Gravity's Politics

Theo Serlin*

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Abstract

Trade flows decline with geographic distance. This paper explores the implications of that fact for politics. In a multi-region model of trade, differences in trade costs create uneven gains and losses from liberalization. This heterogeneity provides a basis for political divisions over trade policy, even in the absence of sector or factor differences. Some areas gain from lower prices and export opportunities, but regions that sell into those areas face greater competition. I calibrate this model to data on regional trade flows in the US to quantify these uneven gains and losses. This new measure captures different variation than commonly-used measures of trade exposure that ignore the geographic context. The modeled gains from liberalization are predictive of support for trade by voters, in specifications that exploit within-unit variation in trade gains with different partners. I find similar patterns in Europe. Spatial frictions to trade create spatial cleavages over trade.

*King's College London, theo.serlin@kcl.ac.uk. I am grateful to Avidit Acharya, Sarah Brooks, Stephen Chaudoin, Vasiliki Fouka, Alexander Gazmararian, Judith Goldstein, Robert Gulotty, In Song Kim, Helen Milner, Layna Mosley, Rebecca Perlman, Dennis Quinn, Jonathan Rodden, Ronald Rogowski, Kenneth Scheve, Yoto Yotov, and audiences at MIT, Princeton, Rochester, Peking University, the Stanford-Berkeley IPE Colloquium, and the 2024 IPES meeting and 2025 EPSA and APSA meetings for comments on this project.

INTRODUCTION

From ancient Assyria to eBay, trade flows follow the gravity equation (Barjamovic et al., 2019; Hortaçsu, Martínez-Jerez and Douglas, 2009). Scholarship since Tinbergen (1962) has documented that trade flows are proportional to country sizes and decline sharply with geographic distance. The top left panel of Figure 1 shows this pattern, plotting US exports, normalized by the GDP of the receiving country, against geographic distance. The extent of US trade with Canada indicates the importance of distance-related trade costs for trade flows, relative to the differences in factor endowments and technology that provide the basis for trade in neoclassical models. Distance exerts if anything a stronger effect on internal trade, as shown for the US in the top right panel of Figure 1. Distance-related trade costs influence which regions of a country export, and where they export, even within a given industry. The bottom panel of Figure 1 shows that paper manufacturers closer to Mexico export more to Mexico, and those closer to Canada export more to Canada.[1]

This geographic heterogeneity in importing and exporting activity—and thus in the benefits from doing so—is absent from the dominant theories of trade politics. These theories identify cleavages between factors (Rogowski, 1989), industries (Hiscox, 2002), and firms of differing productivity (Kim, 2017; Osgood, 2017), which can of course vary spatially. They do not, however, predict differences in support for trade with Canada between a worker in a paper mill in Buffalo, which relies on the Canadian market, one in a mill of the same productivity in Missouri, which does not, and one in El Paso, which relies on trade with Mexico but not Canada.

Recent empirical scholarship documents that place is important for how trade is politicized. Shocks to an industry percolate through local labor markets (Autor, Dorn and Hanson, 2013), and influence political preferences and electoral behavior (Autor et al., 2020; Broz, Frieden and Weymouth, 2021; Colantone and Stanig, 2018; Baccini and Weymouth, 2021; Ballard-Rosa et al., 2021). People care about the wellbeing of their neighbors, and their perceptions of the

[1] Figure I.1 shows the same pattern in the metals industry.

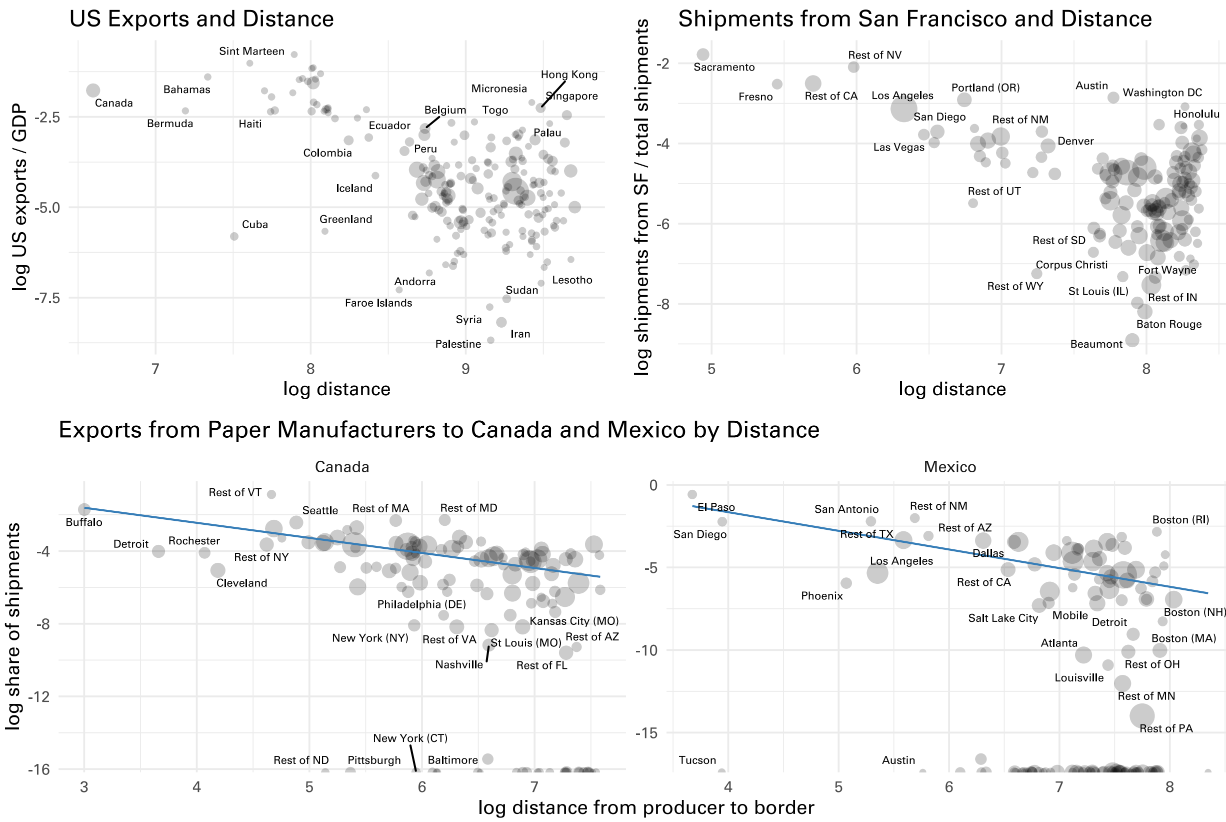

Figure 1: Gravity in Trade Between Countries (top left) Within Countries (top right) and Within Industries (bottom)

The top left panel shows US exports divided by destination GDP plotted against distance. The top right panel shows shipments from manufacturers in San Francisco to other zones of the US in the Commodity Flow Survey. The size in both top panels is proportional to the GDP of the destination. The bottom figure plots the log share of shipments of paper (NAICS 322) from each Commodity Flow Survey zone to Canada and Mexico against distance to the relevant border. The lines are from a Poisson regression. The size corresponds to the total value of shipments from that location. Data in all figures is for 2017.

state of the economy and the effects of policies like trade liberalization are influenced by their local environment (Ansolabehere, Meredith and Snowberg, 2014; Alkon, 2017; Rickard, 2022). There is consensus that geography is important for trade flows, and that the effect of trade on local economies is important for its politics. Yet—beyond the specific effects of negative shocks to clustered industries—we lack an understanding of where to look for the effects of geography on trade politics.

This paper analyzes the implications of gravity for the politics of trade. Because distance is important for trade, internal geography conditions the gains from trade and political divides over trade policy. Locations close to international gates benefit from opportunities to export and access to imports. Those towards the interior experience fewer of these benefits, and are harmed by liberalization as the goods they sell to coastal regions compete with imports. If the gains and losses from trade influence support, we would expect voters in regions with better access to world markets to be more supportive of liberalization, and those in regions with worse access to be less supportive.

This paper develops and tests these intuitions in four sections. Section 1 analyzes distributional conflict in a class of trade models that rationalize the gravity equation. Following Anderson (1979), a number of theoretical models have been proposed that allow trade flows to be written as follows (Krugman, 1980; Eaton and Kortum, 2002; Melitz, 2003; Chaney, 2008):

$$\ln X_{od} = \delta_o + \delta_d - \theta \ln \tau_{od}, \tag{1}$$

where X_{od} are exports from o (for origin) to d (destination), δ_o and δ_d are bundles of attributes specific to o and d, respectively, τ_{od} is the cost of shipping goods between o and d, and θ is the "trade elasticity" which governs how strongly trade flows respond to trade costs. In these models, locations trade for different reasons.[2] Arkolakis, Costinot and Rodríguez-Clare (2012) show that despite these differences, the welfare effects of trade are equivalent in these models, and in a general class of models characterized by a constant elasticity of substitution demand system. I borrow their terminology in referring to these models as "gravity models."

I analyze political divides in a multi-region gravity model. Reducing tariffs creates larger benefits for regions with lower initial costs of accessing the global economy. Depending on the configuration of trade costs, reducing tariffs can also generate welfare losses for some regions. These losses occur despite the absence of the industry or factor differences that drive conflict in canonical international political economy models (Alt and Gilligan, 1994; Rogowski, 1989;

[2] Anderson (1979) and Anderson and Van Wincoop (2003) make the Armington assumption that each location produces a differentiated product. In Eaton and Kortum (2002) each location's productivity differs across varieties of products. In Krugman (1980) increasing returns to scale and product differentiation provide a rationale for trade. Melitz (2003) and Chaney (2008) extend the Krugman framework to include heterogeneous firms.

Hiscox, 2002). Uneven gains and losses provide a basis for divides between regions over trade.

Section 2 uses the model to measure which parts of the US gain from liberalization. I calibrate the model to data on regional trade flows for the US in 2017, and simulate how reductions in trade costs with different parts of the world affect welfare in different regions. I focus on the US in part because of the availability of the granular regional trade data necessary to construct this measure. This approach uses observed trade flows to infer trade costs and provide the model's comparative statics of the gains from liberalizing trade with different partners for different parts of the US. Reductions in trade costs create aggregate welfare gains, but some cases of bilateral liberalization create losses for some US regions. This measure of gains from liberalization is driven by geographic variation in trade costs. Locations on the Pacific coast gain most from trade with Eastern Asia, those on the Gulf of Mexico gain most from trade with Latin America. The measure captures a distinct source of variation to commonly-used variables, which allocate industry-level shocks to regions based on employment (Topalova, 2010; Autor, Dorn and Hanson, 2013; Kovak, 2013).

Section 3 links measured gains from liberalization to support for trade among voters. Different parts of the US gain from liberalization with different world regions. This heterogeneity allows me to exploit within-unit variation in gains from and support for liberalization. I estimate regressions of support for trade with a given country among voters against the gains to those voters' regions from trade with the country in question, with fixed effects for the voters' location and the country in question. These specifications hold fixed unobservable factors that influence support for all forms of liberalization in a given location. The estimated relationship between gains from liberalization and support for trade is large. A two standard deviation increase in gains from liberalization (equivalent to a 0–1 difference in a binary variable) corresponds to an increase in support for trade around 44% of the college-non college gap, and 150% of the gender gap. These conclusions hold using instrumental variables that identify off idiosyncratic variation in proximity to relevant trade hubs and are orthogonal to measures of cultural proximity. Additional results show that legislators are more supportive of trade agreements that benefit their districts.

Section 4 illustrates that the theory applies beyond the American context. In Europe, voters in subnational regions that a calibrated model predicts would gain more from a country joining the European Union—because of distance—are more supportive of that country joining. This result follows from specifications that exploit within-area variation in gains from different countries joining the EU, and that hold fixed country-specific factors influencing support for specific countries. Data on foreign policy preferences in China and Mexico provide further suggestive evidence of the role of distance.

