear Trend	No	Yes	Yes
Industry Nonlinear Trends	No	No	Yes

Notes: This table presents the coefficient of the interaction between quota exposure QE and the post policy change indicator. The Post variable is defined as an indicator for post 1920, the last year before the border closure policy was enacted. In Panel A, the dependent variable in the specifications is the foreign-born share for the Relevant Labor Market (RLM) by Industry pairs, as described in the text. In Panel B, the dependent variable in the specifications is the mean real wage for Relevant Labor Market (RLM) by Industry pair. All specifications include year, industry, and RLM fixed effects, in addition to the quota exposure measure. Column 2 adds the selected RLM level controls listed in Table A2 interacted with a linear time trend. Column 3 adds industry and RLM nonlinear time trends. In Panel A, each RLM-Industry pair has three observations for 1910, 1920, and 1930 censuses. In Panel B, each RLM-Industry pair has a different number of observations based on BLS Manufacturing Survey data. Robust standard errors, clustered at the RLM level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

Table 4: Construction Workers Wage Data - Summary Statistics

	(1)	(2)	(3)	(4)
A. The American Contractor Surveys				
Border Closure Exposure Measure (City):	**Mean Exposure**	**1920 Real Wage**	**1928 Real Wage**	**% Change**
Overall Sample (58 Cities)	0.072	0.526	0.535	1.66%
Below Median Exposure (33 cities)	0.025	0.465	0.443	-4.89%
Above Median Exposure (25 cities)	0.123	0.581	0.633	8.94%
B. Construction Union Survey Data				
	Mean Exposure	**Pre-1920 Wage**	**Post-1920 Wage**	**% Change**
Overall Sample (45 Cities)	0.076	$0.52	$0.65	19.55%
Below Median Exposure (23 cities)	0.035	$0.53	$0.61	13.92%
Above Median Exposure (22 cities)	0.119	$0.52	$0.67	23.23%

Notes: In Panel A, Columns 1-4 show the mean exposure to border closure policy, the 1920 and 1928 wages for construction laborers (in 1929 dollars), and the percent change in wages from 1920 to 1928, for the cities where construction contractors were surveyed by the *American Contractor* journal in the 1920s. In Panel B, columns 1-4 show the mean exposure to border closure policy, the pre- and post-1920 construction union wage scale (in 1929 dollars), and the percent change in real union wage scale before and after 1920.

Table 5: Relationship Between Quota Exposure Measure and Construction Workers' Wages

Sample:	American Contractor Survey				Construction Unions Survey	
Outcome:	F.B. Share	Mean Wages (1929 Prices)			F.B. Share	Wage Scale
Occupation (Construction Industry):	Overall	Laborers	Hod-Carriers	Bricklayers	Overall	Laborers
	(1)	(2)	(3)	(4)	(5)	(6)
Quota Exposure X Post 1920	-0.382***				-0.273*	2.378***
	(0.127)				(0.156)	(0.410)
Quota Exposure		1.694***	1.707	0.0134		
		(0.584)	(1.176)	(0.788)		
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	City X Post	State	State	State	City X Post	City X Post
1910 City Characteristics	1920	Levels	Levels	Levels	1920	1920
Number of Cities	58	58	53	58	45	45
Number of States	27	27	27	27	28	28
Number of Survey Years	3	7	7	7	3	15
Mean % Foreign-Born (1910)	0.223	-	-	-	0.312	
City Pre-Treatment Wage - Mean	-	-	-	-		0.521
Mean Real Wages (City Level, 1929 Prices)	-	0.485	0.682	1.278	-	-
City Quota Exposure - Mean			0.065			0.076
City Quota Exposure - SD			0.061			0.056
Observations (City-Year Pairs)	183	292	283	301	135	376

