Trains, Trade, and Transformation

A Spatial Rogowski Theory of America's 19th Century Protectionism*

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Abstract

We study the effect of expanding trade on societal coalitions through its impact on development. We combine a majoritarian political model with a spatial model of trade to argue that trade-induced economic change—by bringing new workers to locations closer to world markets—can lead to losses rather than gains in political power for the factors of production advantaged by increased trade. We study how this phenomenon explains rising protectionism in the US from 1880 to 1900. Using county-level changes in transportation costs induced by railroad expansion, our estimates indicate that falling costs increased population and farm values but reduced the proportion of farmers. Reduced transportation costs caused a reduction in vote shares for the Democratic party, which favored liberal trade policies, and an increase in an original newspaper-based measure of protectionist sentiment. Expanding trade alters not only political interests but also the geographic distribution of those interests.

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1 INTRODUCTION

In the late 19th century, falling transportation costs integrated US agriculture into the global economy. Steam-powered railways and ships made it possible for American farmers to export to Europe, and collapsed price spreads between European and American markets. These developments brought profound economic and political change to Europe, but their apparent effects on American politics were counterintuitive (Gourevitch, 1977). While falling trade costs should have benefitted farmers and other supporters of free trade, those elements were politically marginalized. The Republican Party, which was committed to high tariffs, became increasingly dominant over the period. This fact is counterintuitive because a large body of work in political science and economics works from the assumption that economic changes that make a group richer, also make it more powerful and increase the likelihood that it will be able to implement its preferred policy. Rogowski (1987, 1123) assumes "those who enjoy a sudden increase in (actual or potential) wealth and income will thereby be enabled to expand their political influence." Acemoglu, Johnson and Robinson (2005) and Puga and Trefler (2014) both consider cases in which expanding international trade increased the power of merchants and enabled them to implement institutional change.

This paper asks why falling transportation costs, and an associated export boom (see Figure 1), empowered protectionist elements in the US. We use county-level data on transportation costs, economic change, and voting, and develop a new measure of protectionism from newspapers. It was not just at the national level that the success of protectionists accompanied falling transportation costs. Counties that experienced decreases in the cost of accessing ports due to the expansion of the rail network shifted towards the Republican Party, and their newspapers became more protectionist. Our focus on county-level transportation costs allows us to rule out simpler solutions to the puzzle of rising protectionism. A theory in which the negative effects of import competition drive protectionism cannot explain why areas which saw large increases in land prices and population due to trade shifted towards protectionism.

These positive economic effects also rule out a theory in which the economic rents from export opportunities are entirely captured by intermediaries. Though developments unrelated to trade may have driven voters towards the Republican Party, there is no reason to expect these developments to be correlated with changing access to world markets, or with protectionism.

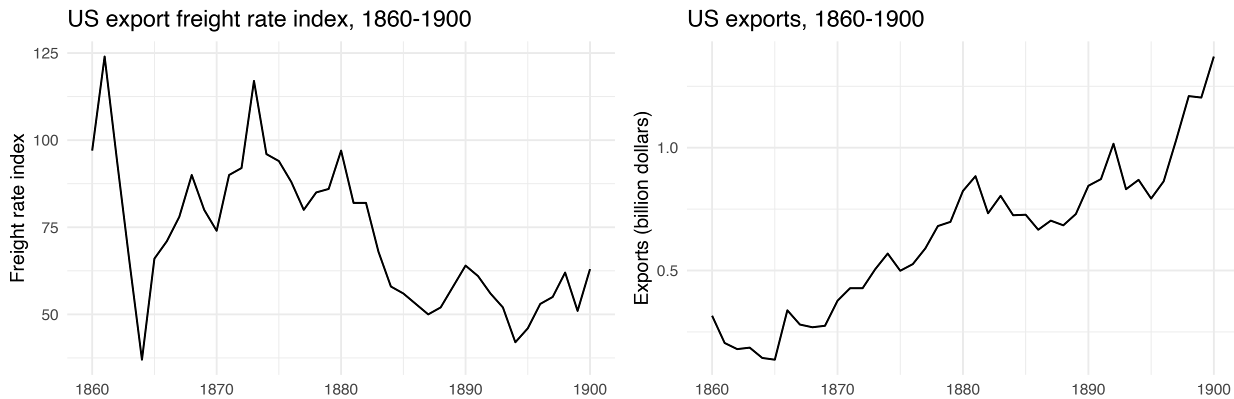

Figure 1: Late nineteenth-century decline in shipping costs and expansion of exports

We argue that trade altered the spatial distribution of economic activity, economic factors, and economic interests. We develop a spatial equilibrium trade model with two factors of production: land and labor. We assume that labor is mobile between regions, and so inter-regional differences in real wages are arbitraged away by migration. As US exports were land-intensive, workers had an economic interest in protectionism. Decreases in transportation costs increase the price received by agricultural exporters, increasing labor demand and migration in the agricultural hinterland. The in-migration of protectionist workers dilutes the political power of landowners.

Our argument draws on Rogowski's (1987; 1990) seminal model of the effect of changing exposure to trade on political cleavages. Rogowski combines a Heckscher-Ohlin trade model in which factors of production are mobile across sectors, with a model of politics in which wealth and income increase political power. The Heckscher-Ohlin model generates the sharp prediction that relatively abundant factors will favor trade, and relatively scarce factors will oppose it. Rogowski argues that in periods of rising international trade, conflict between trade's domestic winners and losers should become more important to domestic politics, and that the power of the winners should increase. While our account shares Rogowski's assumptions about the interests of different actors, the spatial dimension of our theory suggests a different set of results.

Our findings are relevant to scholarship on the effects of trade on domestic politics. Some scholars have extended Rogowski's framework by adopting alternative assumptions about the economic model that describes who wins and loses from increased trade. Others have studied how variation in political institutions influences both the importance of trade to broader political cleavages in a society and the way trade interests influence policy outcomes (Alt and Gilligan, 1994; Milner and Kubota, 2005). An important alternative economic model emphasizes that in practice it is costly for factors to move across industries, making industries not factors the relevant cleavage for trade politics. Within this framework, scholars argue that intersectoral factor mobility varies across countries and time, influencing whether and how trade influences national political cleavages (Hiscox, 2002*a*,*b*; Ladewig, 2006). Another perspective holds that heterogeneity in productivity among firms generates intra-industry divisions over trade, with implications for how trade influences domestic political cleavages (Kim, 2017; Kim and Osgood, 2019).

This research, and the large body of survey work inspired by it, answers many important questions about how trade shapes national politics. What it does not address is that in most countries conflict over trade is fought across space as well as across factors, industries, and firms. Broz, Frieden and Weymouth (2021) argue that how trade affects communities may be most consequential for how it is politicized and how it influences national politics. Researchers have primarily studied the geography of trade politics by taking the spatial distribution of economic activity as given and investigating how a given change in exposure to trade differentially affects political outcomes across locations within a country. This approach is well represented in the large and expanding literature on the political consequences of China's integration into the world economy (Autor et al., 2017; Feigenbaum and Hall, 2015; Che et al., 2016; Colantone and Stanig, 2018*a*,*b*; Ballard-Rosa et al., 2021; Milner, 2021). Other scholars have emphasized how the geographic distribution of economic activity affects the ability of firms in industries to solve their collective action problems and influence politics, and how the spatial distribution of trade interests interacts with political institutions to determine the effect of trade on national politics (Busch and Reinhardt, 1999, 2000; McGillivray, 2004; Rickard, 2018).

While this broad approach to the political economy of geography in trade politics provides important insights into how the spatial distribution of economic activity affects national politics and policy outcomes, it does not address a consequential adjustment mechanism to changing exposure to trade: the geographic location decisions of workers. A large literature in trade and urban economics has emerged over the last two decades that provides a theoretical and empirical framework for understanding how space influences the geographic distribution of economic activity (Fajgelbaum and Redding, 2022; Donaldson and Hornbeck, 2016; Donaldson, 2018). One key element of this framework is that the gravity dynamics that shape the flow of goods and people between countries also apply within countries. While this research has explored how the possibility of migration affects the impact of trade on the economy, it has not investigated its consequences for the effect of trade on political cleavages and policymaking.

In this paper, we take steps in this direction by adopting a spatial model of international trade in which workers are mobile across regions within a country. The core insight of our model is that increased exposure to trade in the agricultural hinterland induces economic development and, in doing so, alters the composition of those who gain and lose from free trade across regions and countries. Trade, development, and mobility combine to alter not only the interests of different economic actors but also their spatial distribution.

We argue that decreased trade costs induced new workers to move to regions growing because of greater trade. While falling internal transportation costs increased labor demand in the agricultural periphery, high tariffs increased labor demand in the industrial core, and so the workers who migrated into the periphery still favored protectionism. Furthermore, economic expansion due to falling internal transportation costs induced immigration to the US, increasing the share of protectionist workers in the electorate at large. Development and mobility explain why trade can lead to the loss of political power by the factors of production most advantaged by increased trade, in this case landowners and the Democratic Party.

To test our argument empirically, we primarily study two political outcome variables: the two-party vote for the Democrats and support for protectionism. For the latter, we develop a new county-by-decade measure using data from 5,601 newspapers in 1,246 counties, from the Newspapers.com database over the 1860 to 1900 period. The measure is based on the frequency of terms predictive of support for protectionism, which we identify by comparing texts of known protectionist and free trade publications.

Our model also predicts that increasing exposure to trade in agricultural regions will increase population, land values, and agricultural production, and reduce the share of landowners. We construct county-level measures of these variables from the US population census and census of agriculture, proxying for landowners with farmers.

The key independent variable in both our theoretical and empirical analysis is log port access, defined as the natural log of one over the iceberg cost of transportation to the nearest port. We compute this measure at ten-year intervals, using the transportation network database created by Donaldson and Hornbeck (2016) and updated by Hornbeck and Rotemberg (2019). This variable measures exposure to trade for each county and changes in this measure over time are driven by the expansion of the US rail network.

Following Donaldson and Hornbeck (2016), we estimate the effect of changes in the rail network in a difference-in-differences framework. We regress each outcome variable on log port access with county and state-by-year fixed effects. We also control flexibly for the length of railway within 40 miles of the county centroid. This means that our estimates of the effect of port access depend on changes in the network distant from and likely unrelated to the counties affected. This increases the plausibility of the parallel trends assumption necessary to give the estimate a causal interpretation.

We find that falling transportation costs increased farm output, farm values, population density, and the number of immigrants, but reduced the share of farmers in the population. We show that reduced transportation costs caused a reduction in county vote shares for the Democratic Party, which at this time represented the interests of agriculture and advocated liberal trade policies. We also find that increased exposure to trade caused an increase in support for protectionism. This pattern of results is consistent with our model that emphasizes the importance of trade attracting new workers and changing the spatial composition of societal actors for and against protectionism.

Our analysis of the puzzle of America's 19th century protectionism links to foundational scholarship on the topic. Goldstein (1993) argues that the Republican Party's intellectual commitment to the tariff explains the persistence of protectionism even as the country's comparative advantage changed. Lake (1988) argues that Britain's commitment to free trade allowed exporting industries to support protectionism at home without losing export opportunities through retaliation abroad. These analyses—and others that link the success of protectionism in this context to the size and growth of import-competing manufacturing (for instance, Frieden (1988) makes this argument with respect to the interwar period)—focus on the interests and attitudes of industrialists.

This article focuses mainly on agriculture, and uses within-country variation in trade costs and protectionist sentiment to explore a different puzzle: that free trade supporters in agriculture lost out politically even at the local level despite gaining economically from falling transportation costs. Mapping the county-level change in Republican votes between 1880 and 1900, we see not just an increase in the level of support for the protectionist party across the board, but that the party also made substantial inroads in agricultural parts of the South, Midwest, and West (Figure 2). This article relates more closely to Gourevitch (1977) and Rogowski (1990), who argue that while falling transportation costs should have empowered farmers, the Democrats' fusion with the Populists alienated industrial workers from that rising coalition. In relation to those analyses, this article addresses changes in voting and attitudes in the agricultural regions affected by changing trade costs, and documents stronger effects before the 1890s realignment.