The final section discusses implications for trade policy. The role of distance for trade generates divides between regions over trade policy. If parties represent regional coalitions and chose policies to benefit their coalitions, the regional structure of trade gains provides a mechanism for trade to become politicized. The estimated gains from trade are right-skewed: trade generates concentrated pockets of winners. This distribution has differing political implications depending on the salience of trade. If trade is low salience, we might expect only the regions that gain to mobilize for trade, pushing towards liberalization. In contrast, if trade is high salience, the median voter gains less than the average from trade, which biases against liberalization.

This paper takes distance-related trade costs as given. Appendix A reviews scholarship on why distance inhibits trade. Most explanations focus around shipping and transportation costs. Both the material cost and time required to ship a good increase with distance (Hummels, 2007; Hummels and Schaur, 2013). Increased travel times over long distances also make it more difficult to acquire contacts and information in buyer or seller markets (Allen, 2014; Chaney, 2018). Cultural proximity, in increasing connections with trading partners (Rauch and Trindade, 2002), and in harmonizing tastes (Bronnenberg, Dhar and Dubé, 2009), also facilitates trade, and correlates with geographic distance.

The paper contributes to three literatures. First, it contributes to a theoretical literature on the sources of divisions over trade policy. Foundational contributions argued that the relative abdundance of factors (Rogowski, 1989; Mayer, 1984), or the extent to which factors are mobile across industries (Hiscox, 2002; Bisbee and Rosendorff, 2024), determine which coalitions form in a society. In relation to these contributions, this paper analyzes how geography creates cleavages over trade. It shows that trade can still be contentious in the absence of industry or factor differences, and that preferences within these groups are heterogeneous. This contribution complements scholarship that explores the consequences of heterogeneity in productivity across firms in the same industry (Milner, 1988; Kim, 2017; Osgood, 2017). That literature largely focuses on firm lobbying rather than mass politics, the focus of this paper.[3] This paper's focus on geography as a source of distributional consequences differs from other work on political geography and trade policy. Busch and Reinhardt (1999, 2000), McGillivray (2004), and Rickard (2018) explore the distinct issue of how the spatial distribution of industries affects their ability to mobilize and receive political benefits. Schonfeld (2021), Helms (2024), and Scheve and Serlin (2024) analyze how internal migration affects trade policy coalitions.

Second, the paper contributes to scholarship that measures the economic and political effects of exposure to trade across regions. Much work following Autor, Dorn and Hanson (2013) studies the political effects of negative economic shocks (for instance Colantone and Stanig 2018; Autor et al. 2020; Ballard-Rosa et al. 2021 and Baccini and Weymouth 2021). In this literature, imports and tariff changes have negative effects on regions specializing in affected industries. Such measures ignore how geography influences participation in trade even within the same industry (see Figure 1). This paper introduces a theoretically-motivated measure of the gains from liberalization. This measure applies recent scholarship from international economics that attempts to measure the aggregate gains from trade in a broad array of models to a multi-region context (Arkolakis, Costinot and Rodríguez-Clare, 2012; Costinot and Rodríguez-Clare, 2014). It highlights how the gains, as well as the losses, from trade are unevenly distributed across space and have political consequences, and how variation

[3]Notable exceptions being Lee and Liou (2022) and Walter (2017).

in trade costs, rather than industry mix, influences these gains. In focusing not just on the losses from import competition when considering the mass politics of trade, this paper builds on Baker's (2003) and Naoi and Kume's (2015) work on consumption (but see also Betz and Pond 2019).

Third, this paper contributes to scholarship on individual trade policy preferences. A key debate is whether individual preferences conform to the predictions of economic models, as assumed by Open Economy Politics theories (Lake, 2009). Scheve and Slaughter (2001) and Mayda and Rodrik (2005) show that more educated voters—who stand to gain from trade under Heckscher-Ohlin—are more supportive of trade. Critics of this approach point out that education may affect trade preferences through other channels such as economic ideas and cosmopolitanism (Hainmueller and Hiscox, 2006; Mansfield and Mutz, 2009), and that voters are unfamiliar with the two-factor Heckscher-Ohlin model (Rho and Tomz, 2017). This paper provides evidence of voter preferences being consistent with an alternative family of economic models, in specifications that flexibly control for education. There are good reasons to think that gravity models explain behavior not rationalized by Heckscher-Ohlin. Unlike Heckscher-Ohlin, these models are consistent with various foundations for trade (not just factor differences), can rationalize intra-industry trade, and closely fit observed trade patterns.[4] In economics, gravity models, especially Eaton and Kortum (2002), are the primary tool for quantifying the welfare effects of trade (e.g. Donaldson, 2018; Caliendo and Parro, 2015; Caliendo, Dvorkin and Parro, 2019), and so should give a more plausible measure of voters' material interests. To act consistent with their self-interest as predicted by the gravity model, voters need some awareness of the extent and effect of trade in their locality—a claim I validate—but do not need to understand the model itself, or the forces that generate such effects. In concert with Owen and Johnston (2017), Walter (2017), and Lee and Liou (2022), the paper illustrates the utility of alternative economic models for understanding trade preferences.

[4] See Trefler (1995) on the poor fit of the Heckscher-Ohlin model.

This paper's contribution is orthogonal to debates about the importance of cultural and sociotropic concerns for trade preferences. Much scholarship has explored how anxieties about cultural change (Margalit, 2012), fairness concerns (Lü, Scheve and Slaughter, 2012), ethnocentrism, and sociotropism (Mansfield and Mutz, 2009), influence trade preferences. This paper's focus on an alternative link between the distributional effects of trade and support for liberalization is entirely compatible with cultural mechanisms also being important. In the model, the welfare effects of trade liberalization are equal for all people in a given area. The prediction for trade preferences is the same regardless of whether voters are egocentric, or care about the effects of trade on their region, or care about the effects of trade on the national economy but form beliefs about trade's national effects from its effects in their region. Patterns of heterogeneity in the empirical analysis are broadly consistent with voters having other-regarding preferences. Indeed, evidence that voters' preferences are shaped by the local economy (Alkon, 2017; Rickard, 2022) is a reason to study the local economic and political effects of trade.

1 A MODEL OF REGIONAL DIVIDES OVER TRADE

This section uses the "gravity model" (defined in the introduction) to study how the spatial structure of trade generates uneven gains and losses that provide a basis for political conflict. The gravity model provides a general framework—consistent with various theories of trade—for analyzing trade flows between multiple locations. I analyze a version of the model with one industry and one factor of production. I make these assumptions to pinpoint a different mechanism from much-studied factor and industry divides (Rogowski, 1989; Hiscox, 2002).[5] If each region were a country—as in Anderson (1979), Krugman (1980), Eaton and Kortum (2002) and Chaney (2008)—trade would benefit everyone and there would be no room for distributional conflict. This section's contribution is in showing how distributional

[5]Adding multiple factors of production would introduce an additional channel generating within-region divides over trade, which might vary between regions; for instance, one might expect less educated voters to be harmed more by trade in regions more exposed to trade, and so be more opposed to trade. In Section 3.3 I find evidence inconsistent with that prediction.

consequences and politics enter from countries being made up of multiple regions.

Reducing tariffs affects the cost of all regions of one country trading with all regions of another, which creates distributional consequences and conflict through two channels. Regions close to international gates gain more from lower trade costs as they are more dependent on imports and exports. More imports—of final or intermediate goods—make for cheaper final goods, while rising exports raise nominal wages; both increase real wages. In turn, regions further from international gates, which themselves trade with the regions that gain, lose out from competition with imports in those markets. This potential for losses is similar to how a trade agreement between two countries can harm third parties (Baldwin and Venables, 1995). This section first introduces notation for the general gravity model, then analyzes a symmetric two-country two-region case to pinpoint this mechanism generating distributional conflict, and draws out political cleavages.

1.1 *The General Gravity Model*

Here I introduce notation for a general multi-region case and discusses equivalences between different theoretical models of trade.

There are N locations, which I will refer to with subscripts j, o, and d. Labor is the only factor of production. In each location o there are L_o workers who each supply one unit of labor and are paid wage w_o.[6] Trade flows between two regions o and d are given by:

$$X_{od} = T_o(w_o\tau_{od})^{-\theta}P_d^{\theta}w_dL_d \tag{2}$$

where T_o is an exogenous constant such as productivity that shifts sales from o to all locations, $\tau_{od} \geq 1$ is the iceberg trade cost between o and d (to deliver 1 unit of goods to location d,

[6]The model does not include inter-regional migration. This decision is motivated by scholarship that finds little migration adjustment to local shocks in the US during this period (Autor, Dorn and Hanson, 2013; Hakobyan and McLaren, 2016). Allowing for migration would smooth the welfare effects of trade across regions but would only equalize welfare across regions in the edge case of frictionless migration (see Scheve and Serlin, 2024). This model should thus be understood as capturing short- to medium-run adjustments to changes in trade barriers.

producers in o must ship τ_{od} units), $\theta > 0$ is the trade elasticity, and P_d is the price index in d. After taking logs on both sides this equation is of the same form as (1). Two locations trade more if there are lower trade costs between the two (τ_{od} is small), if the origin has greater productivity and lower wages that make its products cheaper ($T_o w_o^{-\theta}$ is large), and if the destination has more to spend on goods ($w_d L_d$ is large) and faces higher prices (P_d is large).

The price index in location d is

$$P_d = \left(\sum_{j=1}^{N} T_j (w_j \tau_{jd})^{-\theta} \right)^{-\frac{1}{\theta}} \tag{3}$$

so that welfare for a worker in d can be expressed as $u_d := w_d / P_d$. One can think of the traded goods as either being final goods which are consumed by workers, or as intermediate inputs which are used to produce a non-traded final good. A location has lower prices if it is closer to other locations with higher productivity and lower wages.

The value of goods that a location sells to other locations equals the value it buys,

$$\sum_{d=1}^{N} X_{od} = w_o L_o.$$

Substituting Equation (2) into this equation for each location gives N equations that pin down wages in equilibrium:

$$T_o w_o^{-\theta} \sum_{d=1}^{N} \tau_{od}^{-\theta} P_d^{\theta} w_d L_d = w_o L_o \tag{4}$$

The setup above is consistent with various different models of trade, and the interpretation of the T_o and θ parameters varies across these models. For instance, in an Eaton-Kortum (2002) model, T_o scales productivity across varieties of goods in region o, and θ governs the distribution of productivity across varieties of goods. In an Armington (Anderson, 1979) or Krugman (1980) model, $\theta + 1$ is equivalent to the elasticity of substitution between varieties.

1.2 *A Two-Country Two-Region Model*

ECONOMICS To fix ideas I consider a stylized case of the model. There are two symmetric countries, home and foreign, each made up of two regions, a border region and a hinterland. I denote variables specific to the border with the subscript b, variables specific to the hinterland with subscript h, and foreign realizations of variables with asterisks. These regions are arranged along a line:

$$-\underbrace{h-b}_{\text{Home}}-\underbrace{b^{*}-h^{*}}_{\text{Foreign}}-$$

Regions can only trade with adjacent regions. This assumption is the starkest possible way for proximity to affect trade and most clearly illustrates the theoretical mechanism linking trade costs to distributional conflict. Appendix B.3 however shows that the model's conclusions hold with more standard trade costs proportional to distance.