Notes: This table presents the coefficient of the quota exposure or the interaction between quota exposure and the post policy change indicator on the foreign-born share and on mean wages (expressed in 1929 prices) for different occupations in the construction industry. Foreign-Born shares (columns 1 and 5) are calculated as the share of foreign-born workers in the construction industry at the county level using the full count population censuses of 1910,1920, and 1930. The wage variable for the regressions reported in columns 2-4 is at the city-year level and is obtained from the *American Contractor* surveys of construction contractors in the 1920s. Column 2 shows results for construction laborers (low-skilled), column 3 for hod-carriers (semi-skilled), and column 4 for brick layers (skilled). Each observation in the regression represents a city-year pair. The dependent variable in column 6 is the mean real union wage scale for building laborers in a city-year pair. All specifications include year and state or city fixed effects, in addition to the county-level controls selected in Table A2, and a control for the city's population. Robust standard errors, clustered at the state level, are in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

Table 6: Municipal Street Laborers Workers Wage Data - Summary Statistics

Border Closure Exposure Measure (City):	(1) Full Sample	(2) Bottom Quartile	(3) Second Quartile	(4) Third Quartile	(5) Top Quartile
Number of Cities	2,361	591	590	603	6
Border Closure Exposure Measure (Mean)	0.054	0.002	0.018	0.059	0.140
Hourly Laborer Wage in 1928 (Mean)	0.428	0.307	0.403	0.484	0.518
Largest City (Population)	New York, NY (6.1m)	Tulsa, OK (171k)	Kansas City, MO (391k)	St. Louis, MO (848k)	New York, NY (6.1m)
Average City Population	24,890	8,592	19,107	23,433	49,021

Notes: In Panel A, Columns 1-5 show the number of cities, mean quota exposure measure, mean hourly laborer wage in 1928, largest city, and average city population for each quota exposure quartile and for the full sample of cities and towns, respectively.

Table 7: Relationship Between Quota Exposure and Farm Wages

Outcome:	F.B. Share	Wage (1929 Prices, State)	
	(1)	(2)	(3)
Quota Exposure X Post 1920	-0.192*	0.605**	0.322*
	(0.0993)	(0.262)	(0.167)
Year Fixed Effects	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes
1910 State Characteristics X Post 1920	Yes	No	Yes
Number of States	48	48	
Foreign-Born Share - Mean	0.153	-	
Pre Treatment Wage - Mean	-	0.637	
Quota Exposure - Mean	0.070	0.070	
Quota Exposure - SD	0.091	0.091	
Observations (State-Year Pairs)	144	576	

Notes: This table presents the coefficient of the interaction between quota exposure and the post policy change indicator. The Post variable is defined as an indicator for post 1920, the last year before the border closure policy was enacted. The dependent variable in the specifications is the mean real wage for farm laborers by state and year. All specifications include year and state fixed effects, in addition to the quota exposure measure. Column 2 adds the state-level controls selected in column 5 of Table A2 interacted with a post-1920 indicator. Column 3 interacts the state-level controls with a linear time trend. Robust standard errors, clustered at the state level, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

Appendix Table 1: Restriction measures Used in the Construction of Quota Exposure and War Exposure Variables (See Text)

Country or Region	(1) Quota Restriction Measure	(2) WWI Restriction Measure
A. High-Restriction Countries		
Asia	0.947	0.496
Central Europe	0.968	0.978
Eastern Europe	0.935	0.957
Greece	0.965	0.502
Italy	0.962	0.887
Portugal	0.945	0.411
Rest of World	0.686	0.000
Russia	0.933	0.950
Spain	0.980	0.140
B. Low-Restriction Countries		
Germany	0	0.919
Ireland	0	0.789
Scandinavia	0.100	0.675
United Kingdom	0	0.795
Western Europe	0.559	0.716
C. Non-Restriction Countries		
Canada	0	0
Caribbean	0	0.112
Latin America	0	0
Mexico	0	0

Source: Abramitzky et al., 2022.