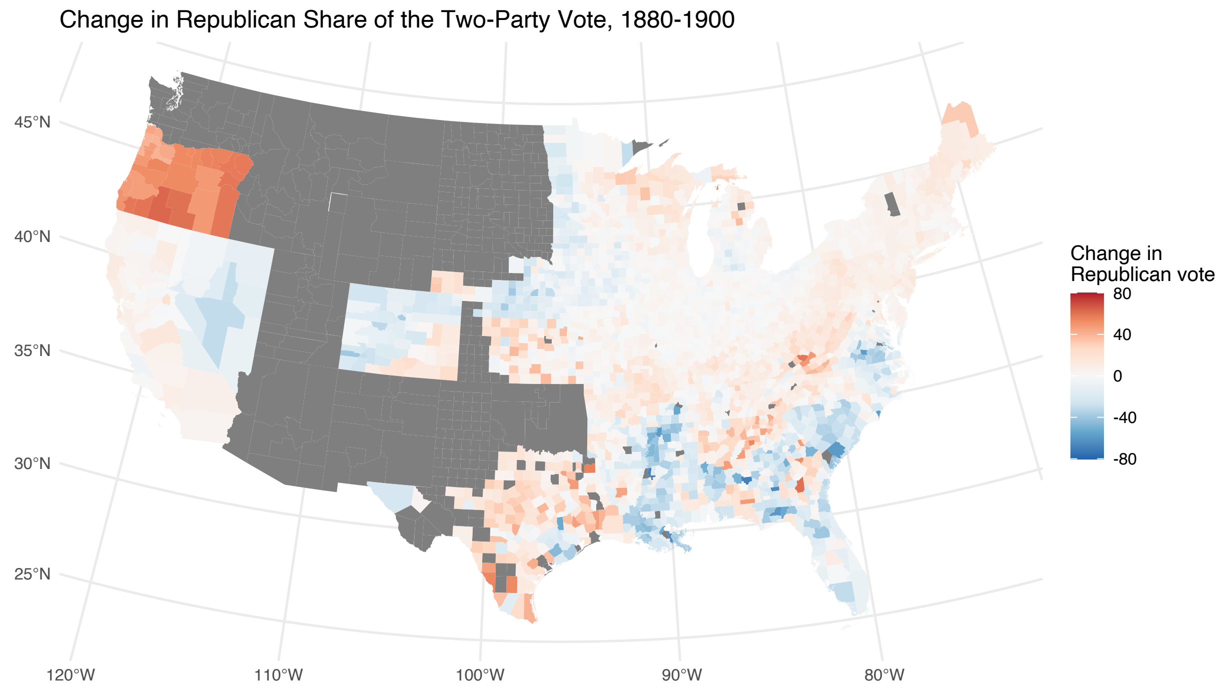

Figure 2: Changing geographical distribution of the Republican vote

The rest of the paper proceeds as follows. We first outline our theoretical model and derive estimating equations. Next we describe our data measuring port access, protectionism, and other economic and political outcomes. This section also presents our research design and estimation strategy. The following section takes the model to the data and presents our estimates for the effect of lower trade costs on our main outcomes. It further provides evidence of our preferred mechanism by showing that the results are driven by counties with relatively high levels of agricultural activity. There is no evidence that trade costs mattered in counties unlikely to export agricultural goods to the rest of the world. We conclude by discussing the role of mobility as an adjustment mechanism in other settings.

2 A SPATIAL ROGOWSKI THEORY OF TRADE, DEVELOPMENT, AND LATE 19TH CENTURY AMERICAN PROTECTIONISM

This section presents a spatial equilibrium model that provides the foundation for our argument about how development and mobility influence the effect of trade on political cleavages. The model links a spatial trade model drawing on Coşar and Fajgelbaum (2016) and Fajgelbaum and Redding (2022) with a model of majoritarian politics (Mayer, 1984; Rogowski, 1987).

The model begins with an economy with multiple regions. Regions specialize in the exporting agricultural or import-competing manufacturing sector, and in these regions firms hire land and labor under perfect competition. Agriculture is sufficiently more land-intensive than manufacturing that if the country shifts production from agriculture to manufacturing, it will increase demand for labor. This difference in factor intensities between sectors generates effects analogous to Stolper-Samuelson. Reductions in trade costs benefit agricultural landowners and harm labor.

Where the model departs from Mayer's and Rogowski's is in considering migration between multiple regions. Drawing on literature in spatial economics (Roback, 1982), we assume interregional labor migration and a spatial equilibrium condition. In equilibrium, the real wage for workers should be equalized across regions. If wages were higher in a given region, other workers would migrate there, increasing the local supply of labor and pushing wages down.

Spatial equilibrium affects the level at which policy preferences are formed. A policy which affects a given region positively but others negatively should only be supported by workers if it raises wages at the national level. If a positive shock to one region is offset by larger negative shocks to other regions, workers in the positive shock region are made worse off, as migration will equalize wages between regions.

Because workers gain from protectionism, and are mobile, reducing the cost to a region of accessing the global economy has divergent economic and political effects. Reducing trade costs benefits exporters by raising the price they receive, and so stimulates economic activity, which brings workers into the region. The increase in workers increases the share of the population supportive of protectionism, increasing the protectionist vote and the market for protectionist-leaning media.

We study the effects of changing transportation costs on economics and politics in a given region i. We first analyze the partial equilibrium economic effects of these changes in a region holding national-level aggregates constant, which allows us to derive "fixed effects" estimating equations. We then analyze the national-level effects of the changes on real wages and thus on immigration, and derive predictions about actors' politics. Lastly, we derive predictions about how these changes affect politics at local and national levels.

2.1 *Model Primitives*

In each region there are T_i units of land and a continuum of firms. Firms rent land at rental rate r_i, hire labor at wage rate w_i, and take wages, rents, and prices for the manufactured and agricultural goods P_{iM} and P_{iA} as given.

Firms produce goods using technology of the form

$$q_{ij} = z_{ij} n_{ij}^{1-\alpha_j}, j \in \{A, M\}$$

where q_{ij} is production per unit of land in region i in sector j, z_{ij} is productivity, n_{ij} is employment per unit of land, and $\alpha_j \in (0, 1)$ is the land intensity of the sector. Firms choose employment to maximize profits:

$$\max_{n_{ij}} P_{ij} q_{ij} - w_i n_{ij}$$

Solving this objective gives an expression for labor demand per unit of land in a given sector that is increasing in prices and productivity and decreasing in wages:

$$n_{ij} = \left(\frac{P_{ij} z_{ij}}{w_i}\right)^{\frac{1}{\alpha_j}} (1-\alpha_j)^{\frac{1}{\alpha_j}}$$

In each region there are L_i landowners who each rent $\frac{T_i}{L_i}$ units of land to firms. Perfect competition by firms ensures that rent per unit of land equals the difference between the value of output and labor costs:

$$r_{ij} = \max_{n_{ij}} P_{ij} q_{ij} - w_i n_{ij}$$

which combined with the solution for labor demand, n_{ij}, gives an expression for the ratio of rents to wages:

$$\frac{r_{ij}}{w_i} = \frac{\alpha_j}{1-\alpha_j} \left(\frac{P_{ij} z_{ij}}{w_i}\right) (1-\alpha_j)^{\frac{1}{\alpha_j}} = \frac{\alpha_j}{1-\alpha_j} n_{ij}$$

Individual preferences for consumption of agricultural and manufactured products (c_A and c_M) are Cobb-Douglas, with consumers spending fraction γ of their budgets on agricultural goods:

$$v(c_A, c_M) = \left(\frac{c_A}{\gamma}\right)^{\gamma} \left(\frac{c_M}{1-\gamma}\right)^{1-\gamma}$$

These preferences imply indirect utility for workers increasing in wages and decreasing in prices:

$$u(w_i, P_{iA}, P_{iM}) = \frac{w_i}{P_{iA}^{\gamma} P_{iM}^{1-\gamma}}$$

We denote national population by $\bar{N}(u^*)$. We assume that national population is an increasing function of the real wage.

2.2 *Equilibrium Conditions*

In equilibrium, the following conditions hold:

i Workers migrate freely to regions with higher real wages, and so if a region i has positive population $\frac{w_i}{P_{iA}^{\gamma} P_{iM}^{1-\gamma}} = u^*$, where u^* is the national real wage.

ii The land market clears. Landowners rent all land to the sectors which are prepared to pay the highest rents for land, and so for all sectors j, k with positive production in region i, $r_{ij} = r_{ik}$, and for all sectors l that do not produce, $r_{il} < r_{ij}$.

iii Firms choose labor to maximize profits, $n_{ij} = \arg\max_{n_{ij}} P_{ij} q_{ij} - w_i n_{ij}$.

iv The country is open to trade, imports the manufactured good and exports the agricultural good. These trade dynamics and arbitrage ensure that the price of the agricultural good is its price in world markets P_A^*, divided by δ_i, the iceberg cost of exporting goods to world markets. The price of manufactured goods is its price in world markets P_M^* multiplied by the cost of importing it from those markets, which includes both transportation costs δ_i and tariffs τ.[1]

v The real wage u^* and national population $\bar{N}(u^*)$ adjust so that the national labor market clears, $\bar{N}(u^*) = \sum_i n_i T_i$.

2.3 *Local Economic Effects*

Conditions i-iv characterize a small open economy. We first derive partial-equilibrium predictions of increasing trade access relying only on these conditions, which gives equations that we can estimate holding time- and place-invariant factors fixed, and then verify that these predictions hold in general equilibrium.

Given these equilibrium conditions, regions specialize in the more profitable sector. Rents in agriculture and industry are functions of the wage and industry-specific productivity, prices, and labor shares. As the real wage is pinned down by mobility across regions, rents will not,

[1]This condition embeds an assumption that regions that produce more of the manufactured good than they consume can sell it to locations further inland. Given that US manufacturing in this period was concentrated in the Northeast near major ports, this assumption should be satisfied in the context we study.

except in knife-edge cases, balance across sectors. Regions with greater relative productivity in agriculture, and lower costs of accessing global markets, will specialize in the agricultural sector.

We consider the effects of decreasing transportation costs on regions specializing in agriculture. We focus in these regions because during the period we study, transportation improvements primarily served to connect the agricultural hinterland to the global economy; manufacturing-intensive regions in the Northeast already had strong transport links.[2]

While we refer to the import-competing industry as manufacturing and the exporting industry as agriculture, our model does not rely on there being two industries or on the particular identities of those industries. We would expect similar effects of increasing trade access on regions specializing in exporting manufacturing sectors.

Substituting the expressions for the real wage from (i) and for prices from (iv) into the expression for labor demand in the agricultural sector gives local employment density n_i:

$$n_i = n_{iA} = \left(\frac{z_{iA}}{u^*} \left(\frac{P_A^*}{P_M^* \tau \delta_i^2} \right)^{1-\gamma} \right)^{\frac{1}{\alpha_A}} (1-\alpha_A)^{\frac{1}{\alpha_A}} \tag{1}$$

This expression for n_{iA} is decreasing in δ_i. Reducing trade costs raises the price received by exporters, increasing demand for labor in the region. Writing the total number of workers as $n_i T_i$ and taking logarithms gives the following estimating equation:

$$\ln \text{workers}_i = \frac{2(1-\gamma)}{\alpha_A} \underbrace{\ln\left(\frac{1}{\delta_i}\right)}_{\text{ln Port Access}} + \underbrace{\ln\left([z_{iA}(1-\alpha_A)]^{\frac{1}{\alpha_A}} T_i \right)}_{\text{County FE}} + \underbrace{\ln\left(\frac{1}{u^*} \left(\frac{P_A^*}{P_M^* \tau} \right)^{1-\gamma} \right)^{\frac{1}{\alpha_A}}}_{\text{Year FE}} \tag{2}$$

Holding constant region-specific productivity (z_{iA}) and land (T_i), which should be stable in a given region over time, and world prices (P_A^*, P_M^*), tariffs (τ), and real wages (u^*), which should be constant across all regions in a given period, we predict that increasing the log

[2]In Appendix B.1 we derive equivalent results for regions specializing in the import-competing sector.

inverse of transportation costs—which we refer to as "log port access"—should have a positive effect on log population.

The model also implies predictions for the effects of changing transportation costs on agricultural production $P_{iA}q_{iA}$, and the value of farms (r_iT_i), both of which are increasing functions of n_{iA}, and for the log odds share of landowners, which is decreasing in n_{iA}. We derive analogous expressions to (2) for these outcomes in Appendix B.2 that also imply a log-linear effect of port access.

Condition i assumes that real wages equalize between locations. The simplest way that this could be the case is if all workers are mobile, and so regions with higher real wages attract in-migration, pushing wages down. While this assumption is perhaps plausible given the high rates of internal mobility in the US in this period (Ferrie, 2005), it is not necessary for real wages to equalize. If only some workers are mobile, and in equilibrium each location has some mobile workers, then the same spatial equilibrium condition must apply, or mobile workers would leave the low-wage locations. This weaker assumption is especially plausible given high rates of immigration to the US during this period. If immigrants migrate to the places with the highest wages, then in doing so they push down wages in those places ensuring spatial equilibrium.

2.4 *National Economic Effects*

Decreasing transportation costs to the agricultural hinterland raises real wages and increases immigration. The intuition for this result is that decreasing internal transportation costs to agricultural regions increases labor demand in those regions, motivating in-migration and bidding up national wages, which in turn drives immigration to the US. We derive this result in Appendix B.3. We show in Appendix B.4 that the same logic implies that the partial equilibrium results in the previous section hold accounting for the effects of port access on real wages.