The iceberg cost of shipping goods between the border and hinterland regions within both Home and Foreign is $\delta > 1$. The iceberg cost of shipping goods between the two border regions is μt, where $\mu > 1$ represents transportation costs and $t \geq 1$ a tariff.[7]

The equilibrium condition that the border's sales equal its purchases is

$$X_{bb} + X_{bh} + X_{bb^*} = X_{bb} + X_{hb} + X_{b^*b}.$$

Writing out this trade balance condition, and making use of symmetry to reduce the number of terms gives:

$$T_b \left(w_b \delta\right)^{-\theta} P_h^{\theta} w_h L_h = T_h \left(w_h \delta\right)^{-\theta} P_b^{\theta} w_b L_b,$$

cancelling terms gives

$$\left(\frac{P_h}{P_b}\right)^{\theta} = \left(\frac{w_b}{w_h}\right)^{1+\theta} \frac{T_h L_b}{T_b L_h}. \tag{5}$$

[7] Tariffs act as an impediment to trade, not a source of revenue. This choice reflects the facts that tariffs as a share of government revenue are miniscule in developed economies and that many government-imposed impediments to trade take the form of non-tariff barriers. Having tariff revenues being redistributed from the border to hinterland would further push the hinterland towards supporting protectionism.

This equation implies that in equilibrium, a shock that lowers relative prices in the border region also raises relative wages in the border region. The intuition is that lower prices in the border mean that the border market is more competitive. For the hinterland to continue to sell goods to the border, the price of goods produced by the hinterland must fall relative to those from the border, which puts downward pressure on wages in the hinterland. Reductions to international trade costs for one region affect wages in other regions through internal terms of trade effects.

Writing out the definitions of P_h and P_b from (3) as

$$P_h = \left(T_h w_h^{-\theta} + T_b \delta^{-\theta} w_b^{-\theta}\right)^{-\frac{1}{\theta}}, \; P_b = \left(T_h \delta^{-\theta} w_h^{-\theta} + T_b \left(1 + (\mu t)^{-\theta}\right) w_b^{-\theta}\right)^{-\frac{1}{\theta}}$$

shows that, holding wages fixed, reducing tariffs (t) reduces prices in the border region (P_b), which is closer to the foreign market and so able to trade. From (5), internal trade then leads to relative wage losses for the hinterland region.

Define the real wage in region j at tariff t as $u_j(t) := w_j(t)/P_j(t)$. Define *interregional inequality* as the ratio of real wages in the border region relative to the hinterland, $u_b(t)/u_h(t)$.

Proposition 1. *Interregional inequality $u_b(t)/u_h(t)$ is strictly decreasing in the tariff t.*

The proof of this result (and all proofs) appears in Appendix B. Decreasing the tariff affects interregional inequality through two channels. Lower tariffs directly decrease prices in the border. This change in prices indirectly affects wages through internal trade, as implied by (5). In this stark example with trade only between adjacent regions, the hinterland region does not experience the gains from lower prices but experiences wage reductions due to competition with imports in the border region; trade thus leads to absolute welfare losses in the hinterland. However, even with the hinterland open to trade, internal terms of trade effects generate welfare losses in the hinterland. Depending on the particular configuration of trade costs across regions, these can dominate the direct benefits to the hinterland from trade.

POLITICS I now model public support for reducing the tariff from some status quo value t to an alternative $t' < t$. I assume that support for the tariff depends on both material and non-material considerations. A voter i supports lowering the tariff to t' if $u_j(t') > u_j(t)\varepsilon_i$, where ε_i is a shock that captures non-material considerations. I assume ε_i is drawn iid across voters from a distribution with CDF F with support $\mathbb{R}_+$. The share of voters in region j who support lowering the tariff, or the probability of a given voter supporting lowering the tariff, is then

$$s_j(t, t') := F(u_j(t')/u_j(t)). \tag{6}$$

Proposition 2. *$s_b(t, t') > s_h(t, t')$ for all t, t' such that $t > t' \geq 1$.*

A larger share of voters in the border region—the region with lower international trade costs—will support liberalization. The logic follows directly from Proposition 1: because reducing trade barriers benefits the border region relative to the hinterland region, voters in the border will be more supportive of reducing trade barriers.

The assumption of non-material preference shocks generates a probabilistic expression for support for trade that I will test in Section 3. However, even with purely material preferences for trade, in this example we would see the same inter-regional divide because the hinterland loses materially.

To summarize, this section illustrated how variation in trade costs generates regional divides in the gains from trade and support for trade policy. The following section extends the model to the observed geography of the US, shows that the prediction of uneven gains and losses across space applies in that more realistic context, and quantifies these gains and losses.

2 QUANTIFYING THE GAINS FROM LIBERALIZATION

This section uses the model to measure which regions gain and lose from reductions in international trade costs. I employ the exact-hat algebra of Dekle, Eaton and Kortum (2007) to solve for the counterfactual effects of changes in international trade costs as functions of observed trade flows and the trade cost changes themselves. Doing so gives a measure of exposure to trade that is distinct from commonly-used measures of trade exposure.

2.1 *Taking the Model to the Data*

Suppose one observes an equilibrium realization of the model, and considers a change of trade costs from τ_{od} to τ'_{od}, holding fixed the other exogenous variables, T_o and L_o.

From (4), wages in this counterfactual equilibrium would solve

$$w'_o L_o = T_o \left(w'_o\right)^{-\theta} \sum_{d=1}^{N} \left(\tau'_{od}\right)^{-\theta} \left(P'_d\right)^{\theta} w'_d L_d,$$

where x' indicates the realization of variable x under this counterfactual. Writing relative changes as $\hat{x} := \frac{x'}{x}$, one can rewrite each of these counterfactual realizations in terms of a relative change from an observed level, $x' = x\hat{x}$:

$$w_o L_o \hat{w}_o = T_o w_o^{-\theta} \sum_{d=1}^{N} \tau_{od}^{-\theta} P_d^{\theta} w_d L_d \hat{w}_o^{-\theta} \hat{\tau}_{od}^{-\theta} \hat{P}_d^{\theta} \hat{w}_d.$$

Dividing both sides by $w_o L_o = \sum_{d=1}^{N} X_{od}$, substituting in the identity for exports from (2), and rearranging gives

$$\hat{w}_o = \left(\frac{\sum_{d=1}^{N} X_{od} \hat{\tau}_{od}^{-\theta} \hat{P}_d^{\theta} \hat{w}_d}{\sum_{d=1}^{N} X_{od}} \right)^{\frac{1}{1+\theta}}. \tag{7}$$

Counterfactual wages can be expressed as solutions to a system of equations in terms of observed trade flows and counterfactual changes in trade costs, wages and prices. Similarly, one can write

$$\hat{P}_d^{-\theta} = \frac{\sum_{o=1}^{N} X_{od} \hat{w}_o^{-\theta} \hat{\tau}_{od}^{-\theta}}{\sum_{o=1}^{N} X_{od}} \tag{8}$$

These two expressions have substantive interpretations. The increase to nominal wages in an origin is a weighted average of increases in prices and wages in destinations, and decreases in trade costs with those destinations, weighted by the share of sales from that origin accounted for by each destination. The decrease to prices in a given destination is a weighted average of decreases in wages in origin locations and of trade costs with those origins, weighted by the share of the destination's purchases accounted for by each origin.

Equations (7) and (8) give $2N$ equations with $2N$ unknowns. Given observed trade flows, and a hypothetical change to trade costs, one can solve for counterfactual changes to wages and prices up to a normalization, and thus for changes to real wages. Solving (7) and (8) does not require data on trade costs, prices, productivity, wages, or labor supply. This method uses observed trade flows to infer the structure of trade costs. One does need an estimate of θ. Fortunately, a large literature estimates this "trade elasticity." I use the consensus estimate from Simonovska and Waugh (2014) of $\theta = 4$.

2.2 *Data and Estimates*

The main source of data is the Freight Analysis Framework. This is a dataset created by the Bureau of Transportation Statistics and Federal Highway Administration that estimates freight flows between 132 zones within the US and 8 world regions. The US zones correspond to major metropolitan statistical areas and the remainders of states. For instance, in Louisiana, there are zones for the Baton Rouge, Lake Charles-Jennings, and New Orleans-Metairie-Hammond MSAs, and for the rest of the state. The Freight Analysis Framework supplements the Commodity Flow Survey—a large survey of manufacturing, mining, and wholesaler shipments administered by the Census Bureau—with data on other sectors like agriculture and international trade.[8] For a given zone, this data allows one to measure trade flows with the zone itself and with each other US zone, in addition to foreign world regions; this internal trade data is necessary to compute the measure of welfare gains outlined above.

This data has only limited coverage of service trade flows. There is nothing in the model that is specific to goods rather than (tradable) services, and empirical scholarship tends to

[8]The Commodity Flow Survey has been widely used to study trade flows within the US, for instance by Dingel (2017); Caliendo et al. (2018) and Caliendo, Dvorkin and Parro (2019).

find larger negative effects of distance on trade flows for services than goods (Kimura and Lee, 2006). The resulting estimates should be understood as quantifying the gains from reductions on barriers to goods trade, with the caveat that gravity should also matter for services trade.

Using the most recent iteration of the Freight Analysis Framework, for 2017, I aggregate freight flows between and within zones and regions, and calculate the welfare effects of reductions to trade costs with different world regions. For each world region, I solve for the effects of a 10% reduction in trade costs with that region. I set $\hat{\tau}_{od} = 0.9$ for pairs linking zones of the US with that region, keep $\hat{\tau}_{od} = 1$ for all other pairs, and solve Equations (7) and (8) for the equilibrium changes in wages and prices, which I use to calculate changes in welfare. Finally, I convert this predicted change in welfare to the elasticity of welfare with respect to trade cost reductions.[9] Doing so gives a unitless measure that is more positive for zones that gain more from reductions to trade costs. I refer to this variable as *Gains from liberalization*.[10]

Figure 2 maps the resulting gains from liberalization with various regions. Zones that experience decreases in welfare from reductions in trade costs are outlined. Reductions in trade costs generate aggregate welfare gains, but in some cases zones of the US experience welfare losses. There are two patterns to note. First, there is a clear gravity structure to the distribution of gains. Locations along the Canadian border gain the most from reducing trade barriers with Canada, those on the Pacific coast gain the most from liberalization with Asia, and those on the Gulf of Mexico gain the most from liberalization with the Rest of Americas. Second, the losing zones are generally close to zones that experience large gains, but further from the border. For instance, the remainder of Oklahoma zone loses from reductions to trade costs with Mexico, while Texas and Dallas in particular experience large gains. This spatial pattern matches the intuition in Section 1. Consumers in Dallas benefit from imports

[9] Given $\hat{u}$ I calculate $-\frac{\ln \hat{u}}{\ln(0.9)}$. The particular choice of a 10% reduction is not important for the calculated measures. Figure I.2 shows the extremely strong correlation between the gains from liberalization calculated using a 10% reduction to trade costs, and the gains calculated using 5% or 50% increases or decreases.

[10] For supplemental analyses I calculate *Gains from global liberalization,* the gains from liberalization with all world regions.

from Mexico, and producers there gain from exports to Mexico, but producers in Oklahoma selling to Dallas lose out. Decreased sales from Oklahoma to Dallas put downward pressure on wages in Oklahoma, which dominate the positive welfare effect of lower prices due to cheaper imports from Mexico.

The previous section showed analytically how spatial trade costs create uneven gains and losses from trade, in a stylized example with two regions and assumed trade costs. This section generalizes that exercise to the 132 regions of the US and the trade costs implied by observed trade flows. This more complex geographical structure generates similar patterns of gains and losses to the stylized example.

The model used to derive these estimates only includes a tradable goods sector. Appendix E extends the model to include a non-traded sector. Even when allowing the productivity and budget share of the non-traded sector to vary across locations, the solutions to Equations (7) and (8) still capture the effect of changes to trade costs on wages relative to tradable prices. The importance of that change for voter welfare, in this extended model, does however vary across locations depending on the relative size of the tradable sector. In the empirical analyses, using a measure of gains from trade that incorporates such variation gives very similar estimates (Table E.1).

