

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

Ran Abramitzky
Stanford and
NBER

Philipp Ager
SDU and
CEPR

Leah Boustan
Princeton and
NBER

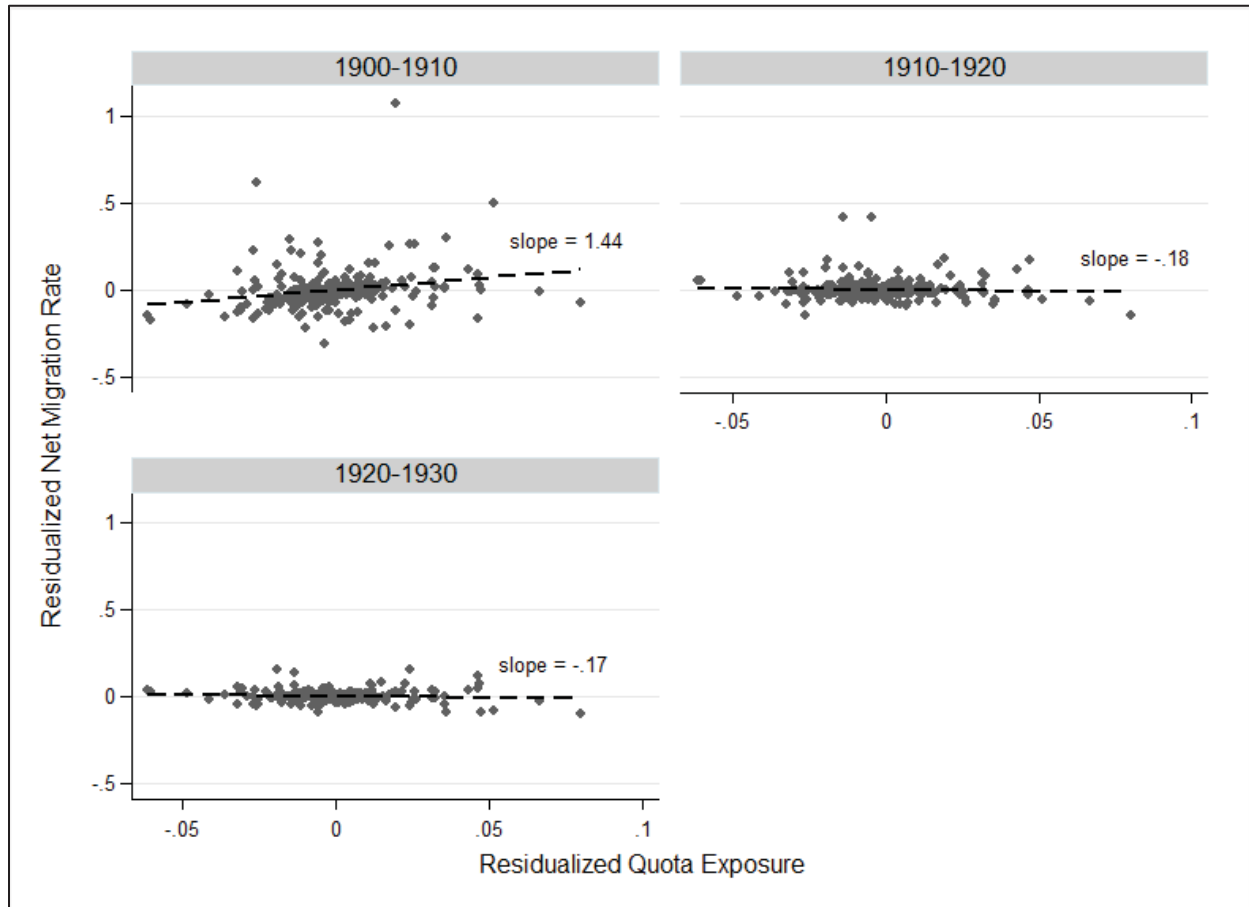
Elior Cohen
UCLA

Casper W. Hansen
University of
Copenhagen

November 2019