2.5 *Preferences over Tariff Policy*

The model predicts that increasing port access increases the share of workers in the population, at both the local and national levels. How that change affects trade policy and voting depends on the preferences of workers over tariff policy. In Appendix B.5, we show that the real wage is increasing in the tariff if raising the tariff raises total labor demand.[3] Given that the tariff decreases labor demand in the agricultural sector and increases it in the manufacturing sector, the question is whether the latter effect will offset the former. We show that the positive effect of the tariff on manufacturing employment offsets its negative effect on agricultural employment if the following inequality holds:

$$\frac{\gamma}{1-\gamma}\frac{\alpha_A}{\alpha_M} > \frac{N_A}{N_M}$$

Labor will be protectionist if agricultural goods are a large part of the consumer's budget (γ is large), if the exporting sector is more land-intensive than the import-competing sector ($\alpha_A > \alpha_M$), and if labor's employment in the exporting sector (N_A) is not too large relative to the import-competing sector (N_M).

This inequality should hold in the period we study, implying that workers should have favored protectionism. An 1875 survey in Massachusetts found consumers spent 62% of their budgets on food and fuel, 23% on dry goods, apparel and sundries, and the remainder on rent (Williamson, 1967). Classifying the first group as agricultural the the second as manufactured implies $\gamma = 0.73$. Budd (1960) estimates labor shares of 19.3% in agriculture and 50.9% in manufacturing in 1880, implying $\alpha_A = 0.807, \alpha_M = 0.491$. Given these estimates, employment in the exporting sector would have had to be more than 4.4 times employment in the import-competing sector for workers to prefer free trade. In the 1880 census microdata, employment in agriculture was 3.6 times employment in manufacturing, and excluding farmers, many of

[3]We also show in Appendix B.6 that agricultural landowners gain from free trade and manufacturing landowners lose from it.

whom would be better classified as landowners, gives a figure only 1.5 times manufacturing employment.

2.6 *Voting*

We have shown that increasing port access in agricultural regions should increase the share of workers in the population relative to landowners, and that in such regions workers should favor protectionism and landowners free trade.[4] During the period we study the parties were sharply divided on the issue of the tariff. Increasing the share of workers in the electorate at both the local level due to economic expansion and the national level due to immigration should increase the share of the vote won by the protectionist party. We model the share voting for the free trade party as a contest function that takes as inputs the number of landowners, the number of workers, and k_i, a place-specific variable that magnifies the power of landowners:

$$s_i = \frac{(k_i L_i)^\theta}{(k_i L_i)^\theta + (n_i T_i)^\theta}$$

The parameter θ determines how responsive changes in voting are to changes in the electorate. If all voters simply vote for the party proposing the tariff policy that benefits them the most, we should observe $\theta = 1$, though values greater than 1 are plausible if voters are themselves influenced by the composition of the electorate, perhaps if workers are wary of voting against their landlord's interests when they are numerically outnumbered.

Taking the log odds and substituting the identity for n_i from equation (1) gives another estimating equation:

$$\ln\left(\frac{s_i}{1-s_i}\right) = -\frac{2\theta(1-\gamma)}{\alpha_A} \underbrace{\ln\left(\frac{1}{\delta_i}\right)}_{\text{ln Port Access}} \underbrace{-\,\theta \ln\left(\left[z_{iA}(1-\alpha_A)\right]^{\frac{1}{\alpha_A}} \frac{T_i}{k_i L_i}\right)}_{\text{County FE}} \underbrace{-\,\frac{\theta}{\alpha_A} \ln\left(\frac{1}{u^*}\left(\frac{P_A^*}{P_M^* \tau}\right)^{1-\gamma}\right)}_{\text{Year FE}} \tag{3}$$

[4]We would not expect port access to change politics in manufacturing regions, where both landowners and workers would favor protectionism.

This contest function allows us to derive an estimating equation for voting that is comparable to those for the economic outcomes, but we do not take a strong stance on this functional form. Other microfoundations could generate the same qualitative prediction that increasing the share of workers increases support for the protectionist party.

In summary, the model predicts that increasing log port access in the agricultural hinterland should be associated with an increase in log population, agricultural output and land values, and a decrease in the log odds share of landowners and vote for the free trade party. In the following section we will directly test these predictions.

3 DATA AND EMPIRICAL STRATEGY

Figure 3: Expansion of US rail network over the late 19th century; the variance of the change in port access between 1880 and 1900 was larger in less-industrialized regions

We study the effects of changes in the transportation network on county-level economic development and support for protectionism. The main predictions of our model concern the effects of log port access, the log inverse of the iceberg transportation cost to ports. We compute this measure at ten-year intervals, using the transportation network database created by Donaldson and Hornbeck (2016) and updated by Hornbeck and Rotemberg (2019). Donaldson and Hornbeck combined shapefiles of America's rivers, canals and railroads with estimates of mode-specific transportation costs and of wagon and sea shipping routes, to estimate the cost of shipping goods between any two US counties. We focus on the cost of shipping goods from all counties to the eleven largest ports, which in 1880 accounted for 93% of US exports.[5] Changes in this measure over time are driven by the expansion of the US rail network. In the 1880–1900 period, expansion in the railway network mainly affected agricultural regions in the interior; manufacturing hubs in the Northeast already had rail connections to ports in 1880 (Figure 3, right panel). We also use the shapefiles from the Donaldson-Hornbeck database to calculate the length of railroad within 40 miles of each county's centroid.

Our formal model predicts that increases in port access should increase population, land values, and agricultural output in agricultural counties. We use county-level data on these variables from the US population census and census of agriculture (Haines and Research, 2005), which we harmonize to 1890 boundaries following Hornbeck (2010). The model also predicts that port access should decrease the log odds share of landowners. We proxy for the share of landowners with the share of farmers, which we calculate using the complete-count data from the 1880 and 1900 censuses (Ruggles et al., 2021).[6]

Our primary dependent variable is the share of the two-party vote won by the Democratic Party. The parties were sharply polarized on the issue of the tariff, with the Republicans advocating for protectionism and the Democrats free trade (Epstein and O'Halloran, 1996). We use county-level presidential election returns from Clubb, Flanigan and Zingale (1987). We begin our analyses in 1880, after the end of Reconstruction, in order to avoid accidentally capturing changes in voting patterns related to the Civil War. We end our analyses in 1900 as US comparative advantage began to shift away from agriculture, and comparative advantage in agriculture is a necessary condition for our theory.

In the model, areas shift towards the Republicans as they develop because the local share

[5]These ports are Baltimore, Boston, Charleston, Galveston, New Orleans, New York, Norfolk, Philadelphia, Portland ME, San Francisco, and Savannah (*Statistical Abstract of the United States 1892*, 1893, 66)

[6]The 1890 records were destroyed in a fire.

of workers, who gain from protectionism, increases. We use two measures of protectionism from newspapers to test whether areas became more protectionist as well as more Republican. We develop our primary measure following scholarship on media bias (Gentzkow and Shapiro, 2010), by creating a dataset of newspapers known to be more protectionist, which we pair with others published in the same city at the same time. We train a Lasso model to predict whether a newspaper in this dataset is protectionist based on the frequency of specific terms in articles on trade, and then use the coefficients from the Lasso to predict protectionism in other newspapers. We detail the construction and validation of this measure in Appendix A. As an alternative measure we use the relative frequencies of terms associated with the protectionist and free trade causes as listed by Hirano and Snyder (2021). Each measure addresses the other's limitations. The Hirano-Snyder measure is intuitive and transparent, but relies on the ad-hoc choice of terms; the Lasso measure provides a data-driven but less transparent alternative.

Our preferred empirical specification is of the form

$$Y_{ist} = \beta \ln(\text{port access})_{ist} + f\left(\text{rail length}_{ist}\right) + \gamma_{is} + \delta_{st} + \varepsilon_{ist}$$

where Y_{ist} is an outcome of interest for county i in state s at time t, log port access is defined as above, $f\left(\text{rail length}_{ist}\right)$ is a third-degree polynomial in the length of railway within 40 miles of the country centroid, γ_{is} is a county fixed effect, and δ_{st} is a state-by-year fixed effect.

If the dependent variable is log population, this estimating equation is an almost direct analogue to equation (2). If the dependent variable is the log odds Democrat share of the vote, it is analogous to equation (3).

The coefficient β identifies the causal effect of port access on Y_{ist} provided that counties which experienced greater increases in port access in a given year were not otherwise following different trajectories to counties in the same state which experienced smaller changes in port access. Flexibly controlling for local railroad access, following Donaldson and Hornbeck

(2016) and Hornbeck and Rotemberg (2019), makes this identification assumption more plausible. While local changes in railroad access are likely endogenous to economic and political developments, distant changes in the transport network which increase access for some counties but not others are less plausibly related to the counties affected.

In addition to these controls, we employ traditional difference-in-differences checks, examining whether 1880–1900 changes in port access correlate with trends in voting over the 1860–1880 period, estimating models controlling for county time trends, and controlling for a range of plausible confounding factors interacted with year indicators.

4 RESULTS

4.1 *Economic Effects*

Table 1 documents the effects of expanding port access on economic change. Consistent with the predictions of the model, we find large positive effects on log population (1), farm output (2), and land values (3), and a negative effect on the log odds share of farmers (4). A 1% increase in port access, is associated with a 0.85% percent increase in population, and has larger effects still on agricultural production and land values. These results make sense if improved transportation infrastructure made it possible for farmers to participate in global markets, creating incentives for increased production, bidding up land values and increasing labor demand. Our estimates are close to the elasticities predicted by the model given historical data on the theoretical parameters. The model calibrated at the historical parameters $\gamma = 0.73, \alpha_A = 0.807$ would predict coefficients in models (1)–(4) of $0.67, 1.13, 1.30,$ and -0.67. In all cases the theoretical prediction falls in the 90% confidence interval of the estimate, implying that our theoretical model can account for the empirical results.

Model (5) indicates that expanding port access was associated with an increase in the immigrant population disproportionate to the population increase. While this result is not a direct prediction of the model, it is relevant to the model in three ways. First, the model predicts that falling internal transportation costs should motivate immigration to the US. Much scholarship in labor economics finds that immigrants' location decisions are more responsive to local economic changes, and so we might expect people migrating to the US because of economic growth in the agricultural hinterland to locate in the regions growing (Cadena and Kovak, 2016). Second, the existence of large numbers of immigrants moving to rapidly-growing regions and thus equilibrating wages makes the spatial equilibrium assumption underpinning our analysis of actors' preferences more plausible, even if the native-born population was not perfectly mobile.[7] Third, we would expect, and indeed find in Table A-16, that immigrants were less likely to own real estate, and so increasing the share of immigrants should decrease the share of landowners.

While we focus mainly on agricultural expansion, the predictions of our model should also hold for other exporting industries. In Table A-5 we document a positive association between log port access and the log share in manufacturing and manufacturing output. Decomposing the effect by industry, we find the growth in the manufacturing employment share is entirely driven by the wood industry—logging and sawmills—implying that port access led to an expansion of resource-intensive exporting sectors, and not manufacturing in general.

4.2 *Political Effects*

We then move to study the effects of these economic changes on voting behavior. Table 2 shows the results of regressions of the Democratic share of the two-party vote on port access. As the dependent variable we use both the log odds of this share, which is consistent with our model, and the raw percentage, which is easier to interpret and less sensitive to values near 0 and 100.[8] Models (1) and (2) implement our base specification—with fixed effects and controls for local railroad access in (2)—and find that a 1 percent increase in port access is associated

[7]The labor economics literature documents falling rates of internal migration in the US since the 1980s, and little migration in response to economic shocks like the China shock and recession. However, locations with large immigrant populations experience stronger migration responses and weaker wage responses to economic changes (Cadena and Kovak, 2016).