What variation is driving these estimates? Equation (7) suggests that the partial equilibrium effects of reductions in trade costs with a particular region—holding fixed changes to wages and prices in other regions and zones—should be proportional to the ratio of exports to the region in question relative to sales to all regions and zones, including sales to the home district. Equation (8) suggests that the partial equilibrium effect on prices of a reduction in trade costs with a given region should be proportional to the share of imports from that region in total purchases. Table I.1 shows that these partial equilibrium predictors explain much of the variation in gains from liberalization.

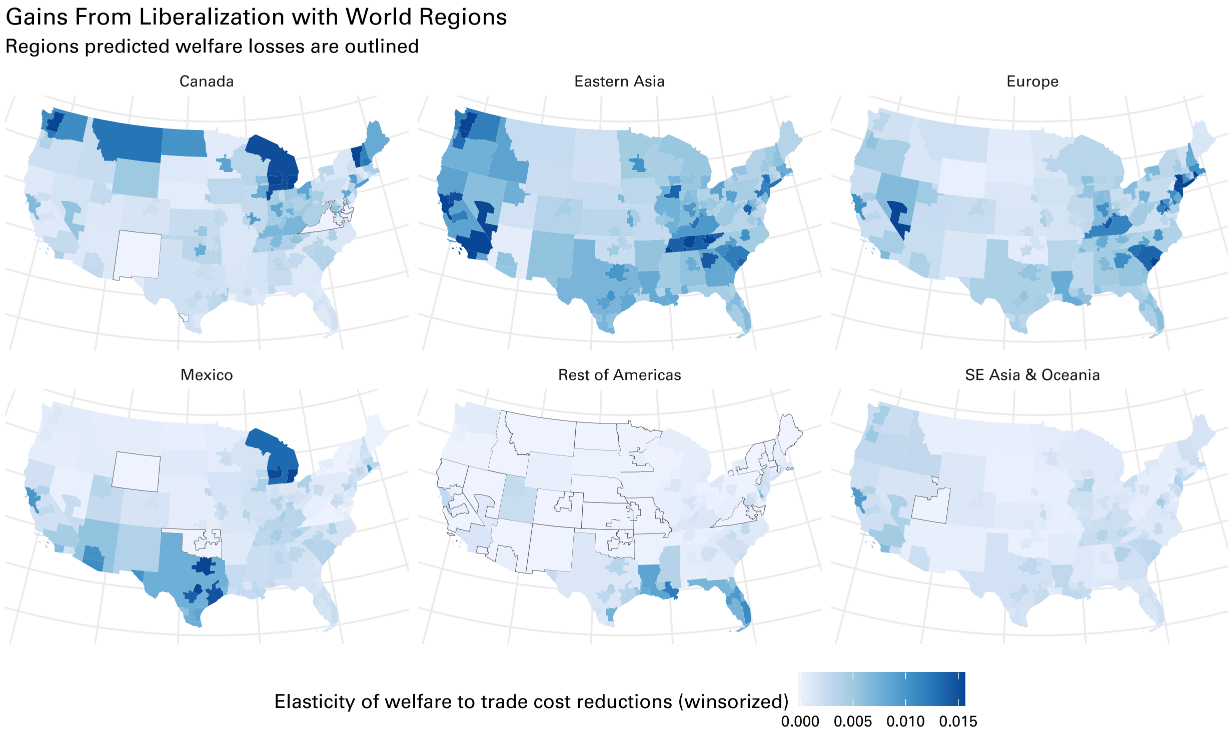

Figure 2: Counterfactual effects of reductions to trade costs with specific world regions

2.3 *Differences With Shift-Share Measures of Trade Exposure*

This measure of gains from liberalization is conceptually and empirically distinct from commonly-used measures of regional exposure to trade. A vast literature following Topalova (2010) and Autor, Dorn and Hanson (2013) measures regional exposure to shocks in the global economy using shift-share specifications that allocate industry-level import penetration, exports, or tariff changes to regions on the basis of industry employment. Such measures compare regions that differ in the presence of industries that on average compete with imports or are exposed to tariff cuts; in the models used to motivate them, the gains from cheaper imports do not differ across regions (Autor, Dorn and Hanson, 2013; Kovak, 2013). They ignore the enormous within-industry geographic variation in both exporting and the use of imported inputs, for instance shown in Figure 1.[11]

Gains from liberalization are not predictably correlated with shift-share measures of exposure. Figure 3 shows that the gain from liberalization is uncorrelated with a shift-share measure of net import penetration, calculated by allocating industry net import penetration to US zones on the basis of manufacturing employment. The right panel shows that the change in Chinese imports studied by Autor, Dorn and Hanson (2013) and Autor et al. (2020) is uncorrelated with gains from liberalization with Eastern Asia. Table I.2 shows that areas with more employment in positive net export industries—which one might expect to gain more from trade—tend to have smaller estimated gains from liberalization, and that both import penetration and export dependence are positively correlated with gains from liberalization.

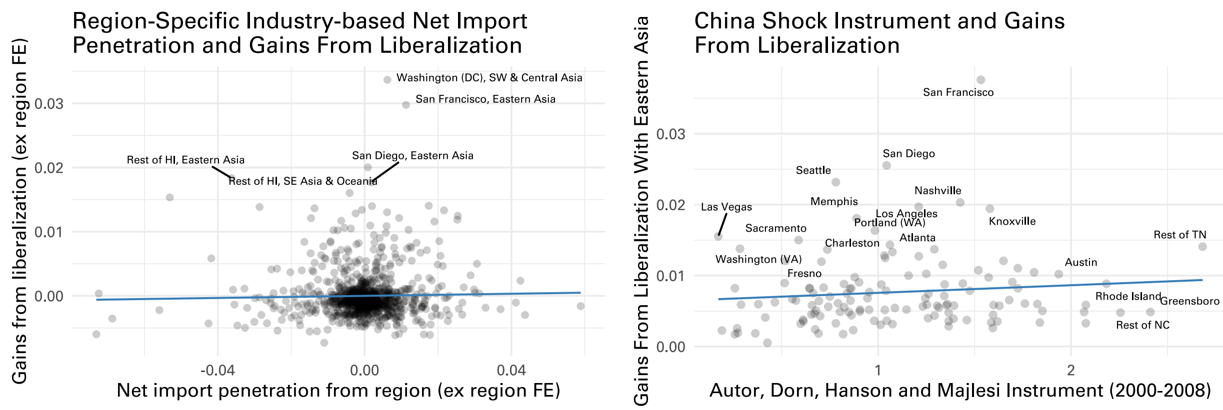

Figure 3: Average Industry Net Import Penetration is Uncorrelated With Gains From Liberalization

The left panel plots the gain from liberalization with a given region against average net import penetration in manufacturing industries, weighted by the share of employment in each industry. Both the x and y variables are at the FAF zone-world region level, residualizing out world region fixed effects. The right panel plots the gain from liberalization with Eastern Asia against the change in imports per worker instrument from Autor et al. (2020), calculated by averaging the county-by-commuting zone data from the Autor et al. (2020) replication files at the FAF zone level, weighting counties by 1990 population.

[11]Papers that measure the general equilibrium effects of the China trade shock (Caliendo, Dvorkin and Parro, 2019; Galle, Rodríguez-Clare and Yi, 2023) similarly ignore spatial variation in trade costs.

3 LINKING THE GAINS FROM LIBERALIZATION TO SUPPORT FOR TRADE

This section examines whether the modeled gains from liberalization correspond to support for liberalization.

3.1 *Data and Empirical Strategy*

MEASURES OF SUPPORT FOR TRADE I examine the relationship between gains from liberalization and support for specific cases of trade liberalization among voters. The primary source of data concerns support for trade with different partners from multiple waves of the Cooperative Election Survey (CCES). Since 2006, the Cooperative Election Survey has asked large samples of American voters about the Central America Free Trade Agreement (CAFTA), extending NAFTA to include Peru and Colombia, the Korea-US Free Trade Agreement (KORUS), and placing tariffs on Chinese goods. Table I.3 presents the full question wordings, years, and sample sizes; the total sample is around 330,000. I focus on these questions because they are specific to clearly identifiable world regions, and do not specify particular industries to be protected.[12] I allocate respondents to FAF zones using county identifiers.

Studying support for specific trade issues, rather than attitudes towards trade in general, has two advantages. First, issues like CAFTA and the 2018 trade war with China were topics of public debate, and so it is more likely that voters were informed and formed opinions about such issues, relative to trade in the abstract (Kuo and Naoi, 2015). Second, different regions would gain from lowering tariffs with the Rest of Americas region containing CAFTA, Peru and Colombia, relative to Eastern Asia, containing China and South Korea.

[12]Other trade-policy relevant questions in the Cooperative Election Survey ask about the Trans Pacific Partnership, and tariffs on steel and aluminum. The regional impact of the former is ambiguous because the agreement would have included Mexico, Canada and countries in South America as well as countries in East Asia and Oceania, but the main parties with which the US did not already have a Free Trade Agreement were Japan and Vietnam.

ESTIMATION I estimate the relationship between how much a voter's location gains from trade with a given trading partner, and the probability of that voter supporting trade with that partner. In such a regression, one might be concerned that places that gain more from trade might differ in other ways that influence support for trade in general. Within-zone variation in gains from trade with different parts of the world allows me to hold fixed features of locations that affect support for trade in general. I estimate linear probability models of the form

$$\textit{support for trade}_{zijt} = \beta \, \textit{gains from liberalization}_{zj} + \gamma_z + \delta_{jt} + \varepsilon_{zijt}, \tag{9}$$

where the dependent variable is coded as 1 if individual i, living in FAF zone z, supports trade with country j in survey wave t, *gains from liberalization*$_{zj}$ is the modeled welfare gain in that zone from reducing trade barriers with j's world region, γ_z is a fixed effect for the FAF zone, δ_{jt} is a fixed effect for being asked about trade with country j in survey wave t, and ε_{zijt} is an error term. Additional specifications add controls at the level of zone-by-partner-by-wave, and interact the trading partner fixed effects with the respondents' characteristics (I omit these from (9) for simplicity of presentation).

One concern about estimating (9) is that the gains from liberalization could be endogenous to support for trade, because the gains from liberalization measure is constructed from data on trade with the world region in question. For instance, if some feature of a location made voters more supportive of trade with Asia, that might also lead them to engage in more trade with Asia, leading to greater estimated gains from liberalization with Asia.

I address this concern by isolating the component of gains from liberalization due to geographic location. I construct *gate proximity*$_{zjt}$ which I calculate as the average geographic proximity to international gates, locations in which imports and exports to a world region enter or leave the US in the year of the survey. The data on imports and exports by port are from the US Census Bureau. I detail the construction of this measure in Appendix C.1. Unlike gains from liberalization, the construction of gate proximity does not involve international trade flows relating to the US zone in question (and I control for the value of imports and exports shipped via ports in the zone). It is therefore less endogenous to factors that affect both trade and support for trade.

Two stage least squares regressions estimate the Local Average Treatment Effect for compliers. That quantity corresponds to how gains from liberalization affect support for trade, for voters in those regions that gain more from trade with a given world region *due to their geographical location.* Because this paper is specifically focused on the influence of geography on trade preferences, that quantity is of greater theoretical interest than the average effect of gains from liberalization on support for trade. Gains from liberalization incorporate both geography and other factors like infrastructure and supply chains that influence trade exposure; the instrumental variables estimates isolate the role of geography.

IDENTIFICATION In the non-instrumented specifications, the main identification assumption is that, conditional on controls, gains from liberalization are uncorrelated with unobserved factors influencing support for trade not due to gains from liberalization. In the instrumental variables specifications, the exclusion restriction is that conditional on controls, unobserved factors affecting support for trade not due to gains from liberalization are uncorrelated with gate proximity.