Appendix Table 2: Lasso Results for the Relationship Between Exposure to Border Closure Policy and 1910 Region Characteristics

Sample:	BLS Industry Surveys (RLM)	American Contractor (City)	Construction Unions Survey (City)	Municipal Street Workers	USDA Farm Wages (State)
	(1)	(2)	(3)	(4)	(5)
Foreign-Born Share	x	x	x	x	x
Log Total Population	-	-	x	x	-
Share Urban Population	-	-	x	-	x
Share Black Population	-	-	-	x	-
Literacy Rate	-	-	-	-	-
Share Workers in Manufacturing	-	-	-	x	-
Share Workers in Agriculture	x	x	x	x	-
Share Workers Holding White Collar Occupation	-	-	-	x	-
Log Average Farm Value	-	-	-	-	-
Log Value of Farm Output per Acre	-	-	-	-	-
Share Owner Operated Farms	-	-	-	x	-
Share Farmland Cultivated	-	x	-	-	-
Share Wheat in Cultivated Farmland	-	-	-	x	-
Share Cotton in Cultivated Farmland	-	-	-	-	-
Share Hay/Corn in Cultivated Farmland	-	-	-	-	-
Region Quota Exposure - Mean	0.065	0.065	0.076	0.070	0.070
Region Quota Exposure - SD	0.050	0.061	0.056	0.092	0.092
Number of Regions	190	58	45	2,361	48

Notes: Column 1 shows the variables selected by a lasso procedure of a cross-sectional specification where the dependent variable is the Relevant Labor Market (RLM) exposure measure, and the potential explanatory variables are a set of 1910 RLM characteristics. Columns 2 and 3 show the variables selected by a lasso procedure of a cross-sectional specification where the dependent variable is the city exposure measure and the potential explanatory variables are a set of 1910 city characteristics, computed at the county level, for the *American Contractor* and Construction Union samples, respectively. Column 4 shows the variables selected by a lasso procedure of a cross-sectional specification where the dependent variable is the city quota exposure measure, and the potential explanatory variables are a set of 1910 city characteristics, for the municipal street workers sample. Column 5 shows the variables selected by a lasso procedure of a cross-sectional specification where the dependent variable is the state quota exposure measure, and the potential explanatory variables are a set of 1910 state characteristics. Controls marked with an "x" are chosen by the Lasso specification.

Appendix Table 3: Pre-Border Closure Policy Trends in Wages

Sample:	BLS Industry Surveys		Construction Unions Survey	
Outcome: Real Wages (1929 Prices)	Linear Trend	Nonlinear Trend	Linear Trend	Nonlinear Trend
	(1)	(2)	(3)	(4)
Quota Exposure X Linear Trend	-0.0466		0.0384	
	(0.0367)		(0.0796)	
Quota Exposure X Year 1911		0.0567		-0.0908
		(0.138)		(0.0770)
Quota Exposure X Year 1912		0.0453		0.0189
		(0.160)		(0.0855)
Quota Exposure X Year 1913		0.210		0.245
		(0.139)		(0.316)
Quota Exposure X Year 1914		-0.0696		0.304
		(0.183)		(0.385)
Quota Exposure X Year 1915		0.258		0.0613
		(0.245)		(0.363)
Quota Exposure X Year 1916		-0.140		
		(0.198)		
Quota Exposure X Year 1918		-0.241		
		(0.203)		
Quota Exposure X Year 1919		-0.430		
		(0.293)		
R-Squared	0.261	0.335	0.031	0.062
Region Real Wage - Mean		0.339		0.505
Region Quota Exposure - Mean		0.062		0.104
Region Quota Exposure - SD		0.049		0.068
Observations		550		94

Notes: This table presents the results of two tests for the existence of pre-trends in real wages in the BLS industry surveys of manufacturing and mining industries (columns 1-2) and the BLS surveys of construction unions in selected cities (columns 3-4). The years included in the manufacturing and mining sample are the pre-policy years 1910-1919. Column 1 presents the coefficient of the interaction between quota exposure and a linear time trend. The specification also includes a linear time trend and the quota exposure measure in levels. Column 2 presents the coefficients of the interaction between the quota exposure measure and year dummies. The specification also includes year dummies and quota exposure measure. The years included in the construction union sample are the pre-policy years 1910-1915. Column 3 presents the coefficient of the interaction between quota exposure and a linear time trend. The specification also includes a linear time trend and the quota exposure measure in levels. Column 4 presents the coefficients of the interaction between the quota exposure measure and year dummies. The specification also includes year dummies and quota exposure measure. Robust standard errors, clustered at the level of the relevant region, in parenthesis. *** p<0.01; ** p<0.05; * p<0.1.