[8]To calculate the log odds we cap the Democratic voteshare at 2.5 and 97.5 percent.

	ln pop	ln farm output	ln land value	ln odds farmers	ln immigrants
	(1)	(2)	(3)	(4)	(5)
ln port access	0.85^{***}	2.06^{**}	1.61^{**}	-1.10^{*}	3.03^{***}
	(0.30)	(0.78)	(0.69)	(0.55)	(0.83)
DV mean	9.43	13.19	14.54	-0.64	5.82
R^2	0.99	0.95	0.96	0.98	0.99
N	7776	7754	7754	5168	7775

This table shows the results of regressions of county level economic variables on port access, defined as the log of the inverse of transportation costs to the nearest major port. All models include county and state-by-election fixed effects and control for a third degree polynomial in the length of railroad within 40 miles of the county centroid. In model (1) the dependent variable is log population, in (2) the log value of agricultural output, in (3) the log value of farm land, in (4) the log odds share of farmers in the population, and in (5) the log number of foreign-born residents. Models are weighted by 1880 population. Standard errors clustered by state in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table 1: Effects of port access on population and agriculture, 1880–1900

with around a half percentage point reduction in the Democratic vote. Model (3) controls for log market access to counties within 50 miles, defined as in Donaldson and Hornbeck (2016) as a weighted sum of county populations, weighted by the inverse of transportation costs. This variable controls for railroad connections to close internal markets. Model (4) controls for the percentage of white inhabitants in 1880 and log population density in 1880, interacted with year indicators. While we start our analyses after the end of Reconstruction, it is possible that changes in voting patterns related to the disenfranchisement of African Americans correlate with changes in port access. One might also be concerned that differential trends related to initial density, which might influence which counties gained port access and experienced growth in population density, account for our results. Controlling for race and density attenuates our coefficients the most, but they remain substantively large and statistically significant. When we examine the log odds specifications we find broadly similar patterns. In the more restrictive specification in model (6), our estimated elasticity is fairly close to our estimated effects of port access on population and the log odds share of farmers, which we would expect if port access influenced voting by directly changing the composition of the electorate.

Our results are not sensitive to the particular choice of period, and satisfy difference-in-

	% Democrat				ln odds	
	(1)	(2)	(3)	(4)	(5)	(6)
ln port access	-59.48^{***}	-51.45^{***}	-36.74^{**}	-20.78^{**}	-2.92^{***}	-1.21^{**}
	(12.14)	(11.47)	(14.94)	(8.05)	(0.67)	(0.57)
Railroad controls		x	x	x	x	x
ln MA within 50 miles			x			
1880 % white x election				x		x
1880 ln density x election				x		x
DV mean	53.75	53.75	53.75	53.75	0.23	0.23
R^2	0.90	0.90	0.91	0.92	0.89	0.91
N	9878	9878	9878	9878	9878	9878

This table shows the results of regressions of county level presidential voting on port access, defined as the log of the inverse of transportation costs to the nearest major port. All models include county and state-by-election fixed effects. In Models (1)–(4), the dependent variable is the Democratic party's share of the two-party vote, in (5)–(6) the log odds ratio of that share. Models (2)–(6) control for a third degree polynomial in the length of railroad within 40 miles of the county centroid, (3) controls for log market access to counties within 50 miles of the county centroid, (4) and (6) control for 1880 % white and 1880 log population density interacted with election fixed effects. Models are weighted by 1880 population. Standard errors clustered by state in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table 2: Effects of port access on voting Democrat, 1880–1900

differences robustness checks. We find similar magnitudes and patterns of significance for the 1860–1900 period (Table A-7), and note that those results are robust to the inclusion of county time trends, which increases our confidence that differential trends do not account for our results. We also find no evidence of an effect of 1880–1900 changes in port access on voting in the 1860–1880 period (Table A-8), which provides additional evidence against parallel trend violations. Our results are also robust to dropping any single year from the 1880–1900 period (Table A-9). This robustness check should also address concerns related to negative weights in multi-period difference-in-differences designs, which do not apply to two-period models.

Port access did not just increase support for the protectionist Republican Party; it also increased protectionism in newspapers. Table 3 shows the results of regressions of newspaper-level protectionism on port access. Increasing log port access by 0.1 units—around a standard deviation—was associated with a 4.4 percentage point increase in our Lasso measure of protectionism, equivalent to around 0.2 standard deviations. We find similar magnitudes and

	2 step lasso		Hirano-Snyder	
	(1)	(2)	(3)	(4)
ln port access	37.75**	44.43***	34.15**	35.42*
	(15.92)	(16.45)	(14.63)	(19.55)
Railroad controls		x		x
DV mean	43.75	43.75	63.91	63.91
R^2	0.84	0.84	0.83	0.83
N	6776	6776	5945	5945

This table shows the results of regressions of newspaper-level protectionism on county-level port access, defined as the log of the inverse of transportation costs to the nearest major port. All models include newspaper and state-by-election fixed effects. Models 2 and 4 control for a third degree polynomial in the length of railroad within 40 miles of the county centroid. In models 1 and 2 the dependent variable is a data-driven measure of protectionism based on terms predictive of pro-tariff newspapers, in 3 and 4 the measure proposed by Hirano and Snyder (2021), which compares the usage of pro- and anti-tariff terminology. Standard errors clustered by state in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table 3: Effects of port access on newspaper protectionism, 1880–1900

patterns of significance using the measure based on pro- and anti-tariff terminology. This evidence makes it less plausible that factors unrelated to the tariff account for the shift away from the Democrats.

4.3 *Evidence for the Mechanism*

Our preferred explanation for these results is that increased trade access led to increased population density and diluted the share of farmers and landowners who gained from freer trade. A range of county and individual-level evidence supports this interpretation.

At the county level, we show in Table 4 that both the economic effects—the increase in population density and reduced share of farmers—and the anti-Democrat voting effects are driven by more agricultural counties. We estimate null results for the effects of port access in counties with percent agricultural employment below their state's average in 1880. This finding supports our preferred mechanism in two ways. First, the economic processes driving the result, in which trade access increases the opportunities for exporters, should apply

	ln pop		ln odds farmers		% Democrat	
	(1)	(2)	(3)	(4)	(5)	(6)
ln port access	0.14	1.10***	−0.48	−1.17***	−7.74	−64.41***
	(0.63)	(0.23)	(1.05)	(0.43)	(19.59)	(13.03)
1880 Agriculture	1H	2H	1H	2H	1H	2H
DV mean	9.63	9.26	-1.01	-0.28	52.81	54.65
R^2	0.99	0.97	0.98	0.89	0.85	0.89
N	3867	3870	2578	2578	4919	4926

This table shows the results of regressions of county-level log population, log odds share of farmers, and Democratic share of the two party vote, subset according to whether the county fell in the bottom or top half of the state in the percent employed in agriculture in 1880. Models 1, 3, and 5 are restricted to less agricultural counties, 2, 4, and 6 to more agricultural ones. All models include county and state-by-year fixed effects, and control for a third degree polynomial in the length of railroad within 40 miles of the county centroid. Models are weighted by 1880 population. Standard errors clustered by state in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table 4: Moderating effects of 1880 agricultural employment

mostly to agricultural areas, and so these results are consistent with our theory.[9] Second, if we found a null effect on the economic variables for some counties, and a positive effect on political outcomes in those same counties, it would imply that some mechanism other than the economic one specified is driving the results. We find no such evidence of an alternative mechanism.

The link between our theoretical and empirical analyses rests on the assumptions that population density and the share of farmers proxy for landownership, and that landowning interests tended to vote Democrat. We verify the former assumption using county and individual-level data from the 1870 and 1900 censuses, that recorded information on real-estate ownership and the farm and ownership status of dwellings. Higher-density counties

[9]We would expect a negative effect on population in regions specializing in import-competing manufacturing industries. However, there are relatively few such regions during this period, and those regions experienced fairly small changes in port access, and so it is likely that the odd-numbered columns in 4 pool data from exporting agricultural counties and perhaps some exporting industrial areas, for which the effect on population should be positive, and import-competing manufacturing counties, for which the effect should be negative.

had lower rates of property ownership (Figure A-4) and farmers were indeed more likely to own land (Table A-10). We verify the latter using individual-level data on partisanship from Indiana county directories (Hammarberg, 1984) and California voter registers, in Table A-11.[10]

One might be concerned that our voting results are picking up an effect distinct from our mechanism, whereby port access was associated with industrialization, and industrialization increased support for the Republican party through some other mechanism. We address this concern in three ways. First, we note that in Table A-5 the positive association between port access and industrialization is driven by logging and sawmills, resource-intensive exporting industries that, much like agriculture, would have gained from freer trade. This result makes it implausible that the expansion of protectionist industries accounts for the shift in voting, and makes sense given that port access should capture exposure to the global economy which should have benefitted exporting interests and harmed import-competing ones. Second, in Table A-6, we verify that controlling for 1880 manufacturing employment interacted with year indicators leaves our voting estimates unchanged, implying that differential trends related to initial manufacturing, which may have influenced subsequent development, do not account for our results. Third, in Table A-12 we examine the association between various economic variables and the Democratic vote, conditional on county and state-by-year fixed effects. As predicted by our model, we find a negative association between population, farm output, farm values, the wood industry, and Democratic voting. However, we estimate a null relationship between voting and manufacturing employment and output. If manufacturing expansion explained our results, we would expect to see a strong negative association between manufacturing and voting Democrat. That we do not observe such a relationship suggests that statistics of aggregate manufacturing employment and output pool import-competing

[10]We access the California data at `http://www.mariposafootprints.org/voters/Generalnew.htm`, `http://freepages.rootsweb.com/~npmelton/genealogy/prct.htm`, and `http://freepages.rootsweb.com/~shastaca/genealogy/1912voters.html`.

industries which should have favored the protectionist Republicans, and exporting industries that should have favored the Democrats.

In-migration of immigrants could also affect politics through alternative mechanisms, if immigrants voted Republican for cultural reasons, or if they inspired an anti-immigrant backlash. Evidence of the effect on different nationalities raises doubts about either alternative explanation (Table A-13). Protestant immigrants from Britain, Germany, and Scandinavia tended to vote Republican, while Catholic immigrants from Ireland tended to vote Democrat (Higham, 1974). We find positive effects of port access on the immigration of both groups, and so do not have a clear prediction of how port access affected voting via sectarian allegiances. Anti-immigrant rhetoric in the period was targeted mostly against Italian and Jewish immigrants, and so it seems most plausible that the immigration of those groups would precipitate a backlash. We find a negative association between port access and Italian and Russian and Polish immigrants, likely driven by large increases in the presence of those groups in northeastern cities which experienced small changes in port access.

We also consider three alternative if largely complementary explanations. First, population growth in regions affected by increased port access may have caused culturally-Republican voters to migrate to previously Democratic districts. Second, the increased importance of trade to local economies may have caused voters to ascribe greater importance to the gold standard, which the Republicans strongly supported. Third, agricultural exporters may have gained from trade but become more susceptible to holdup, which stoked a political backlash. In Table A-14, we do find evidence that increased port access induced in-migration from Republican-voting areas. This explanation is complementary to our argument. Areas that voted Republican were dominated by the protectionist manufacturing interests the party favored, and so migrants from those areas likely had economic interests in voting Republican. In Table A-15 we find that port access was associated with if anything less attention to the gold standard, and had no effect on a Lasso-derived measure of populism, suggesting that those factors do not explain our results. These results are consistent with the effect being stronger in the 1880–1890 decade, before the Democrats embraced populism, than after (see Table A-9).

5 CONCLUSION

During the last decades of the 19th century, US trade policy became increasingly protectionist. This outcome seems to have broadly reflected the policy opinions of voters who gave Republicans resounding electoral victories. These outcomes are puzzling because falling transportation costs integrated US agriculture into the global economy as never before and many existing accounts of the political consequences of export shocks suggest that economic winners should be able to translate those gains into policy (Rogowski, 1987, 1990; Acemoglu, Johnson and Robinson, 2005; Puga and Trefler, 2014). We show not only that protectionism triumphed at the national level, but that the places that gained the most from falling transportation costs became more protectionist.

We combine a majoritarian model of politics with a spatial model of international trade to argue that the extent to which decreased trade costs induce workers to move to locations closer to world markets can lead to the loss of political power by the factors of production advantaged by increased trade. Our paper provides causal evidence that increased trade increased farm output, farm values, and population density but reduced the proportion of farmers. This economic transformation meant that there were more voters—workers—with an interest in trade protection and our paper provides evidence that increased trade lead to a reduction in voting for the Democratic Party, which supported free trade, and an increase in protectionist opinion, as measured by local newspapers.

Our theoretical framework suggests a number of extensions for future research. Societal coalition models of economic policymaking typically specify the economic interests and policy preferences of a fixed set of actors in a given location and then map the institutions that aggregate those preferences into policy outcomes. In assessing the consequences of economic change for politics, adjustment mechanisms are through the reallocation of economic activity among this fixed set of actors. These models have provided insights about a wide range of political economy outcomes. Our theoretical framework, however, highlights the potential importance of economic growth and internal migration in changing the composition of societal coalitions and, in doing so, altering how economic change shapes politics. In the case we study, these forces undermined the political power of agricultural interests even as those interests gained from trade, but the effects of mobility on political economy outcomes should differ across contexts.

While incorporating geographic mobility into political economy models may be productive across many areas of economic policymaking, we highlight one directly related to our paper. In our model, workers are perfectly mobile across space and this assumption assures that they have common interests and reactions to increased exposure to trade from falling transportation costs. We think this is a useful and empirically supported assumption in the context of the late 19th century United States economy. Nonetheless, barriers to geographic mobility are undoubtedly important in other settings and may even be important in ours. Barriers to mobility will generate conflict among workers and across regions that may be critical for understanding political responses to changing exposure to trade. Future research should focus on theoretically and empirically identifying the importance of such barriers, which ones matter, and how specifically they influence politics. This idea is implicit in much of the recent literature on the consequences of negative import shocks with a focus on the "left behind." Our paper suggests that explicitly modeling political economy outcomes in a spatial trade model which allows workers to adjust by moving may provide new theoretical insights on that phenomenon and guide new empirical studies.