Equation (9) has a two-way fixed effects structure, holding fixed features of the zone through zone fixed effects and the country in question through country-wave-respondent characteristics fixed effects. This specification in effect tests if places that gain more from trade with Eastern Asia relative to Rest of Americas are more supportive of trade with Eastern Asia relative to Rest of Americas, holding fixed both average support for trade with each region across all US zones, and the level of support for trade with both regions in each US zone.

The identification concern not accounted for by the zone and country fixed effects is that locations differ in ways that make voters more sympathetic towards trade with one world region but not others, that correlate with gains from liberalization or gate proximity. For instance, if FAF zones on the Pacific coast have more Chinese immigrants, or more sympathetic views of China for reasons unrelated to trade, that might affect support for trade with China and correlate with gains from liberalization with Eastern Asia.

I take three steps to address this concern. First, at the individual-level, I control for unique combinations of individuals' education, gender, and race, which I interact with indicators for the issue in question and year. These are factors shown to be predictive of trade preferences (Scheve and Slaughter, 2001; Hainmueller and Hiscox, 2006; Mansfield and Mutz, 2009; Guisinger, 2017; Mutz, Mansfield and Kim, 2021). My estimates thus compare support for trade with different partners between individuals with the same education, gender, and race, living in different locations. These fixed effects account for differences in the demographic mix of survey respondents across locations that affect support for trade with specific partners, for instance if voters on the Pacific coast are more likely to be Asian and thus more supportive of trade with Asian countries.

Second, at the zone-level, I control for the value of imports and exports from ports located in the zone, for shift-share measures of import penetration and export exposure with the country in question, and for the presence of immigrants from the country in question. Appendices C.2–C.4 detail the construction of these variables. Controlling for imports and exports via the zone makes the exclusion restriction for gate proximity more plausible, by identifying off places that happen to be located near to ports important for trade with a given world region, but that are not themselves major international gates. Import penetration and export exposure are variables used by scholars to measure trade exposure at the industry level (Bernard, Jensen and Schott, 2006; Acemoglu et al., 2016; Dauth, Findeisen and Suedekum, 2021), which I allocate to FAF zones using employment, similar to Autor, Dorn and Hanson (2013). These controls address the concern that certain zones might have industries that tend to export to or compete with imports from the country in question. Controlling for immigrants helps address concerns about cultural proximity or favorable views of the trading partners in question driving the estimates.

Third, for additional analyses I follow Borusyak and Hull (2023) and "recenter" the instrument. This procedure, described in more detail in Appendix C.5, nets out the average realization of the instrument under counterfactual scenarios that fix the importance of different world regions for trade at different gates, but vary the overall importance of different gates for US trade. The resulting recentered instrument in effect compares places that are located close to international gates that trade primarily with the same world region, but that differ in the overall importance of that gate for world trade.

To gauge the plausibility of the exclusion restriction, Table C.1 shows that the resulting instrument is uncorrelated with country-specific import penetration, export exposure, and immigrants, and with a measure of social network connections with the country in question. This exercise raises confidence that the recentered instrument is also uncorrelated with unobserved factors that might affect support for trade. Similarly, the un-recentered instrument with the full set of controls is uncorrelated with social network connections, suggesting that the controls help address possible threats to identification.

3.2 *Gains From Liberalization and Popular Support for Trade*

Before estimating the relationship between gains from liberalization and support for trade among voters, I plot the raw data by zone and world region. In Figure 4, the x axis gives the gains from liberalization at the zone level with the Rest of Americas (left) and Eastern Asia (right). The y axis plots average support for free trade with the Rest of Americas (top) and Eastern Asia (bottom). The left two panels show that places like Louisiana and Jacksonville, Florida that gain from trade with the Rest of Americas are more supportive of trade with the Rest of Americas but not with Asia. The right two panels show that places like San Francisco and Seattle that gain most from trade with Asia are somewhat more supportive of trade in general—unsurprising given these are also places with high productivity and more educated labor forces—but are especially supportive of trade with Asia.

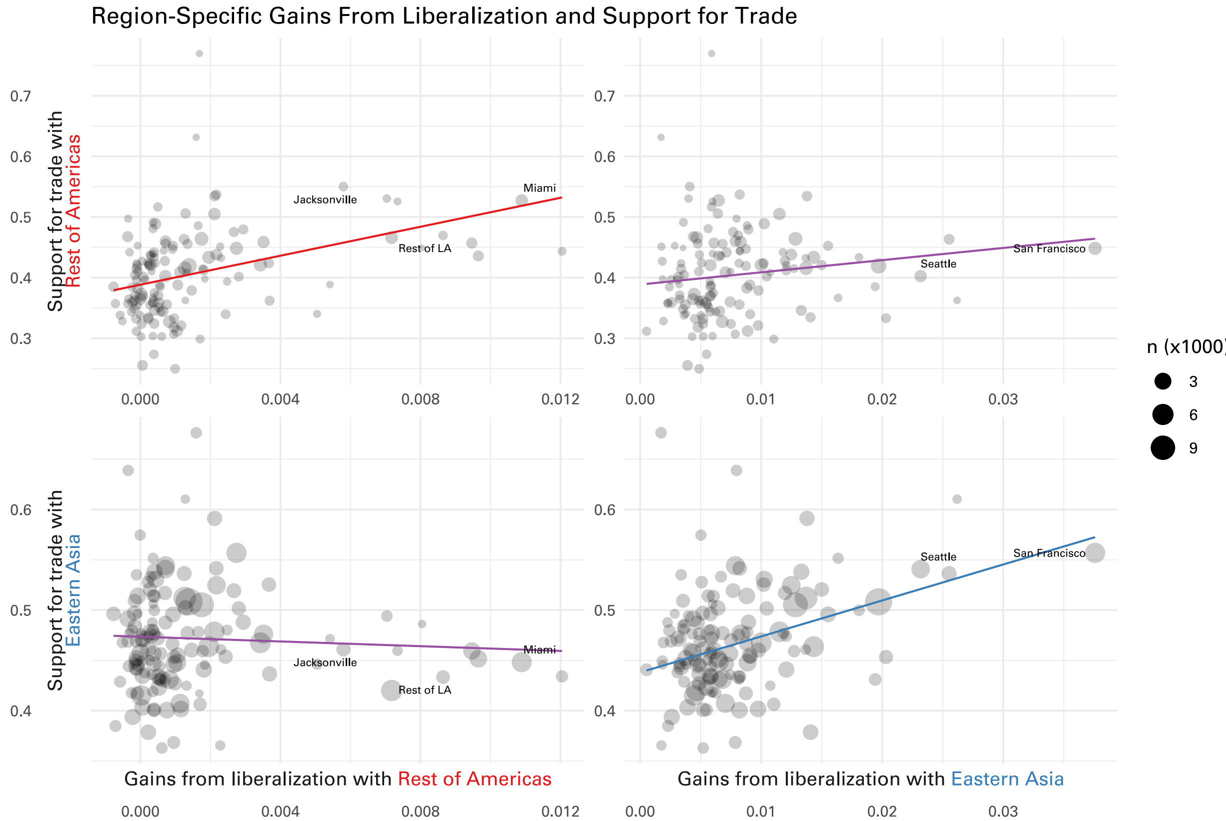

Figure 4: Gains From Liberalization With a Region Correlate With Support for Trade With That Region

The y axis is the share of respondents in the FAF zone expressing support for trade with a given world region (Rest of Americas at the top, and Eastern Asia at the bottom), the x axis is the modeled welfare gains to the FAF zone from reducing trade costs with the Rest of Americas (left) or Eastern Asia (right).

Table 1 estimates the relationship between gains from liberalization and support for trade on these issues. Model (1) presents the cross-sectional relationship, adjusting only for education-race-gender combinations. It indicates that voters in zones that gain more from liberalization are more supportive of trade. (2) adds zone fixed effects, suggesting that this relationship is not driven by people in certain regions generically supporting all trade. A 0.01 unit increase in gains from liberalization corresponds to a 3.2 percentage point increase in support for trade. To put this estimate in perspective, college graduates in this dataset are around 10 percentage points more supportive of free trade than non-graduates, while men are around 3 percentage points more supportive of trade than women. A two standard deviation increase in gains from liberalization corresponds to 44% of the college-non college gap, and 151% of the gender gap.[13]

Models (3)–(8) instrument for gains from liberalization with gate proximity. Across these specifications, the first-stage F-stat is greater than 27 with the main instrument, and 10 with the recentered instrument, indicating the instruments are relevant. Figure I.3 shows that the first-stage relationship for both instruments is positive and monotonic. (4) adds controls for the log values of imports and exports via ports located in the zone. It accounts for the presence of ports influencing support for trade through mechanisms other than by influencing the cost of engaging in international trade, for instance by creating jobs in the port sector. (5) controls for shift-share import penetration and export exposure, commonly-used measures of trade exposure, (6) for the presence of immigrants. Across specifications, the TSLS coefficients are somewhat larger than the OLS. This discrepancy is consistent with greater measurement error in gains from liberalization than gate proximity: It is easier to measure imports and exports at the port, rather than internal origin or destination level. The Freight Analysis Framework uses proprietary data from the Census Bureau on the domestic origins and destinations of trade flows and their points of entry and exit, but these origins and destinations do not always coincide with where goods are produced or consumed.[14] (7) and

[13]I focus on two standard deviations because going from 0 to 1 on college or female status corresponds to around a two standard deviation change in those variables.

[14]An additional source of measurement error in gains from liberalization is that the Freight Analysis Framework data is specific to 2017, while the outcomes considered are from a range of years. Appendix D presents three analyses that suggest this source of measurement error is unlikely to affect the estimates. First, because much of the variation in trade gains is geographic, and geography is time invariant, one would not expect the spatial pattern of trade gains to vary much over time. Gate proximity in 2021 is extremely strongly correlated with gate proximity in 2005, with correlations ranging from 0.93 to 0.98 (Figure D.1). Second, in a robustness check, I use year-specific port-by-country trade flows to construct a year-specific measure of gains from liberalization, doing so gives extremely similar estimates (Table D.1). Third, a well-established econometric result is that, provided that the instrument is uncorrelated with measurement error, two-stage least squares estimates are consistent in the presence of measurement error (Greene, 2003, p. 86). Gate proximity is constructed using year-specific trade flow data and so is not subject to this form of measurement error; one would need to assume that gate proximity, conditional on controls, is uncorrelated with measurement error in gains from liberalization. Because measurement error is unobserved I cannot directly verify that, but I can show that both instruments are uncorrelated with the difference between 2017 gains from liberalization and the gains from liberalization imputed using year-specific trade flow data (Table D.2). The difference between those two forms of gains from liberalization should reflect measurement error from applying 2017 data to other years.