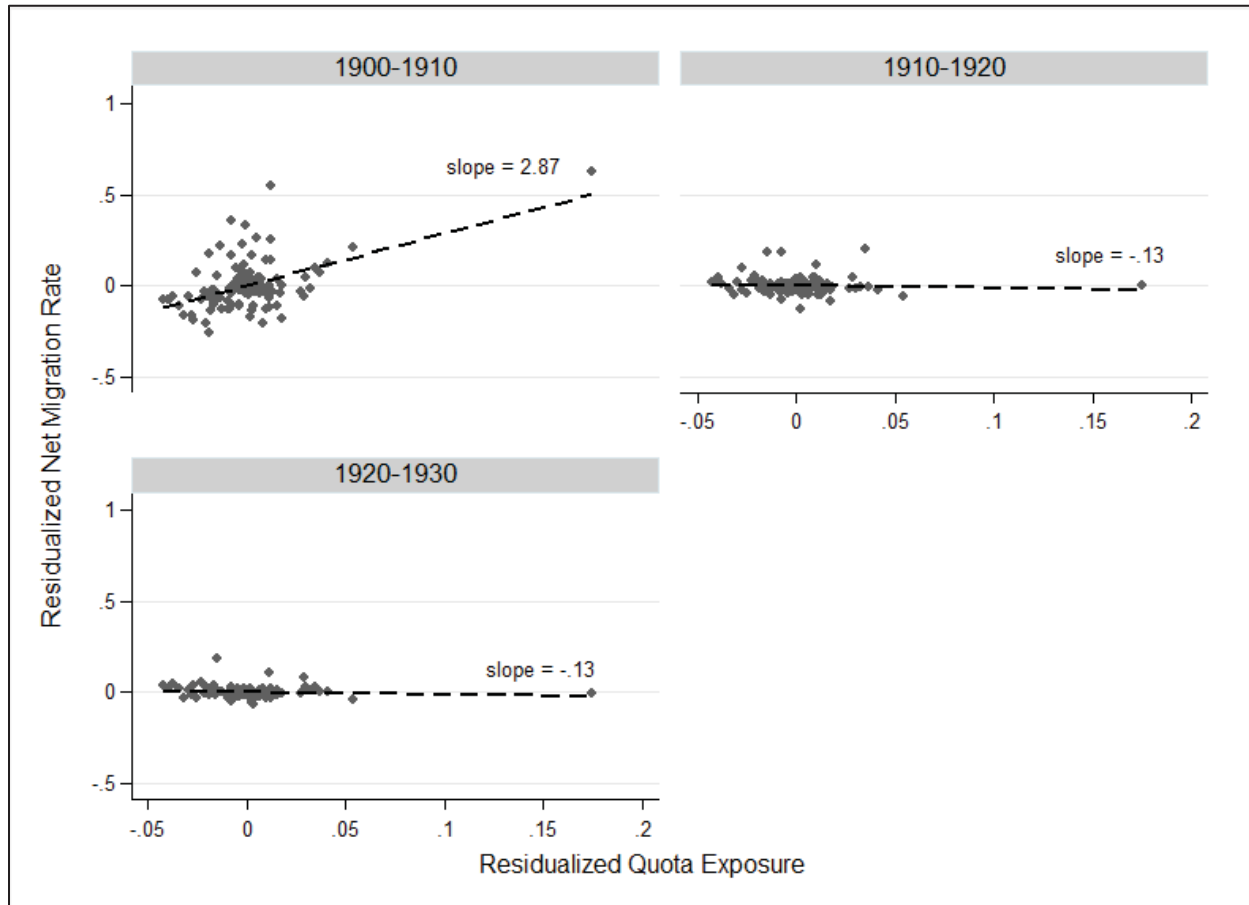
Appendix Material – For Online Publication Only

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



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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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