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Online Appendix for “Trains, Trade, and Transformation: A Spatial Rogowski Theory of America’s 19th Century Protectionism”

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A newspaper measure of protectionism

This section details the construction of our measure of protectionism used in Table 3. We are interested in measuring the anti- or pro-free trade bias of news coverage. This objective is analogous to that of research that tries to estimate the partisan slant of US media (Gentzkow and Shapiro, 2010). The basic framework used in this literature is to use terms known to be predictive of bias in one context and use them to measure bias in another. Martin and Yurukoglu (2017) measure bias in cable news by fitting an elastic net regression model of a congressional speaker's DW-nominate score on his or her usage of different phrases, and then use the weights from the elastic net to generate predicted values of the DW-nominate score of cable channels, as if the cable channels were also members of congress.

Our approach to measuring protectionism is similar to that of Martin and Yurukoglu (2017), but we make a number of modifications due to the constraints of our data sources. The basis of our measure is the frequency of terms predictive of support for protectionism, in 5,601 newspapers in 1,246 counties, from the Newspapers.com database.

We use a two-step process to estimate the weights to apply to these frequencies. In the first step, we use the full text of the publications of protectionist and tariff-reform organizations, after excluding all references to cities, the publication titles, or publishers.[11] We train a Lasso model to predict, based on the frequency of each one- or two-word phrase, whether a page is from a protectionist or free trade publication. We use this first stage to select 300 plausibly distinguishing terms.

In the second stage, we use these 300 terms to predict whether a newspaper is protectionist relative to others published in the same place at the same time. We identify newspapers approvingly quoted in *American Economist* which also appear in the Newspapers.com database. These newspapers were generally quoted for expressing protectionist sentiments, for instance, in 1899 the Philadelphia *Inquirer* was quoted "on the Tariff Responsible for the Mills," and the Philadelphia *Item* was quoted: "Prosperity a Complete Vindication for the Tariff." We pair these quoted newspapers with other newspapers published in the same city in the same year, with the assumption that the newspapers quoted in *American Economist* will on average be more protectionist than those not quoted. There are 110 such newspapers quoted in *American Economist*, which we pair with 505 others. We scrape the number of articles mentioning each of the 300 terms from the first stage, at the newspaper-year block level, restricting attention to articles which use one of the terms "protectionist," "protectionism," "imports," "exports," "importing", "exporting," "tariff," "foreign trade" or "international trade." We scale the number of hits for each term by the number of articles using any of the trade-related terms, and then use these term-frequencies to train another Lasso to predict whether the newspaper is one quoted in *American Economist*. We select the Lasso penalty using cross validation. By ensuring that each quoted newspapers is paired with others, we minimize the risk that features specific to the places which had protectionist newspapers bias

[11] On the protectionist side, we use the *American Economist*, published by the American Protective Tariff League, and the *Protectionist*, published by the Boston Home Market Club. On the free trade side, we use the *People's Cause: A Journal of Tariff Reform, Ballot Reform, Civil Service Reform*, the *Free Trade Broadside* published by the American Free Trade League, and *Tariff Reform*, published by the New York Reform Club.

our estimates. We use this Lasso to generate a set of around 60 terms and coefficients which we use to create our newspaper-year score.

This slightly more complicated process is motivated by constraints in accessing the data. As we needed to use an independent query to the Newspapers.com website to scrape the frequency of each term in each newspaper in each period, we avoided using methods that would require us to scrape a large number of terms for each newspaper (Martin and Yurukoglu (2017) have the entire transcripts of cable news and use 1000 terms). In a one-step approach analogous to Martin and Yurukoglu (2017), we could either use the free trade and protectionist organization publications, or the newspapers identified as being supportive of protectionism. Using the former, we run the risk of picking terms used very infrequently by ordinary newspapers, and may pick up on idiosyncratic features of these specific publications and not of the protectionist and free trade camps in general. Comparing newspapers identified as being protectionist against others in the same city at the same time has advantages in identifying terms that were actually used by the kinds of newspapers for which we are trying to estimate bias, and allows us to avoid picking up terminology common to a specific city. While we would not expect cities with multiple newspapers to be representative of all cities in the US, that should not be an issue for our measurement as we use within-city variation at this stage explicitly to avoid picking up place-specific features. However, because we need to scrape the frequency of terms in these newspapers in order to estimate a Lasso or Elastic Net model, we first need a reasonably short list of terms that should be predictive of trade policy preferences. We therefore use the protectionist and free trade organization publications to derive this initial list of terms.

We verify that our measure of protectionism is negatively correlated with county-level Democratic voteshare, and positively correlated with pro-tariff Congressional voting (Tables A-1, A-2). It also passes more basic plausibility tests: it is positively correlated with references to "American Economist," and with terms considered by Hirano and Snyder (2021) to be pro-tariff, and it is negatively correlated with those considered anti-tariff (Table A-3). These exercises increase our trust that this measure does capture genuine protectionism, and suggests that the newspapers in the Newspapers.com database were reasonably representative of the areas in which they were located. Our measure is also not correlated with references to the tariff, suggesting it picks up attitudes to the tariff, and not the issue's salience.

Scholarship on media economics suggests that these within-newspaper changes in protectionism documented in Table 3 can be attributed to consumer demand. Gentzkow and Shapiro (2010) argue that newspaper owners face a tradeoff between promoting their own beliefs, and catering to the preferences of readers, who can take their custom elsewhere. Newspapers have high fixed costs, and so need large circulations to be profitable. In the period we study, falling printing costs and widespread literacy (92% of white adults were literate in 1880) led to the emergence of representative and informative newspapers founded on advertising revenues (Petrova, 2011). In the context of our results, population, and thus the market for news, increased with port access, which of itself would have increased incentives for media owners—whether local elites or political parties—to cater to readers' preferences. As we would expect these new readers to prefer protectionism, even while free trade-supporting elites benefitted, the circulation incentive would have pushed newspapers towards more protectionist coverage.

This analysis only allows us to estimate protectionism for counties with newspapers in the Newspapers.com database. That database is not constructed to provide a representative sample of the US. This partly motivates our use of newspaper fixed effects in Table 3, so that our estimates are driven by within-county changes in port access and and within-newspaper changes in protectionism. That said, mapping which counties are included in this dataset (Figure A-3) does not suggest any clear bias in coverage. While there is a lot of heterogeneity in coverage across states, the dataset does not seem to exclude any particular region, and in certain states like Kansas, Pennsylvania, and Alabama it gives almost comprehensive coverage at the county-level, implying a reasonable mix of rural and urban counties. In our sample 1,307 counties contain newspapers, and the mean number of newspapers per county, conditional on a county containing a newspaper, is 5.05.

In addition, we use Random Forests to create an imputed measure of protectionism for all counties over the 1860–1900 period. We train a series of Random Forest models to predict our newspaper protectionism scores at the county-year level, using data on county political, economic, religious and immigrant composition.[12] This method allows us to estimate the average protectionism of the country over time—weighting our imputed measure by county population—and to visualize the spatial distribution of protectionism.

Figure A-1 shows that over the 1860–1900 period the country became more protectionist. Our training data is relatively heavily weighted towards the end of the period, and so we have less confidence in the figures for 1860 and 1870, but there is still strong evidence of a shift towards protectionism over the 1880–1900 period. Figure A-2 shows the spatial distribution of protectionism in 1880 and 1900, and shows, consistent with historical accounts of the issue, that the Northeast was solidly protectionist, the South free trade, and the Midwest divided between the protectionist industrial north and more free-trade south and west. Comparing the 1880 and 1900 maps, one can see that protectionism made substantial inroads into the Midwest and parts of the South, areas that were predominantly agricultural during this period. This evidence suggests that, at the same time that parts of the US became integrated into the world economy and agricultural exports surged, the exporting regions became more protectionist.

B Additional Derivations for the Formal Model

B.1 *Labor Demand in Regions Specializing in Manufacturing*

The analysis in section 2.3 derives an expression for labor demand in regions specializing in agriculture. This subsection derives an equivalent expression for regions specializing in manufacturing.

If $r_{iM} > r_{iA}$, a region specializes in manufacturing. Employment in the region is thus employment in manufacturing per unit of land, $n_i T_i = n_{iM} T_i$. Substituting the identity for wages from equilibrium condition i and the identity for prices from equilibrium condition iv into the expression for labor demand in manufacturing gives

$$n_{iM} = \left(\frac{z_{iM}}{u^*} \left(\frac{P_M^* \tau \delta_i^2}{P_A^*} \right)^{\gamma} \right)^{\frac{1}{\alpha_M}} (1 - \alpha_M)^{\frac{1}{\alpha_M}}$$

[12] We iteratively drop variables according to the degree of missingness.

	(1)	(2)	(3)	(4)
Protectionism	-0.09^{**}	-0.03^{**}	-0.02^{*}	-0.03^{*}
	(0.04)	(0.02)	(0.01)	(0.02)
Election FE	x	x		x
State FE		x		
State-by-election FE			x	
Newspaper FE				x
DV mean	36.91	36.91	36.91	36.91
R^2	0.10	0.62	0.82	0.83
N	10445	10445	10445	10445

This table shows the results of regressions of county-level vote-share for the Democratic party on newspaper-level protectionism. Standard errors clustered by state in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table A-1: Correlations between newspaper measure of protectionism and county-level Democratic share of presidental vote, 1860–1900

	(1)	(2)	(3)	(4)
Protectionism	0.29^{*}	0.09^{*}	0.10^{*}	0.74^{***}
	(0.16)	(0.04)	(0.06)	(0.18)
Congress FE	x	x	x	x
Party FE		x	x	x
State FE			x	x
Newspaper FE				x
DV mean	11.02	11.02	11.02	11.02
R^2	0.10	0.39	0.40	0.64
N	13155	13155	13155	13155

This table shows the results of regressions of congressional voting on newspaper-level protectionism. The dependent variable is protectionist voting in Congress on tariff bills, coded as 100 if the MC voted for a bill raising tariffs, or against a bill reducing tariff, −100 if they voted against a bill raising tariffs or for a bill reducing tariffs, and 0 if they abstained, using bills listed in Bensel (2000). Standard errors clustered by state in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table A-2: Correlations between newspaper measure of protectionism and Congressional voting on tariff bills, 1877–1897

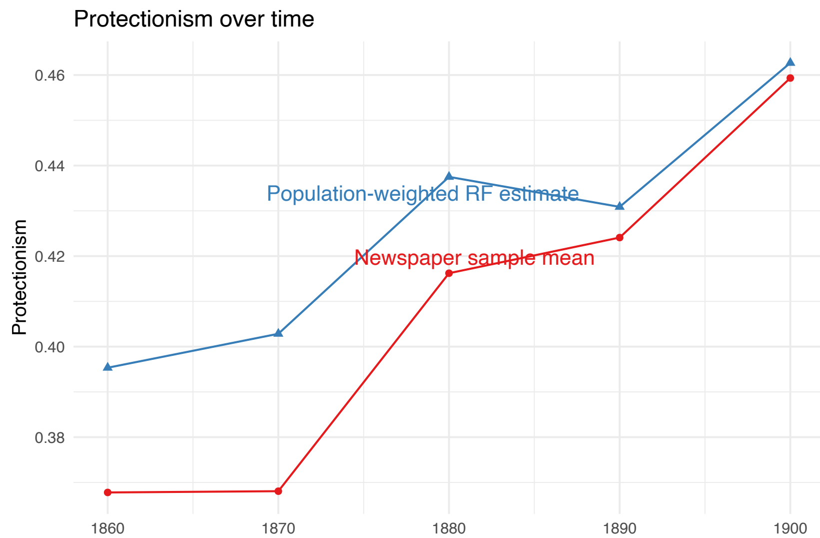

Figure A-1: Average protectionism in Newspapers.com sample and in Random Forest estimates weighted by population

Note that this expression is decreasing in u^*, and increasing in τ and δ_i^2. Raising the real wage decreases the quantity of labor demanded, and increasing the price received by firms by raising P_{iM} through higher transportation costs or tariffs raises the quantity of labor demanded.