	Support for free trade							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gains from liberalization	2.504*	3.205*	6.067*	5.599*	5.330*	3.802*	7.271*	5.881*
	(0.379)	(0.738)	(1.036)	(1.016)	(1.063)	(1.045)	(1.846)	(2.135)
log imports via zone				0.407	0.568	0.418	0.099	0.113
				(0.769)	(0.806)	(0.741)	(0.837)	(0.800)
log exports via zone				0.880	1.005†	0.788	0.599	0.534
				(0.561)	(0.574)	(0.545)	(0.668)	(0.634)
Industry import penetration					0.056	0.101		0.091
					(0.233)	(0.241)		(0.231)
Industry export exposure					1.216	1.146		0.776
					(0.758)	(0.748)		(0.910)
log % immigrants						0.013*		0.010†
						(0.004)		(0.005)
Model	OLS	OLS	TSLS	TSLS	TSLS	TSLS	TSLS	TSLS
Recentered instrument							x	x
Education x race x gender x question x year FE	x	x	x	x	x	x	x	x
Zone FE		x	x	x	x	x	x	x
First stage F-stat			29.365	26.952	31.282	27.331	11.129	10.47
N	327303	327303	327303	327303	327303	327303	327303	327303
R^2	0.057	0.061	0.061	0.061	0.061	0.061	0.060	0.061

This table presents evidence of the relationship between gains from liberalization and support for free trade. Data is at the individual level. The dependent variable is coded as 1 if the respondent's answer aligns with support for trade: opposition to tariffs on Chinese goods, support for the US joining CAFTA-DR and KORUS, and support for extending NAFTA to Peru and Colombia. Gains from liberalization are those with Eastern Asia in the case of Chinese tariffs and KORUS, and Rest of America in the case of CAFTA-DR and NAFTA extension. (1) and (2) are estimated by OLS, (3)–(6) instrument for gains from liberalization with log gate proximity, the average distance-related inverse trade cost with locations where imports and exports to the world region in question enter or leave the US, (7) and (8) recenter the instrument as in Borusyak and Hull (2023). All models include fixed effects for combinations of race, education level, and gender interacted with an indicator for the survey question and year, (2)–(8) control for FAF zone fixed effects, (4)–(8) control for the log value of imports and exports to the world region shipped via ports in the zone (these coefficients and standard errors are multiplied by 1000 for legibility), (5)–(6), and (8) control for average import penetration and export exposure with the countries in question, and (6) and (8) control for the log share of immigrants from the country in question relative to population. Observations are weighted using CES survey weights. Standard errors clustered by FAF zone in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table 1: Relationship between gains from liberalization and support for trade

(8) use the recentered instrument, which gives slightly larger though less precise estimates. Given that this instrument identifies off a narrower and more plausibly exogenous source of variation, these results raise confidence that unobservables are not biasing the estimates up. Table I.4 reports the reduced form estimates and shows that the OLS estimates are robust to including the full set of controls.

The main identification concern is that people in parts of the US that gain more from trade with a particular world region hold more favorable attitudes towards that region for other reasons, which manifests in greater support for trade with that region. The evidence that the recentered instrument and instrument with the full set of controls are uncorrelated with forms of cultural proximity in Table C.1 helps allay this concern. I directly probe this issue with survey data from Gallup on how favorably respondents feel towards different countries. Table I.5 shows that respondents in areas—primarily the Pacific coast—that gain more from liberalization with Eastern Asia do hold more favorable views of East Asian countries, but that respondents in areas—clustered on the Gulf of Mexico—that gain more from liberalization with the Rest of Americas hold less favorable views of countries in that region. Examining the relationship between gains from liberalization and favorable views in a specification with zone fixed effects similar to Table 1, I find no relationship between the two variables, nor between the two instruments and favorability. The results are also not driven by immigrants supporting lower trade barriers with their home countries: they are robust to dropping immigrants and those with immigrant parents (Table I.6).

The estimates are also robust to including fixed effects for party-issue, region-issue, or urban-rural-issue combinations (Table I.7). These checks suggest the results are not driven by differences in the partisan valence of different trade issues—for instance due to Republicans supporting CAFTA and tariffs on Chinese imports (though the positions of the parties are endogenous to the interests of their supporters)—nor by support for different trade issues mapping onto other broad cleavages distinct from the benefits of trade. Table I.8 shows the results are robust to dropping each specific trade issue; attitudes to the Trump administration's trade war with China do not solely account for the estimates. I also obtain very similar estimates using a measure of gains from liberalization that incorporates variation in the traded share of the economy across locations (Table E.1).

3.3 *Distinctions With Canonical Models of Trade Politics*

These results linking gains from liberalization to support for trade cannot be rationalized by models based around factors, industries, or firms. The tendency of higher-skilled college graduates to be more supportive of trade (Scheve and Slaughter, 2001) is accounted for by the education-by-issue (by-race-by-gender) fixed effects. Scholarship has consistently failed to link industry of employment—which I do not have data on—to trade preferences in the US (Mansfield and Mutz, 2009). One might be concerned that voters in areas with import-competing industries oppose trade. However, controlling for measures of local industry import penetration in model (5) does not change my estimates. High productivity firms tend to benefit from and support trade (Kim, 2017; Osgood, 2017). That phenomenon can explain why voters in certain areas, who may be more likely to work for high-productivity firms, tend to support trade (Lee and Liou, 2022). It cannot explain why voters in some areas would support trade with, for instance, Central America but not Korea.

Patterns of heterogeneity are inconsistent with an alternative model in which the measured gains from liberalization mask distributional consequences along Stolper-Samuelson lines. One might expect low skill workers to lose from and oppose trade everywhere, but lose most in areas more exposed to international trade (see Palmtag, Rommel and Walter 2020). If that were the case, low-skilled voters would be most skeptical of trade in cases where their region was predicted to gain from liberalization. Subsetting by education in Table I.9 I find the opposite.

The gains from liberalization do have a larger effect on college-educated voters, which likely reflects access to information. Union members similarly experience larger effects, a pattern that reflects unions mobilizing their members for and against trade as it matches their interests (Kim and Margalit, 2017).

3.4 *Evidence for the Plausibility of the Mechanism*

The evidence thus far suggests that voters tend to be more supportive of trade policies that benefit them. The claim is not that voters understand the gravity model, but are able to express preferences consistent with it through cognitively simpler channels. Scholarship on "low information rationality" examines how voters approximate sophisticated reasoning by taking cues from politicians, the media, and unions, which they combine with information from their own lives and social networks (Popkin, 1991; Lupia, 1994; Ansolabehere, Meredith and Snowberg, 2014). Patterns of heterogeneity by union membership are consistent with elite influence.

Voters' perceptions of the importance of trade with different parts of the world for their locality and the United States correlate with the measured gains from liberalization. The Chicago Council on Global Affairs' 2018 survey contains two sets of questions on the economic importance of trade with different partners. The first asks respondents "If the United States gets into a trade war with China, how concerned are you that this would hurt the local economy in your area?" and the equivalent question about Mexico. This question is close to the concept measured by the gains from liberalization: if the gains to an area from decreasing trade costs are large, so are the losses from increasing trade costs by raising tariffs. The second set of questions asks respondents how important relationships with various countries are for the US economy.

Tables I.10 and I.11 document a positive relationship between the gains from liberalization and gate proximity measures, and perceptions of the economic importance of different partners. These estimates make it more plausible that the other results reflect beliefs about the potential gains from trade. They come with the caveat that the sample size is smaller than in the other surveys and so the estimates are less precise. It is not the case that perceptions of the economic importance of different countries simply reflect the salience of different countries. Table I.11

shows that perceptions of the importance of countries for US security are uncorrelated with the independent variables.

Do the results linking gains from liberalization to support for trade reflect voters' egocentric preferences? The model, in which voters' trade preferences respond to the effect of liberalization on average real wages in their region, is consistent both with purely egocentric preferences—because voters receive the average real wage—or with voters having other-regarding preferences for other inhabitants of the same region, or otherwise basing their evaluation of national policy on its local effects. These behavioral mechanisms are not mutually exclusive. Patterns of heterogeneity by employment and home-ownership suggest that voters are not narrowly egocentric. If voters only cared about their material wellbeing, we would expect to observe stronger effects for those employed—for whom the gains from liberalization affect wages as well as prices—and for home-owners, because the success of the local economy is partly capitalized into house prices (Scheve and Slaughter, 2001).[15] Table I.12 instead shows little difference in estimates between these categories. In addition, the results in Table I.11 indicate that voters' perceptions of trade's national effects are influenced by its local effects. These patterns indicate a role for sociotropism in explaining the results in Table 1.

3.5 *Support For Trade in Congress and Elections*

Beyond public opinion, gains from liberalization correlate with congressional and electoral behavior. Representatives of congressional districts that stand to gain more from trade with a given region are also more likely to vote for free trade agreements with that region (Table G.1). This conclusion follows from specifications with FAF zone-by-member fixed effects that compare the same legislator representing the same district voting on trade agreements with different impacts on the district. These specifications adjust for the propensity of some districts to elect legislators who are more supportive of trade on average. These estimates provide evidence against the concern that voters' trade policy preferences are irrelevant for

[15]Note that those not in employment are still exposed to trade through its effects on prices.

policy, and help establish the plausibility of the idea that voters take cues from political elites.

Voters in zones that gain more from liberalization tend to be less supportive of anti-trade presidential candidates (Table F.1). Much scholarship on the globalization backlash links shift-share measures of import penetration to electoral outcomes. The results in Section 2 show that the gains from trade are also spatially uneven; the results here show they influence political outcomes. Expanding world trade not only creates pockets of losers measured by industry exposure, but also constituencies of winners that vote for trade.

4 CONSEQUENCES OF GRAVITY OUTSIDE THE US

Thus far, this paper has examined gains from and support for trade in the US. The theory is not however specific to the American context. In many countries, divisions over globalization and foreign policy are divisions between regions near and far from world markets. In Mexico, residents of states further north, which are closer to the US, Mexico's largest trading partner, are more supportive of FDI and globalization (Figure I.4). In China, coastal provinces are much more open to international trade, and their residents have more internationalist foreign policy preferences (see Figure I.5). These associations suggest that the theory may apply broadly. They are however cross-sectional, and a natural concern is that unobserved features of locations other than geography account for these patterns.

I use data on support for different countries joining the European Union to more rigorously test the theory outside the US. Over the period 1994–2010, Eurobarometer surveys asked respondents across Europe whether they were in favor of different countries joining the EU. This data largely consists of residents of Western European EU members being asked about formerly communist countries that would join during the Eastern Enlargement. I calibrate the trade model in Section 1 to match regional GDP and population data, and simulate the welfare effects in each subnational region from different countries joining the EU and thus experiencing lower trade barriers with the EU. Appendix H details the data and estimation.

Much scholarship following Eichenberg and Dalton (1993), Anderson and Reichert (1995), and Gabel (1998*a*,*b*) documents greater support for European integration among voters who standard trade models would predict gain more from lower barriers to trade within Europe (Foster and Frieden, 2021). Hobolt (2014) shows that individuals with more human capital, who stand to gain from lower barriers to trade, are more supportive of, amongst other things, EU expansion. Jones and van der Bijl (2004) link country-level trade data to support for different countries joining the EU.[16] While preferences towards the EU are not solely material (Hobolt and De Vries, 2016), these findings suggest the gains from lower barriers to trade with potential joiners should influence voter support for those countries joining.

Because respondents are asked about support for different countries joining the EU, and because the regions they live in stand to gain differently from different countries joining, I can difference out place-specific factors that affect support for EU expansion in general.

Table 2 shows the positive relationship between these region-specific gains from a country joining the EU, and individual support for that country joining the EU. This relationship is robust to the inclusion of individual fixed effects (2 and 4), to allowing individual support for different countries joining to vary by combinations of the respondent's gender and education (1 and 2), and to isolating within-country variation in the gains across regions from different countries joining the EU, by further interacting these fixed effects with those for the respondent's country (3 and 4). Doing so results in understandably smaller coefficients because it loses much of the variation. There is meaningful variation in gains from lower barriers to trade with a given country across Europe, and within larger European countries like France, but not within smaller countries like Luxembourg or Estonia.

[16] At the elite level, Schimmelfennig (2001) notes that geographically-uneven economic gains from the Eastern Enlargement explain part of the cross-country variation in support, see also Moravcsik and Vachudova (2003).