Appendix Table 4: *American Contractor* Construction Contractors Wage Survey and Construction Trade Union Wage Scales - Participating Cities and Coverage

City	Wage Survey	Union Wage	City	Years Covered	Union Wage
(1)	(2)	(3)	(4)	(5)	(6)
Akron, OH	YP	N	New Haven, CT	Y.P.	Y
Alliance, OH	YP	N	New Orleans, LA	N	Y
Atlanta, GA	Y.F.	Y	New York, NY	Y.F.	Y
Baltimore, MD	Y.F.	Y	Newark, OH	YP	N
Binghamton, NY	Y.P.	N	Norfolk, VA	Y.F.	N
Boston, MA	YF	Y	Omaha, NE	Y.F.	Y
Bridgeport, CT	N	Y	Peoria, IL	N	N
Buffalo, NY	Y.F.	Y	Philadelphia, PA	YF	Y
Butte, MT	N	Y	Pittsburgh, PA	YF	Y
Chicago, IL	YF	Y	Portland, OR	N	Y
Cincinnati, OH	YF	Y	Portland, ME	N	Y
Cleveland, OH	YF	Y	Providence, RI	N	Y
Columbia, SC	YP	N	Raleigh, NC	Y.P.	N
Columbus, OH	YF	Y	Reading, PA	YF	N
Dallas, TX	N	Y	Redfield, SD	YP	N
Dayton, OH	YF	N	Richmond, IN	YP	N
Denver, CO	N	Y	Richmond, VA	Y.F.	N
Des Moines, IA	Y.P.	Y	Rochester, NY	Y.P.	Y
Detroit, MI	YF	Y	Saginaw, MI	YP	Y
Dubuque, IA	Y.P.	N	Salt Lake City, UT	N	Y
Duluth, MN	YP	N	San Francisco, CA	YP	Y
Erie, PA	YF	Y	Savannah, GA	Y.P.	N
Fairmont, WV	Y.P.	N	Scranton, PA	N	Y
Fitchburg, MA	YP	N	Seattle, WA	N	Y
Flint, MI	YP	N	Sharon, PA	YP	N
Grand Rapids, MI	YF	Y	Shreveport, LA	YP	N
Greensboro, NC	Y.P.	N	Sioux City, IA	Y.F.	N
Houston, TX	N	Y	Spokane, WA	N	Y
Indianapolis, IN	YF	N	St. Joseph, MO	YF	N
Kansas City, MO	N	Y	St. Louis, MO	YF	Y
Kent, OH	YP	N	St. Paul, MN	N	Y
Lansing, MI	YP	N	St. Petersburg, FL	Y.F.	N
Lima, OH	YP	N	Toledo, OH	YP	Y
Little Rock, AR	YP	Y	Warren, OH	YP	N
Los Angeles, CA	N	Y	Washington, DC	YF	Y
Louisville, KY	YF	Y	Webster City, IA	Y.P.	N
Memphis, TN	Y.F.	N	Wichita, KS	N	Y
Milwaukee, WI	YF	Y	Youngstown, OH	YF	N
Minneapolis, MN	N	Y			

Notes: The table shows a list of the cities where (i) the *American Contractor* journal surveyed construction contractors regarding construction workers' wages throughout the 1920s and (ii) the BLS did an annual survey of construction trade union leaders where they reported a union wage scale for building laborers. The wage survey years are 1920, 1921, 1922, 1925, 1926, 1927, and 1928. The union wage scale survey years are 1910-1915 and 1920-1928. In the wage survey columns 2 and 4, "Y.F." means the city has data for each of the survey years, "Y.P." means the city has data for some of the survey years, and "N" means the city has no wage data at all. In the union wage scale columns, "Y" indicates that the city has union wage scale reported in at least one year, and "N" means no union wage scale is reported for the city.