B.2 *Derivation of Estimating Equations for Agricultural Production and Land Values*

AGRICULTURAL PRODUCTION We observe the nominal value of agricultural production $P_{iA}q_{iA}T_i$. From the production function identity we have $q_{iA} = z_{iA}n_{iA}^{1-\alpha_A}$. From equilibrium condition iv we have $P_{iA} = \frac{P_A^*}{\delta_i}$. Substituting this expression for P_{iA} and the identity for n_{iA} from equation (1) and taking logarithms gives

$$\ln(P_{iA}q_{iA}T_i) = \frac{\alpha_A + 2(1-\gamma)(1-\alpha_A)}{\alpha_A} \underbrace{\ln\left(\frac{1}{\delta_i}\right)}_{\text{Port Access}} + \underbrace{\ln\left((z_{iA})^{\frac{1}{\alpha_A}}(1-\alpha_A)^{\frac{1-\alpha_A}{\alpha_A}}T_i\right)}_{\text{County FE}} + \underbrace{\ln\left(P_A^*\left(\frac{1}{u^*}\left(\frac{P_A^*}{P_M^*\tau}\right)^{1-\gamma}\right)^{\frac{1-\alpha_A}{\alpha_A}}\right)}_{\text{Year FE}}$$

FARM VALUES We observe the value of farms, which should be a multiple of total rents r_iT_i, in a given county. From the identity for the ratio of rents to wages and the identity for wages implied by equilibrium condition i we can derive the following expression:

$$r_iT_i = \frac{\alpha_A}{1-\alpha_A} n_{iA}T_{iA}u^* P_{iA}^{\gamma}P_{iM}^{1-\gamma}$$

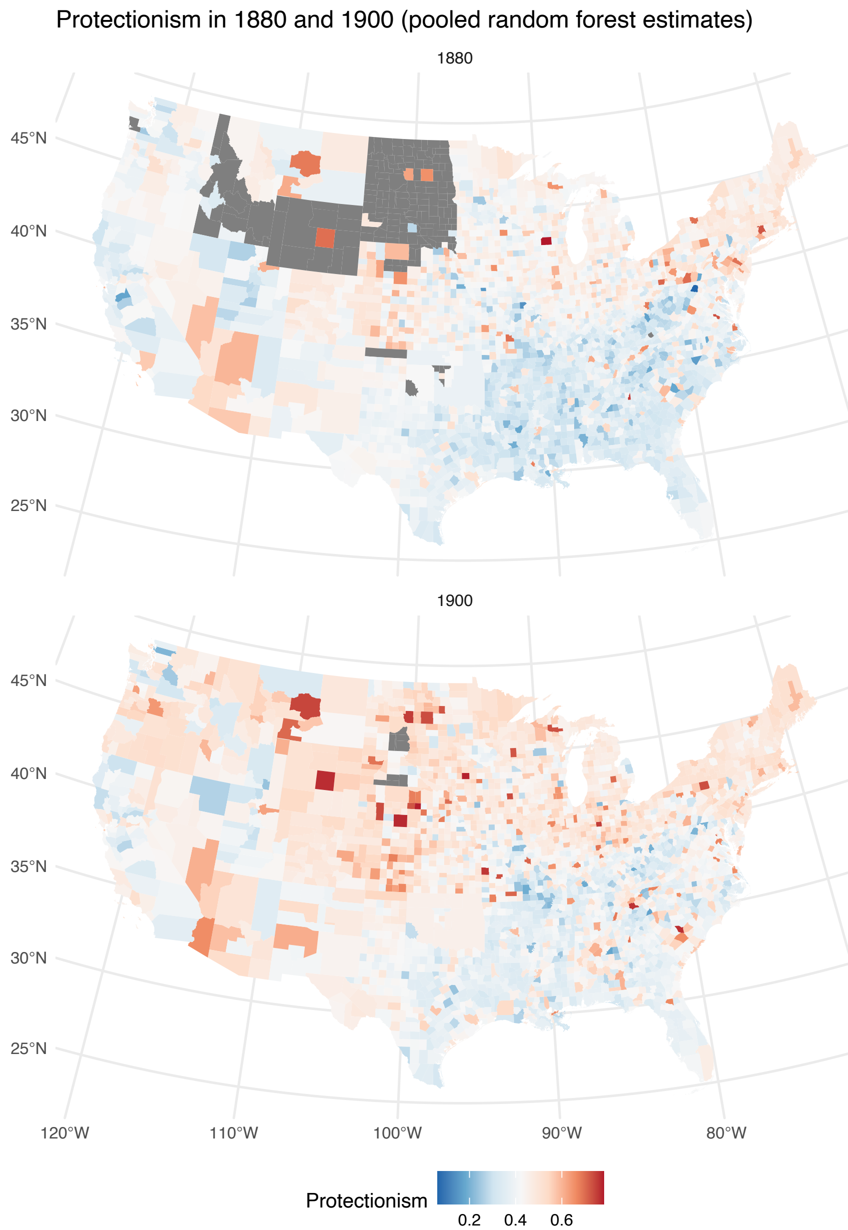

Figure A-2: Geographical distribution of protectionism

Substituting in the identity for n_{iA} from (1) and the identities for P_{iA} and P_{iM} from equilibrium condition i and taking logarithms gives

$$\ln\left(r_i T_i\right) = \frac{1+(1-\gamma)(1-\alpha_A)}{\alpha_A} \underbrace{\ln\left(\frac{1}{\delta_i}\right)}_{\text{Port Access}} + \underbrace{\ln\left(\left[z_{iA}(1-\alpha_A)\right]^{\frac{1}{\alpha_A}} \frac{\alpha_A}{1-\alpha_A} T_i\right)}_{\text{County FE}} + \underbrace{\ln\left(\left(\frac{1}{u^*}\right)^{1-\alpha_A} \frac{\left(P_A^*\right)^{1-\gamma(1-\alpha_A)}}{\left(P_M^* \tau\right)^{(1-\alpha_A)(1-\gamma)}}\right)^{\frac{1}{\alpha_A}}}_{\text{Year FE}}$$

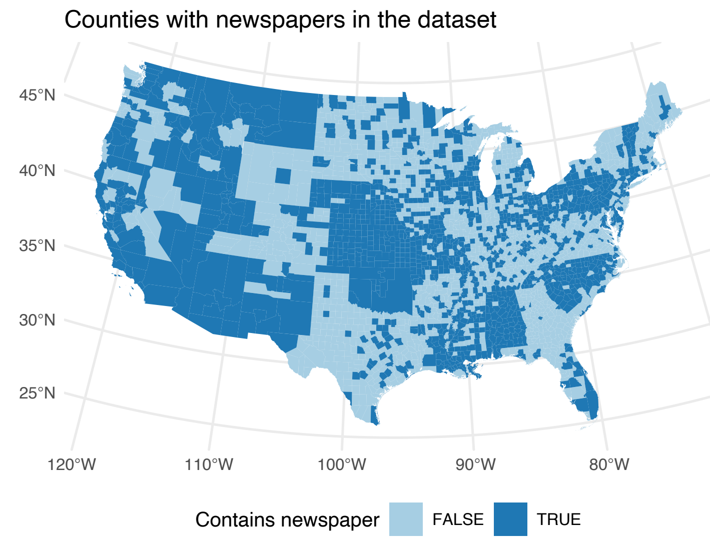

Figure A-3: Geographical coverage of the Newspapers.com data

THE POPULATION SHARE OF LANDOWNERS The share of landowners in the population is given by $\lambda_i = \frac{L_i}{L_i + n_i T_i}$. Taking the log of the odds ratio gives $\ln \frac{\lambda_i}{1-\lambda_i} = \ln L_i - \ln n_i - \ln T_i$. Substituting the identity for n_{iA} from (1) gives

$$\ln\left(\frac{\lambda_i}{1-\lambda_i}\right) = -\frac{2(1-\gamma)}{\alpha_A} \underbrace{\ln\left(\frac{1}{\delta_i}\right)}_{\text{Port Access}} - \underbrace{\ln\left([z_{iA}(1-\alpha_A)]^{\frac{1}{\alpha_A}} \frac{T_i}{L_i}\right)}_{\text{County FE}} - \underbrace{\ln\left(\frac{1}{u^*}\left(\frac{P_A^*}{P_M^* \tau}\right)^{1-\gamma}\right)^{\frac{1}{\alpha_A}}}_{\text{Year FE}}$$

B.3 *General Equilibrium Effects of Port Access on Real Wages and Immigration*

We examine the effects of changing port access for a given region i, holding the port access of all other regions k constant. Totally differentiating the national labor market clearing expression from equilibrium condition v with respect to δ_i gives

$$\frac{\partial \bar{N}(u^*)}{\partial u^*}\frac{\partial u^*}{\partial \delta_i} = \frac{\partial n_i T_i}{\partial \delta_i} + \frac{\partial n_i T_i}{\partial u^*}\frac{\partial u^*}{\partial \delta_i} + \frac{\partial \sum_{k \neq i} n_k T_k}{\partial u^*}\frac{\partial u^*}{\partial \delta_i}$$

Rearranging gives

$$\frac{\partial u^*}{\partial \delta_i} = \frac{\frac{\partial n_i T_i}{\partial \delta_i}}{\frac{\partial \bar{N}(u^*)}{\partial u^*} - \frac{\partial \sum_k n_k T_k}{\partial u^*}}$$

This expression is negative, because equation (1) shows that n_i is decreasing in δ_i and n_k are decreasing in u^*, and $\bar{N}(u^*)$ is by assumption increasing in u^*.

Decreasing transportation costs δ_i to agricultural regions thus increases real wages, and as immigration is increasing in the real wage, also increases immigration.

	"tariff"	"american economist"	negative tariff	positive tariff	% positive
	(1)	(2)	(3)	(4)	(5)
Protectionism	0.03	0.05^{***}	-0.29^{***}	0.07^{***}	0.30^{***}
	(0.09)	(0.02)	(0.06)	(0.02)	(0.02)
DV mean	90.31	1.07	8.6	12.63	62.4
R^2	0.90	0.81	0.81	0.84	0.83
N	8090	8090	8090	8090	6915

This table shows the results of regressions of at the newspaper level of references to tariffs on protectionism. In model (1) the dependent variable is references to tariffs, in (2), references to "American Economist," the publication of the American Protective Tariff League, in (3) references to "high tariff", "monopoly tariff," "trust tariff," or "tariff tax," in (4), references to "protective tariff" or "tariff protection," in (5) the number of references to the terms in (4) divided by the number of terms in (3) and (4), times 100. References are scaled by references to "and" and multiplied by 1,000. All models include newspaper and state-by-year fixed effects. Standard errors clustered by state in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table A-3: Correlations between newspaper measure of protectionism and references to tariffs, 1860–1900

B.4 *General Equilibrium Effects of Port Access on Economic Variables*

We have shown that the number of workers, agricultural production, and farm values are increasing functions of employment density n_i, and in the case of farm values real wages u^* as well. We show in this subsection that increasing port access in a given region increases employment $n_i T_i$ and thus by extension the other economic outcomes, even when accounting for the general equilibrium effects of increasing port access on national wages and population.

Note that the total derivative of employment $n_i T_i$ with respect to δ_i is

$$\frac{dn_iT_i}{d\delta_i} = \frac{\partial n_iT_i}{\partial \delta_i} + \frac{\partial n_iT_i}{\partial u^*}\frac{\partial u^*}{\partial \delta_i}$$

Implicitly differentiating equilibrium condition v with respect to δ_i gives

$$\frac{\partial \bar{N}(u^*)}{\partial u^*}\frac{\partial u^*}{\partial \delta_i} = \frac{\partial n_iT_i}{\partial \delta_i} + \frac{\partial n_iT_i}{\partial u^*}\frac{\partial u^*}{\partial \delta_i} + \frac{\partial \sum_{k\neq i} n_kT_k}{\partial u^*}\frac{\partial u^*}{\partial \delta_i}$$

which we can rearrange to obtain

$$\frac{\partial n_iT_i}{\partial \delta_i} + \frac{\partial n_iT_i}{\partial u^*}\frac{\partial u^*}{\partial \delta_i} = \frac{\partial u^*}{\partial \delta_i}\left(\frac{\partial \bar{N}(u^*)}{\partial u^*} - \frac{\partial \sum_{k\neq i} n_kT_k}{\partial u^*}\right)$$

The left hand side is the total derivative of n_iT_i with respect to δ_i. The right hand side must be negative as $\frac{\partial u^*}{\partial \delta_i} < 0$, $\frac{\bar{N}(u^*)}{\partial u^*} > 0$, and $\frac{\partial n_kT_k}{\partial u^*} < 0$. Thus n_iT_i is decreasing with δ_i, so increasing port access in region i raises employment in that region. As land T_i is fixed, raising employment must also raise employment density n_i.