	Support for country joining EU			
	(1)	(2)	(3)	(4)
Gain to region from country joining EU	0.193*	0.190*	0.112*	0.108*
	(0.039)	(0.037)	(0.034)	(0.032)
NUTS region x wave FE	x		x	
Respondent FE		x		x
Joining country x wave x education x gender FE	x	x		
x respondent's country FE			x	x
N	2115037	2115037	2115037	2115037
R^2	0.189	0.660	0.229	0.684

This table presents evidence of the relationship between gravity-implied gains from lower trade barriers and support for different countries joining the European Union. The independent variable is the real wage gain in percentage points to the respondent's NUTS region from a given country joining the European Union, the dependent variable is 1 if the respondent is in favor of that country joining the EU, 0 if against. (1) and (3) include fixed effects for the respondent's region interacted with the survey wave, (2) and (4) for the respondent. (1) and (2) include fixed effects for the country in question, interacted with the survey wave and unique combinations of the respondent's education and gender. (3) and (4) further interact these country-wave-education-gender fixed effects with the respondent's country. Observations are weighted using national survey weights. Standard errors clustered by NUTS region in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table 2: Relationship between gains from lower trade barriers and support for countries joining the European Union

5 DISCUSSION

Trade flows, both within and between countries, are influenced by distance-related trade costs as much as by traditional sources of comparative advantage. This paper has analyzed how inter-regional trade and variation in trade costs create divergent effects of liberalization across the regions of a given country, and coalitions of regions that win and lose from liberalization. In doing so it introduces measures of the gains from liberalization and shows they map onto support for trade.

A growing body of scholarship explores how negative economic shocks are politicized via their effects on communities (Broz, Frieden and Weymouth, 2021; Baccini and Weymouth, 2021; Ballard-Rosa et al., 2021). This article illustrates how, because geography is a fundamental determinant of trade, its influence on the politics of trade goes beyond the consequences of localized decline. Trade creates aggregate gains, and geographic trade costs explain in part who realizes those gains.

That trade creates geographic divides is important because geographic divides are easily politicized. They often correspond to broad social cleavages and distinct electoral districts; when parties represent different sides of a geographic divide, they politicize issues correlated with that divide (Rodden, 2019). In the US, trade was a major political issue in the late 19th century, when divides over trade were not just between sectors and factors but also between regions (Trubowitz, 1998). Recently, trade has re-emerged as a salient issue, despite the advent of forces like product differentiation and intra-industry trade—features of gravity models like Krugman (1980)—that make trade less divisive (Alt et al., 1996; Kim, 2017). That gravity models generate geographic divides suggests an explanation.

The spatial distribution of gains from liberalization has implications for what trade policies are implemented. A conspicuous feature of gravity-derived gains from trade is that a minority of districts capture most of the gains. Figure 5 shows this right skew, plotting the distribution of gains from liberalization across CCES survey respondents. This pattern applies broadly:

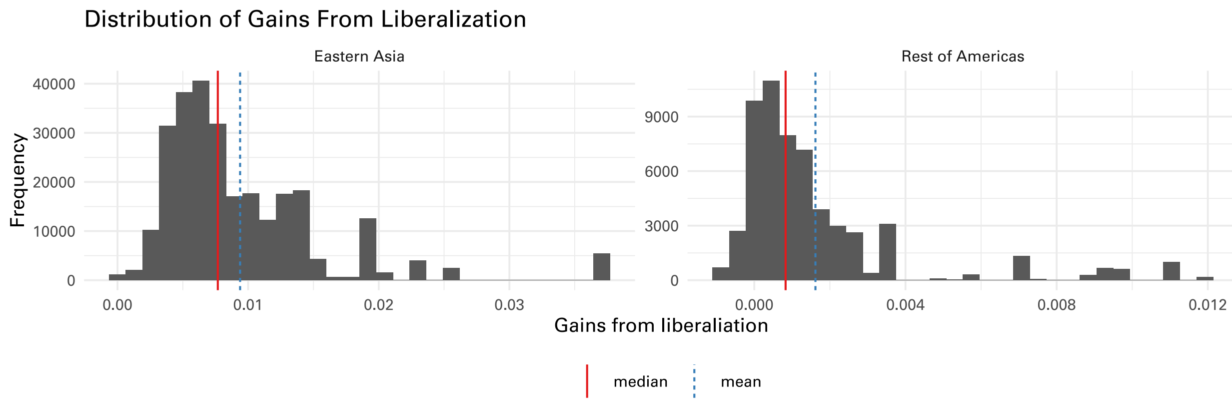

Figure 5: The distribution of gains from liberalization is right-skewed

This figure plots the distribution of gains from liberalization with Eastern Asia and the Rest of Americas, for survey respondents asked about trade with these world regions. The solid red line plots the median respondent's gain, the dashed blue line the mean respondent's gain.

Figure I.6 shows it holds in all EU countries analyzed in Section 4. In a majoritarian political system, this skew to the gains has different consequences for trade policy depending on the salience of trade for voters. If trade is a low-salience issue, so that voters and interest groups only mobilize over trade if it benefits or harms them more than the cost of mobilization, the right-skew pushes towards liberalization. Instead of trade creating concentrated losers, it creates concentrated pockets of winners, who mobilize for liberalization. In contrast, if trade is high salience and relevant to the first dimension of electoral competition, so that the median voter decides trade policy, the right skew of the gains mean that the median voter gains less than the average, leading to more protectionist equilibrium policies. These predictions fit the recent chronology of trade policy in the US. In the 1990s and 2000s, trade was a low salience issue and the country pursued liberalization. Since 2016, trade has become a salient political issue and US policy has swung toward protectionism.

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Online Appendix

Table of Contents

A summary of literature on distance-related trade costs

The analysis in the main text works from the assumption that distance constrains trade flows. This appendix reviews theoretical and empirical work on why distance is so important for trade flows.

Explanations for why distance influences trade costs fall into two non-exclusive camps. The first focuses on physical transportation costs, the second on forms of cultural proximity that strongly correlate with distance.

The most basic way in which distance influences trade costs is by increasing the physical cost of transporting goods. If it costs a certain amount to ship a good between two locations A and B, it must cost less to ship it to locations on the path between A and B. Hummels (2007) provides much evidence on the composition of international trade costs over time.

The fact that distance continues to influence trade flows, and that the elasticity has stayed stable over time, is often phrased as a puzzle (Disdier and Head, 2008). The logic is that technological developments decrease transportation costs, which should in turn diminish the importance of distance. The theoretical gravity model provides something of an explanation. What matters for trade flows between two locations is not the level of trade costs, but their magnitudes relative to other locations. Doubling the cost of sending a good over a kilometer would double all trade costs but keep the ratio of any two trade costs constant. Buch, Kleinert and Toubal (2004) make this point.

In addition to the direct costs of shipping, distance also influences the time a good is in transit. Hummels and Schaur (2013) point out that over the 1991–2005 period, air shipments accounted for 28% of US imports by value, and 33% of imports not from North America. Shipping a good by air is more expensive—and this extra expense is proportional to geographic distance—but quicker. Time spent in transit is a source of inventory-holding and depreciation costs. These costs are important for goods subject to physical spoilage or rapid obsolescence. Shipping time is especially important for parts and components, if the lack of a key component can hold up production. Hummels and Schaur (2013) point out that over half of US capital goods imports are by air.

That traveling further requires more time in transit could explain why studies tend to find larger distance elasticities for trade in services than goods (Kimura and Lee, 2006). For services that need to be provided in person—for which the provider is paid by the hour—travel time can multiply costs.

Similarly, if setting up supply chains, contracting with firms in origins or destinations, or learning about which goods are cheaper in which locations requires some travel, distance-related travel costs will constrain trade. Allen (2014) finds evidence of informational trade costs influencing trade flows in Indonesia, in addition to freight costs. Chaney (2018) develops a model in which firms gradually develop contacts, with longer-lived and larger firms having connections over a broader area, which rationalizes the gravity equation.

Explanations based around cultural proximity can be divided into those that emphasize how proximity helps business relationships, and those that emphasize variation in tastes across space. Rauch and Trindade (2002) document how ethnic Chinese networks facilitate trade between countries. Their explanation focuses on how ethnic networks help match buyers and sellers across countries, and how they deter opportunistic behavior through community sanctioning (as in Greif 1993). Because migration is also constrained by distance, networks that facilitate trade are constrained by geographic distance. This set of theories intersects with those like Chaney (2018) in which firms' networks are important for trade.

An alternative set of theories focus on consumer tastes varying across space. Bronnenberg, Dhar and Dubé (2009) find that brands in the US enjoy meaningfully larger market share in cities in which they were early entrants. Brand market share falls as one goes further from the brand's location of origin. Blum and Goldfarb (2006) find a gravity relationship for digital goods consumed over the internet—in the absence of trade costs—that is driven by "taste-dependent digital products, such as music, games, and pornography" (384). If tastes vary across space, then locations will export more to locations that are closer to them and have similar tastes.

B MODEL PROOFS AND EXTENSIONS

B.1 *Proof of Proposition 1*

Substituting the definitions of P_h and P_b into Equation (5) gives an equation that implicitly defines the wage ratio:

$$\left(\frac{w_b}{w_h}\right)^{1+\theta}\frac{T_hL_b}{T_bL_h}=\frac{T_b(1+(\mu t)^{-\theta})+T_h\left(\frac{w_b}{w_h}\right)^{\theta}\delta^{-\theta}}{T_b\delta^{-\theta}+T_h\left(\frac{w_b}{w_h}\right)^{\theta}}$$

Write the left hand side as $f\left(w_b/w_h\right)$ and the right hand side as $g\left(w_b/w_h, t\right)$. Differentiating both sides with respect to t and rearranging gives

$$\frac{\partial\frac{w_b}{w_h}}{\partial t}=\frac{\frac{\partial g}{\partial t}}{\frac{\partial f}{\partial\frac{w_b}{w_h}}-\frac{\partial g}{\partial\frac{w_b}{w_h}}}.$$

It is straightforward to verify that $\frac{\partial f}{\partial w_b/w_h}>0$ and $\frac{\partial g}{\partial t}<0$. g is decreasing in w_b/w_h if $T_hT_b\delta^{-2\theta}<T_hT_b(1+(\mu t)^{-\theta})$, which is satisfied for $\delta>1,\theta>0$ and $\mu>1,t>1,T_h>0,T_b>0$. These inequalities establish that $\frac{\partial w_b(t)/w_h(t)}{\partial t}<0$.

B.2 *Proof of Proposition 2*

We want to show $F(u_b(t')/u_b(t))>F(u_h(t')/u_h(t))$, where $t>t'\geq 1$. $F(\cdot)$ is an increasing function, so this inequality is satisfied if $u_b(t')/u_b(t)>u_h(t')/u_h(t)$, which can be rearranged to $u_b(t')/u_h(t')>u_b(t)/u_h(t)$. Showing that $\frac{\partial u_b(t)/u_h(t)}{\partial t}<0$ then satisfies the initial inequality. Multiplying both sides of (5) by $(w_b/w_h)^{\theta}$ gives

$$\left(\frac{u_b}{u_h}\right)^{\theta}=\left(\frac{w_b}{w_h}\right)^{1+2\theta}\frac{T_hL_b}{T_bL_h}$$

The inequality $\frac{\partial w_b(t)/w_h(t)}{\partial t}<0$, which has been established by Proposition 1, then satisfies the initial inequality.

B.3 *Distance-Related Trade Costs*

This section extends the model to relax the assumption that locations can only trade with those adjacent. I maintain the assumed trade costs between border regions of μt and border and hinterland regions of δ. To trade with non-adjacent regions, traders must pay the cost of shipping through each intervening region. For instance, to ship from the hinterland to the other country's border, one would pay δ to ship to the home border, then μt to ship from there to the foreign border, for a total cost of $\delta\mu t$. Such a cost structure could be generated by the locations being arranged on a line and and shipping costs being a log-linear function of distance (as suggested by Figure 1). This cost structure generates the following bilateral trade costs:

$$\tau_{bh} = \tau_{hb} = \delta, \quad \tau_{bb^*} = \mu t, \quad \tau_{hb^*} = \tau_{bh^*} = \delta\mu t, \quad \tau_{hh^*} = \delta^2 \mu t.$$

The trade balance condition is then

$$X_{bb} + X_{bh} + X_{bb^*} + X_{bh^*} = X_{bb} + X_{hb} + X_{b^*b} + X_{h^*b}.$$

Expanding and rearranging, we obtain Equation (5). Thus the same intuitions about trade lowering prices in the border region leading to nominal relative wage losses in the hinterland apply in this environment. We now prove Proposition 1 in this environment. Proposition 2 follows directly from Proposition 1.