B.5 *Deriving the Effect of Raising the Tariff on Labor Demand*

Writing employment of workers in regions specializing in agriculture by $N_A = \sum_{r_{iA} > r_{iM}} n_{iA} T_i$ and employment in regions specializing in manufacturing as $N_M = \sum_{r_{iA} \leq r_{iM}} n_{iM} T_i$, we rewrite the national labor market clearing condition (v) as $\bar{N}(u^*) = N_A + N_M$. Totally differentiating both sides with respect to the tariff, τ, and rearranging gives

$$\frac{\partial u^*}{\partial \tau} = \frac{\frac{\partial N_A}{\partial \tau} + \frac{\partial N_M}{\partial \tau}}{\frac{\partial \bar{N}(u^*)}{\partial u^*} - \frac{\partial N_A}{\partial u^*} - \frac{\partial N_M}{\partial u^*}}$$

Note that the denominator is positive as $\frac{\partial N_A}{\partial u^*} < 0$, $\frac{\partial N_M}{\partial u^*} < 0$, so this expression is positive if $\frac{\partial N_A}{\partial \tau} + \frac{\partial N_M}{\partial \tau} > 0$.

Expanding out this expression gives

$$\frac{\partial N_A}{\partial \tau} + \frac{\partial N_M}{\partial \tau} = \frac{\partial \sum_{r_{iA} > r_{iM}} n_{iA} T_i}{\partial \tau} + \frac{\partial \sum_{r_{iA} \leq r_{iM}} n_{iM} T_i}{\partial \tau}$$

Differentiating the expressions for local labor demand with respect to τ gives

$$\frac{\partial n_{iA} T_i}{\partial \tau} = \frac{\gamma - 1}{\alpha_A} \frac{n_{iA} T_i}{\tau}, \quad \frac{\partial n_{iM} T_i}{\partial \tau} = \frac{\gamma}{\alpha_M} \frac{n_{iM} T_i}{\tau}$$

substituting these identities into the expression above gives

$$\frac{\partial N_A}{\partial \tau} + \frac{\partial N_M}{\partial \tau} = \frac{1}{\tau} \left(\frac{\gamma - 1}{\alpha_A} N_A + \frac{\gamma}{\alpha_M} N_M \right)$$

As τ is always positive, this expression is positive if the term in parentheses is positive, which will hold if $\frac{\gamma}{1-\gamma} \frac{\alpha_A}{\alpha_M} > \frac{N_A}{N_M}$.

B.6 *Preferences of Landowners Over Tariff Policy*

In this subsection we show that landowners in agricultural regions stood to lose from higher tariffs, and landowners in manufacturing regions stood to gain.

Showing the result for agricultural landowners is straightforward. Combining the identity that $r_{iA} w_i = \frac{\alpha_A}{1-\alpha_A} n_{iA}$ with the identity for the wage from equilibrium condition i implies that the utility of landowners is given by

$$\frac{r_{iA}}{P_{iA}^{\gamma} P_{iM}^{1-\gamma}} = \frac{\alpha_A}{1 - \alpha_A} n_{iA} u^*$$

Substituting in the identity for n_{iA} from equation (1) gives

$$\frac{r_{iA}}{P_{iA}^{\gamma} P_{iM}^{1-\gamma}} = \frac{\alpha_A}{1 - \alpha_A} \left(z_{iA} \left(\frac{P_A^*}{P_M^* \tau \delta_i^2} \right)^{1-\gamma} \right)^{\frac{1}{\alpha_A}} (1 - \alpha_A)^{\frac{1}{\alpha_A}} (u^*)^{\frac{\alpha_A - 1}{\alpha_A}}$$

Taking the total derivative gives

$$\frac{dr_{iA}P_{iA}^{-\gamma}P_{iM}^{\gamma-1}}{d\tau} = \frac{\partial r_{iA}P_{iA}^{-\gamma}P_{iM}^{\gamma-1}}{\partial\tau} + \frac{\partial r_{iA}P_{iA}^{-\gamma}P_{iM}^{\gamma-1}}{\partial u^*}\frac{\partial u^*}{\partial\tau}$$

This expression is negative as $\frac{\partial r_{iA}P_{iA}^{-\gamma}P_{iM}^{\gamma-1}}{\partial\tau}$ and $\frac{\partial r_{iA}P_{iA}^{-\gamma}P_{iM}^{\gamma-1}}{\partial u^*}$ are negative, and $\frac{\partial u^*}{\partial\tau}$ is positive for the parameter values we consider. Thus landowners in agricultural regions should favor free trade.

To show that landowners in manufacturing regions gain from tariffs, we follow the same initial steps to derive

$$\frac{r_{iM}}{P_{iA}^{\gamma}P_{iM}^{1-\gamma}} = \frac{\alpha_M}{1-\alpha_M}\left(z_{iM}\left(\frac{P_M^*\tau\delta_i^2}{P_A^*}\right)^{\gamma}\right)^{\frac{1}{\alpha_M}}(1-\alpha_M)^{\frac{1}{\alpha_M}}(u^*)^{\frac{\alpha_M-1}{\alpha_M}}$$

Taking the total derivative gives

$$\frac{dr_{iA}P_{iM}^{-\gamma}P_{iM}^{\gamma-1}}{d\tau} = \frac{\gamma}{\alpha_M\tau}\frac{r_{iM}}{P_{iA}^{\gamma}P_{iM}^{1-\gamma}} + \frac{\alpha_M-1}{\alpha_M u^*}\frac{r_{iM}}{P_{iA}^{\gamma}P_{iM}^{1-\gamma}}\frac{\partial u^*}{\partial\tau}$$

Because $\frac{r_{iM}}{P_{iA}^{\gamma}P_{iM}^{1-\gamma}}$ must be positive, this expression is positive if

$$\frac{\gamma u^*}{(1-\alpha_M)\tau} > \frac{\partial u^*}{\partial\tau}$$

Returning to the identity for $\frac{\partial u^*}{\partial\tau}$, we see

$$\frac{\partial u^*}{\partial\tau} = \frac{\frac{\partial N_A}{\partial\tau}+\frac{\partial N_M}{\partial\tau}}{\frac{\partial\bar{N}(u^*)}{\partial u^*}-\frac{\partial N_A}{\partial u^*}-\frac{\partial N_M}{\partial u^*}} < -\frac{\frac{\partial N_A}{\partial\tau}+\frac{\partial N_M}{\partial\tau}}{\frac{\partial N_A}{\partial u^*}+\frac{\partial N_M}{\partial u^*}}$$

The identities for n_{iA} and n_{iM} imply that

$$\frac{\partial n_{iA}}{\partial u^*} = -\frac{n_{iA}}{\alpha_A u^*},\quad \frac{\partial n_{iM}}{\partial u^*} = -\frac{n_{iM}}{\alpha_M u^*}$$

Substituting in these identities along with the identities for $\frac{\partial N_A}{\partial\tau}$ and $\frac{\partial N_M}{\partial\tau}$ gives

$$-\frac{\frac{\partial N_A}{\partial\tau}+\frac{\partial N_M}{\partial\tau}}{\frac{\partial N_A}{\partial u^*}+\frac{\partial N_M}{\partial u^*}} = \frac{\frac{1}{\tau}\left(\frac{\gamma-1}{\alpha_A}N_A+\frac{\gamma}{\alpha_M}N_M\right)}{\frac{1}{u^*}\left(\frac{1}{\alpha_A}N_A+\frac{1}{\alpha_M}N_M\right)} = \frac{u^*}{\tau}\left((\gamma-1)\frac{\frac{N_A}{\alpha_A}}{\frac{N_A}{\alpha_A}+\frac{N_M}{\alpha_M}}+\gamma\frac{\frac{N_M}{\alpha_M}}{\frac{N_A}{\alpha_A}+\frac{N_M}{\alpha_M}}\right)$$

If the inequality below holds, then the utility of manufacturing landowners is increasing in τ:

$$\frac{\gamma}{1-\alpha_M} > (\gamma-1)\frac{\frac{N_A}{\alpha_A}}{\frac{N_A}{\alpha_A}+\frac{N_M}{\alpha_M}}+\gamma\frac{\frac{N_M}{\alpha_M}}{\frac{N_A}{\alpha_A}+\frac{N_M}{\alpha_M}}$$

This inequality must be satisfied as the left hand side for $\alpha \in (0,1)$ is greater than γ, and the right hand side is a convex combination of γ and $(\gamma - 1)$, and so is maximized at γ.

C ADDITIONAL TABLES

Table A-4: Summary statistics

Variable	N	Mean	SD	q5	q95
ln port access	8,397	-0.19	0.11	-0.42	-0.07
railroad length within 40 miles	8,397	35.92	29.46	0.00	93.45
ln 1 + Market Access within 50 miles	8,397	10.33	3.47	2.04	14.15
ln 1 + population	7,776	9.43	1.26	7.26	10.96
ln 1 + farm output	7,754	13.19	1.78	10.61	14.90
ln 1 + farm value	7,754	14.54	1.93	11.94	16.66
ln odds % farmers	5,168	-0.64	0.88	-2.33	0.41
ln 1 + foreign born	7,775	5.82	2.33	1.95	9.17
% white, 1880	2,386	0.84	0.22	0.34	1.00
ln population density, 1880	2,386	2.99	1.39	0.10	4.50
% in agriculture, 1880	2,383	0.66	0.22	0.19	0.91
% in manufacturing, 1880	2,383	0.07	0.08	0.01	0.23
% Democrat of two-party vote	9,878	53.75	20.91	22.71	95.10
ln odds % Democrat	9,878	0.23	1.24	-1.22	2.97
2-step Lasso Protectionism	6,776	43.75	23.39	7.62	85.84
Hirano-Snyder Protectionism	5,945	63.91	22.29	28.27	100.00

	ln % Mf	ln % wood	ln % non-wood	ln Mf output		
	(1)	(2)	(3)	(4)	(5)	(6)
ln port access	2.52***	6.17***	0.71	4.02***	0.95	2.71**
	(0.64)	(1.74)	(0.54)	(1.20)	(3.13)	(1.31)
1880 Mf > farm output					Y	N
DV mean	-3.21	-5.32	-3.52	12.17	13.69	11.7
R^2	0.96	0.87	0.96	0.96	0.98	0.83
N	5169	5169	5169	7664	1789	5875

This table shows the results of regressions of county level economic variables on port access, defined as the log of the inverse of transportation costs to the nearest major port. All models include county and state-by-election fixed effects and control for a third degree polynomial in the length of railroad within 40 miles of the county centroid. In model (1) the dependent variable is the log share of the population employed in manufacturing, in (2) the log share of population employed in logging and sawmills, in (3) the log share employed in manufacturing industries other than logging and sawmills, in (4)–(6) the log value of manufacturing output. Model (5) is restricted to counties in which 1880 manufacturing output exceeded agricultural output, (6) to counties in which 1880 agricultural output exceeded manufacturing output. Models are weighted by 1880 population. Standard errors clustered by state in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table A-5: Effects of port access on manufacturing, 1880–1900

	(1)	(2)	(3)	(4)
ln port access	−51.45***	−54.32***	−20.78**	−21.72**
	(11.47)	(11.00)	(8.05)	(8.22)
1880 % Mf x election		x		x
1880 % white x election			x	x
1880 ln density x election			x	x
DV mean	53.75	53.73	53.75	53.73
R^2	0.90	0.91	0.92	0.92
N	9878	9845	9878	9845

This table shows the results of regressions of county level Democratic share of the two-party vote on port access. All models include county and state-by-election fixed effects, and control for a third degree polynomial in the length of railroad within 40 miles of the county centroid. Models (2) and (4) control for the share of the population in 1880 employed in manufacturing interacted with election fixed effects, (3) and (4) also control for the 1880 % white and log population density interacted with election fixed effects. Models are weighted by 1880 population. Standard errors clustered by state in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table A-6: Effects of port access on Democrat share of two-party vote, 1880–1900, controlling for 1880 manufacturing employment

	(1)	(2)	(3)	(4)
ln port access	-17.85^{***}	-14.54^{***}	-15.12^{**}	-19.85^{***}
	(4.84)	(4.30)	(5.95)	(5.71)
Railroad controls		x		x
Linear time trends			x	x
DV mean	53.8	53.8	53.8	53.8
R^2	0.87	0.87	0.91	0.91
N	16019	16019	16019	16019

This table shows the results of regressions of county level Democratic share of the two-party vote on port access, defined as the log of the inverse of transportation costs to the nearest major port. All models include county and state-by-election fixed effects. Models 3–4 add linear county time trends, and 2 and 4 control for a third degree polynomial in the length of railroad within 40 miles of the county centroid. Standard errors clustered by state in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table A-7: Effects of port access on Democrat share of two-party vote, 1860–1900

	Pretrends		Actual	
	(1)	(2)	(3)	(4)
ln port access$_{t+2}$	-4.83	19.95		
	(26.53)	(21.77)		
ln port access			-59.48^{***}	-51.45^{***}
			(12.14)	(11.47)
Railroad controls		x		x
Period	1860–1880	1860–1880	1880–1900	1880–1900
DV mean	54.52	54.52	53.75	53.75
R^2	0.88	0.91	0.90	0.90
N	8210	8210	9878	9878

This table shows the results of regressions of the Democratic share of the county two-party vote on log port access 1880–1900. Models (1) and (2) test for pretrends, and use as the dependent variable Democratic voting in the 1860–1880 period. In the absence of parallel trends one would expect 1880–1900 port access to be orthogonal to 1860-1880 voting. Models (3) and (4) replicate the baseline results for the 1880–1900 period, and place the estimates from (1) and (2) in context. Models (2) and (4) also control for a third degree polynomial in the length of railroad (1880–1900) within forty miles of the county centroid. All models include county and state-by-year fixed effects. Models are weighted by 1880 population. Standard errors clustered by state in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table A-8: Pretrends checks for voting

	(1)	(2)	(3)
ln port access	-50.47^{***}	-70.13^{***}	-35.97^{**}
	(12.01)	(17.39)	(15.55)
Y1	1880	1880	1890
Y2	1890	1900	1900
DV mean	54.34	52.96	53.69
R^2	0.93	0.90	0.93
N	7343	4921	7492

This table shows the results of regressions of county level Democratic share of the two-party vote on port access, subset to different two-year pairs from the 1880–1900 period. All models include county and state-by-election fixed effects, and a third degree polynomial in the length of railroad within 40 miles of the county centroid. Models are weighted by 1880 population. Standard errors clustered by state in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table A-9: Effects of port access on Democrat share of two-party vote, two-year pairs, 1880–1900

	Real estate value		Owns real estate		Owns farm	
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	1146.63^{***}		22.15^{***}		13.93^{***}	
	(44.27)		(0.79)		(0.95)	
Farmer	1600.54^{***}	2195.58^{***}	46.98^{***}	46.46^{***}	48.02^{***}	36.59^{***}
	(67.00)	(54.89)	(0.87)	(0.36)	(0.99)	(0.42)
Year	1870	1870	1870	1870	1900	1900
County FE		x		x		x
DV mean	1324.31	1324.31	43.47	43.47	45.44	45.44
Individuals	9130689	9130689	9130689	9130689	18552260	18552260
R^2	0.30	0.76	0.82	0.95	0.71	0.94
N	4523	4523	4523	4523	5662	5662

This table shows the results of regressions of individual-level property ownership on whether the individual is occupied as a farmer, using data from the 1870 and 1900 censuses. The dependent variable in models 1 and 2 is real estate wealth in 1870, in 3 and 4 a binary measure of whether the respondent's real estate wealth was non-zero, and in 5 and 6 a binary measure of whether the respondent lived on a farm and ownerd it in the 1900 census. Even-numbered models add county fixed effects. The base level in all models is employment in Industry. The sample is restricted to white men aged 16 and above. To improve computational efficiency, individual-level data is aggregated to the county-sector level, and then models are estimated weighted by county-sector size. Robust standard errors in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table A-10: Farmers and property ownership, 1870 and 1900

	Indiana 1874				California 1910s	
	(1)	(2)	(3)	(4)	(5)	(6)
Farmer	0.17***	0.17***	0.15***	0.12***	0.08***	0.05***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)
Age controls		x	x	x		
Gender controls					x	x
County FE		x				x
Township FE			x	x		
Religion FE				x		
DV mean	0.39	0.39	0.39	0.39	0.39	0.39
R^2	0.03	0.12	0.26	0.34	0.00	0.02
N	1005	1005	1005	1005	18533	18533

This table shows the results of regressions of individual-level political affiliation on occupations, using data from Indiana county directories in 1874 compiled by Hammarberg (1977), and the California voter registers in Mariposa and Shasta counties in 1912, and Sacramento county in 1914. The dependent variable is coded as 1 if the individual is listed as a Democrat, 0 if not. The independent variable is coded as 1 if the individual is employed as a farmer, 0 otherwise. Models 2–4 control for third-degree polynomials in the individual's age and time lived in Indiana, 2 and 6 add county fixed effects, 3 and 4 more granular township fixed effects, 4 adds fixed effects for 17 religious denominations, and 5 and 6 control for gender. Robust standard errors in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table A-11: Individual-level correlates of Democrat affiliation, Indiana 1874 and California, 1912–1914

	(1)	(2)	(3)	(4)	(5)	(6)
ln pop	-3.54^{**}					
	(1.57)					
ln farm output		-2.30^{***}				
		(0.80)				
ln farm value			-1.43^{**}			
			(0.58)			
ln % Mf				-0.16		
				(1.04)		
ln % wood					-0.77^{**}	
					(0.38)	
ln Mf output						-0.20
						(0.15)
DV mean	53.75	53.68	53.68	52.96	52.96	53.6
R^2	0.90	0.90	0.90	0.89	0.89	0.90
N	9878	9854	9854	4917	4917	9685

This table shows the results of regressions of the county level Democratic share of the two-party vote on various measures of economic development. All models include county and state-by-election fixed effects. Models are weighted by 1880 population. Standard errors clustered by state in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table A-12: Relationship between different economic changes and voting Democrat, 1880–1900

	Immigrants	N. Europe	Britain	Ireland	Italy	E. Europe
	(1)	(2)	(3)	(4)	(5)	(6)
ln port access	3.03^{***}	3.86^{***}	2.40^{***}	3.63^{***}	-3.44^{*}	-8.08^{***}
	(0.83)	(1.06)	(0.75)	(0.86)	(1.90)	(1.85)
DV mean	5.82	3.87	4.34	2.51	1.06	1.24
R^2	0.99	0.99	0.99	0.98	0.92	0.92
N	7775	7776	7776	7776	7776	7776

This table shows the results of regressions of the log number of immigrants on port access. In model (1) the dependent variable is the log number of foreign-born residents, in (2) the log number born in Germany, Sweden, Norway and Denmark, in (3), Great Britain, in (4), Ireland, in (5), Italy, and in (6) Poland and the Russian Empire. All models include county and state-by-year fixed effects, and control for a third degree polynomial in the length of railroad within 40 miles of the county centroid. All models are weighted by 1880 population. Standard errors clustered by state in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table A-13: Effects of port access on immigration, 1880–1900

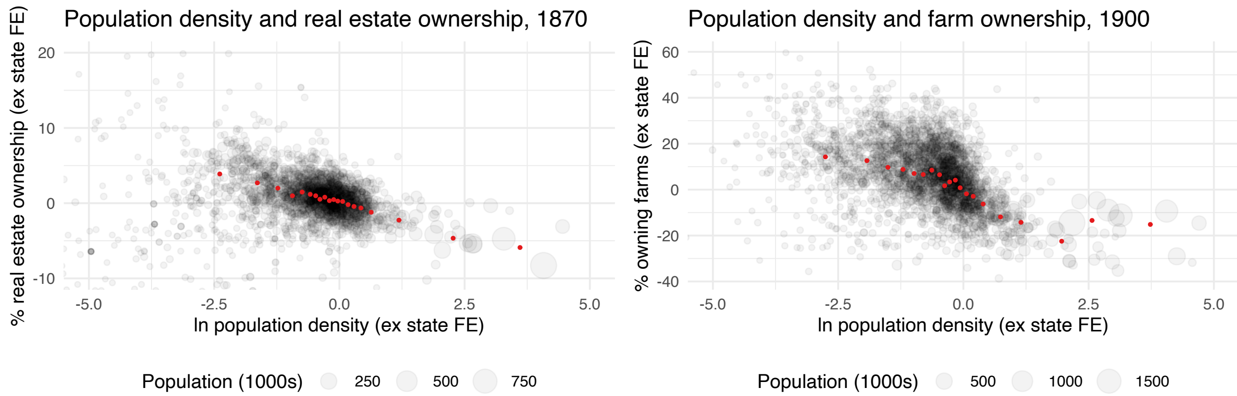

Figure A-4: Relationship between population density and percentage owning real estate, 1870, and farms, 1900

D ALTERNATIVE EXPLANATIONS FOR EMPIRICAL RESULTS

We study the plausible mediating effects of trade-induced migration from different types of areas using census microdata. We use linked census microdata (Abramitzky, Boustan and Rashid, 2020) to compute for 1900 $p_{ij,1900}$, the share of inhabitants in county i who were in county j in 1880. We then use these weights to construct variables which capture the effects of different kinds of migration:

$$M_{it} = \sum_j p_{ijt} m_j$$

where m_j is some time-invariant variable measured in county j. Note that for 1880, $M_{i,1880} = m_i$. We use three different m_j variables: 1880 Republican share of the two-party vote, 1860 Republican vote share, and Union Civil War enlistment per capita (multiplied by 100), using data from Dippel and Heblich (2021). A positive within-county change in the aggregate variables is driven by people migrating from more Republican to less Republican counties. The first of these variables may capture both economic and cultural reasons for voting Republican. For instance, voters migrating from Republican counties may continue to vote Republican because their economic endowments and thus their interests do not change when they migrate. The latter two more plausibly capture cultural factors. The Republican party during this period was known to appeal to voters polarized by the Civil War by "waving the bloody shirt," and such appeals would have been stronger in counties which had been more supportive of the Civil War and Lincoln-era Republican Party.

Table A-14 shows reports the results of regressions of these variable on port access. While there is evidence of internal migration from counties which were more Republican in 1880 being affected by port access, there is weaker evidence in support of more explicitly cultural migration mediators. We find no effect of port access on migration from 1860 Republican strongholds, and a marginally significant effect on migration from places with higher Union enlistment.

Table A-16 shows that immigrants were less likely than natives to own property or farms. Table A-15 examines the effects of port access on coverage of the gold standard and a

	1880 Rep. migrants	1860 Rep. migrants	Union migrants
	(1)	(2)	(3)
ln port access	36.37^{***}	5.46	3.40^{*}
	(8.69)	(7.83)	(1.97)
DV mean	46.39	24.37	3.11
R^2	0.95	1.00	0.96
N	4918	4568	4712

This table shows the results of regressions of mediating variables related to internal migration on port access. All models include county and state-by-year fixed effects, and control for a third degree polynomial in the length of railroad within 40 miles of the county centroid. All models are weighted by 1880 population. Standard errors clustered by state in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table A-14: Effects of port access on internal migration, 1880–1900

Lasso-based measure of populism. It finds no evidence that increased trade caused an increase in attention to monetary policy or motivated populist grievances, perhaps by creating hold-up problems (Eichengreen et al., 2017).

	gold	silver	"gold standard"	"sound money"	"free silver"	populism
	(1)	(2)	(3)	(4)	(5)	(6)
ln port access	7.24	−12.74	-2.35^{**}	-0.83^{***}	−1.89	5.66
	(14.15)	(11.98)	(1.09)	(0.29)	(1.18)	(10.68)
DV mean	30.5	24.12	1.19	0.29	1.3	28.86
R^2	1.00	1.00	1.00	0.98	0.98	0.90
N	7065	7065	7065	7065	7065	7065

This table shows the results of regressions ofnewspaper references to the gold standard and populism on port access. In models 1–5, the dependent variable is the number of references to the term in the top row, scaled by the number of references to "and" and multiplied by 100. In model 6, the dependent variable is a measure of populism derived from a two-stage Lasso similar to that used to study protectionism. All models control for a third-degree polynomial in the length of rail within 40 miles of the county centroid, and county and state-by-year fixed effects. Standard errors clustered by state in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table A-15: Relationship between port access and attention to the gold standard and populism, 1880–1900

	Real estate value		Owns real estate		Owns farm		Owns home	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Foreign-born	-474.56^{***}	-814.75^{***}	-3.88^{*}	2.24^{***}	-11.74^{***}	-1.82^{***}	-10.09^{***}	-2.59^{***}
	(48.82)	(64.30)	(2.20)	(0.53)	(2.05)	(0.27)	(3.33)	(0.54)
Year	1870	1870	1870	1870	1900	1900	1900	1900
County FE		x		x		x		x
DV mean	1026.92	1026.92	38.07	38.07	37.05	37.05	61.82	61.82
Individuals	10024851	10024851	10024851	10024851	21088376	21088376	21088376	21088376
R^2	0.07	0.86	0.02	0.89	0.07	0.98	0.06	0.95
N	4530	4530	4530	4530	5637	5637	5637	5637

This table shows the results of regressions of individual-level property ownership on an indicator for whether the individual, was born in a foreign country, using data from the 1870 and 1900 censuses. The dependent variable in models 1 and 2 is real estate wealth in 1870, in 3 and 4 a binary measure of whether the respondent's real estate wealth was non-zero, and in 5 and 6 a binary measure of whether the respondent lived on a farm and owned it in the 1900 census, in 7 and 8 a binary measure of whether the respondent owned his dwelling. Even-numbered models add county fixed effects. The sample is restricted to white men aged 16 and above. To improve computational efficiency, individual- level data is aggregated to the county-by-nativity level, and then models are estimated weighted by county-by-nativity size. Robust standard errors in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table A-16: Nativity and property ownership, 1870 and 1900