PROOF OF PROPOSITION 1 WITH DISTANCE-RELATED TRADE COSTS Substituting the definitions of P_h and P_b with the new trade costs into Equation (5) gives an equation that implicitly defines the wage ratio:

$$\left(\frac{w_b}{w_h}\right)^{1+\theta} \frac{T_h L_b}{T_b L_h} = \frac{T_b(1 + (\mu t)^{-\theta}) + T_h \left(\frac{w_b}{w_h}\right)^{\theta} \left(\delta^{-\theta} + (\delta\mu t)^{-\theta}\right)}{T_b \left(\delta^{-\theta} + (\delta\mu t)^{-\theta}\right) + T_h \left(\frac{w_b}{w_h}\right)^{\theta} \left(1 + (\delta^2 \mu t)^{-\theta}\right)} \tag{10}$$

As above, writing the left term of (10) as $f(w_b/w_h)$ and the right hand side as $g(w_b/w_h, t)$ and differentiating both sides with respect to t and rearranging gives

$$\frac{\partial \frac{w_b}{w_h}}{\partial t} = \frac{\frac{\partial g}{\partial t}}{\frac{\partial f}{\partial \frac{w_b}{w_h}} - \frac{\partial g}{\partial \frac{w_b}{w_h}}}.$$

To show that this expression is negative I show that the numerator is negative and the denominator positive.

To verify that the numerator is negative, $\frac{\partial g}{\partial t} < 0$, I simplify the algebra by writing $k_b := T_b$, $k_h := T_h \left(\frac{w_b}{w_h}\right)^{\theta}$, $g_n := k_b \left(1 + (\mu t)^{-\theta}\right) + k_h \left(\delta^{-\theta} + (\delta\mu t)^{-\theta}\right)$, and $g_d := k_b \left(\delta^{-\theta} + (\delta\mu t)^{-\theta}\right) + k_h \left(1 + (\delta^2\mu t)^{-\theta}\right)$. One can then write $g\left(t, \frac{w_h}{w_b}\right) = \frac{g_n}{g_d}$.

The condition $\frac{\partial g}{\partial t} < 0$ can be written as $\frac{\partial g_n}{\partial t} g_d - \frac{\partial g_d}{\partial t} g_n < 0$. To see that this inequality is satisfied, evaluate the expression.

$$\frac{\partial g_n}{\partial t} g_d = -\frac{\theta}{t} \left(k_b(\mu t)^{-\theta} + k_h(\delta \mu t)^{-\theta}\right) \left(k_b \left(\delta^{-\theta} + (\delta \mu t)^{-\theta}\right) + k_h \left(1 + (\delta^2 \mu t)^{-\theta}\right)\right)$$

$$\frac{\partial g_d}{\partial t} g_n = -\frac{\theta}{t} \left(k_b(\delta \mu t)^{-\theta} + k_h(\delta^2 \mu t)^{-\theta}\right) \left(k_b \left(1 + (\mu t)^{-\theta}\right) + k_h \left(\delta^{-\theta} + (\delta \mu t)^{-\theta}\right)\right)$$

$$-\frac{t}{\theta} \left(\frac{\partial g_n}{\partial t} g_d - \frac{\partial g_d}{\partial t} g_n\right) = k_b k_h (\mu t)^{-\theta} \left(1 - \delta^{-2\theta}\right) + k_h^2 (\delta \mu t)^{-\theta} \left(1 - \delta^{-2\theta}\right)$$

For $\delta > 1$, the right hand side is positive, and therefore because $\theta > 0$, the term in parentheses on the left hand side must be negative, implying $\frac{\partial g}{\partial t} < 0$.

I now verify that the denominator is positive. As above, we have $\frac{\partial f}{\partial \frac{w_b}{w_h}} > 0$. To see that $\frac{\partial g}{\partial \frac{w_b}{w_h}} < 0$, note that the derivative of g with respect to $\left(\frac{w_b}{w_h}\right)^{\theta}$ is negative if $T_b T_h \left(\left(1 + (\mu t)^{-\theta}\right)\left(1 + (\delta^2 \mu t)^{-\theta}\right)\right) > T_b T_h \delta^{-2\theta} \left(1 + (\mu t)^{-\theta}\right)^2$, which simplifies to $1 > \delta^{-2\theta}$, which is satisfied for $\theta > 0, \delta > 1$.

C Additional detail on variable construction

C.1 *Gate Proximity*

The gains from liberalization measure infers trade costs from actual trade flows. It takes into account all factors that influence a location's costs of engaging in international trade. Figure 2 shows that geography is a large contributor to these costs, but is not the only contributor. To supplement the primary measure, I calculate *gate proximity* that more directly measures the extent of frictions to international trade with specific partners from geographic internal trade barriers.

Specifically I calculate the average inverse internal trade cost with locations in which imports and exports to each world region enter and leave, according to the following formula:

$$\textit{gate proximity}_{zjt} = \frac{1}{2} \left(\frac{\sum_o M_{jt}^o \tau_{oz}^{-\theta}}{\sum_o M_{jt}^o} + \frac{\sum_d X_{jt}^d \tau_{zd}^{-\theta}}{\sum_d X_{jt}^d} \right). \tag{11}$$

In this expression, M_{jt}^o are total imports to the US from world region j, entering through US zone o at time t, X_{jt}^d are exports from the US to world region j exiting through US zone d, and τ_{oz} and τ_{zd} are distance-related trade costs between o and z and z and d. This variable calculates the weighted average inverse internal trade cost between each FAF zone z, and the zones through which imports and exports with a particular trading partner j are routed, weighted by the importance of each of these zones for imports and exports. This data on imports and exports by zone is from the US Census Bureau's USA Trade Online, which reports trade flows by port of entry or exit; I geocode ports and allocate them to FAF zones.

To calculate the inverse distance-related internal trade costs $\tau_{oz}^{-\theta}$, I first follow Head and Ries (2001) to back out average trade costs between two locations from trade flow data. With the additional assumptions that locations can trade with themselves at no shipment cost, that is, $\tau_{oo} = 1$ for all o, and that trade costs are symmetric, that is, $\tau_{od} = \tau_{do}$ for all o, d, the inverse of trade costs can be written in terms of observed trade flows:

$$\tau_{od}^{-\theta} = \left(\frac{X_{od} X_{do}}{X_{oo} X_{dd}} \right)^{\frac{1}{2}}. \tag{12}$$

Here X_{od} are shipments from o to d. I calculate symmetric internal inverse trade costs according to Equation (12) using internal trade flows—domestic products shipped to other parts of the US—from the Freight Analysis Framework data. I then predict inverse trade costs using geographic distance. I do so by regressing the logarithm of the inverse trade costs backed out of internal trade flows against log geographic distance and an indicator that the origin equals the destination, and use the estimated coefficients to predict inverse trade costs:

$$\ln \tau_{od}^{-\theta} = \beta_0 + \beta_1 \ln \text{Distance}_{od} + \beta_2 \mathbf{1}_{\{o=d\}} + \varepsilon_{od};$$

$$\hat{\tau}_{od}^{-\theta} = \exp\left(\beta_0 + \beta_1 \ln \text{Distance}_{od} + \beta_2 \mathbf{1}_{\{o=d\}}\right).$$

I use the predicted inverse trade costs, $\hat{\tau}_{od}^{-\theta}$ to calculate gate proximity. The Head and Ries trade cost measure is useful here for giving the functional form that relates distance to trade costs.

Gate proximity more directly captures the role of internal geography for international trade. This transparency comes at the costs of not corresponding as directly to a theoretical quantity—the potential increase in welfare—that should influence support for liberalization.

C.2 *Imports and Exports Via Zone*

I control for the log value of imports and exports with a given world region. As above, I calculate these measures by allocating port-level imports and exports from USA Trade Online to FAF zones.

C.3 *Shift-Share Industry Import Penetration and Export Exposure*

I calculate import penetration by allocating industry-level import penetration and export dependence to FAF zones, according to the following formulas:

$$\textit{Industry import penetration}_{zjt} = \sum_i \underbrace{\frac{L_{izt}}{\sum_i L_{izt}}}_{\text{share employed in } i} \left(\underbrace{\frac{M_{ijt}}{M_{it} + Y_{it} - X_{it}}}_{\text{import penetration in } i} \right)$$

$$\textit{Industry export exposure}_{zjt} = \sum_i \underbrace{\frac{L_{izt}}{\sum_i L_{izt}}}_{\text{share employed in } i} \left(\underbrace{\frac{X_{ijt}}{Y_{it}}}_{\text{export exposure in } i} \right)$$

where L_{izt} is employment in industry i in zone z at time t, M_{ijt} is imports of goods in industry i from partner j, M_{it} is total imports in industry i, Y_{it} total production, X_{it} total exports, and X_{ijt} exports of i to j, and the summation is over industries. I use employment data from the County Business Patterns (Eckert et al., 2020), trade data from USA Trade Online, and industry production data from the NBER-CES manufacturing database, all at the 4-digit

NAICS level.

At the industry level, import penetration here measures the extent to which imports from country j account for the domestic market, itself measured as domestic production plus net imports. Export exposure measures the extent to which exports to country j account for domestic production. At the zone level, these variables correspond to average import penetration and export exposure, weighted by employment.

Net import penetration is the difference between import penetration and export exposure.

C.4 *Immigrants*

I control for the log share of immigrants from the country in question in the year of interest relative to population. This data is from the ACS 5-year survey, which gives the birthplaces of foreign-born residents at the county level, which I aggregate to FAF zones.

C.5 *Recentered Instrument*

Gate proximity measures proximity to major ports through which imports and exports to specific trading partners enter or leave the US. The main identification concern is that places close to a major port for trade with a given world region might differ in terms of the industry or cultural mix in relation to that world region. Some of these differences could be consistent with the model and part of the mechanism, for instance if industries that tend to export to that location locate near the port, but they could also suggest alternative mechanisms that would violate exogeneity or the exclusion restriction. The most pressing concern is that places well-positioned to trade with a given part of the world are also culturally more similar and sympathetic to that region.

To make the exogeneity assumption and exclusion restriction more plausible, I follow Borusyak and Hull (2023) and "recenter" the instrument. Gate proximity can be written as

$$gate\ proximity_{zjt} = \frac{1}{2}\left(\frac{\sum_o \frac{M^o_{jt}}{M^o_t}\tau_{oz}^{-\theta}M^o_t}{\sum_o \frac{M^o_{jt}}{M^o_t}M^o_t} + \frac{\sum_d \frac{X^d_{jt}}{X^d_j}\tau_{zd}^{-\theta}X^d_t}{\sum_d \frac{X^d_{jt}}{X^d_t}X^d_t}\right),$$

where M^o_t and X^d_t are total imports and exports—not just to world region j—shipped via regions o and d at time t, and $\frac{M^o_{jt}}{M^o_t}$ and $\frac{X^d_{jt}}{X^d_t}$ are the shares of those imports and exports from or to world region d. Written this way, we see that gate proximity combines two concepts: proximity to major ports, and proximity to ports that are important for trade with a given region. Both need to be present for gate proximity to influence gains from trade relative to a given world region. To trade with a world region, one needs to be close to a port, and that port needs to be positioned to trade with that region. Whether a location is located near to ports that trade specifically with a given world region is plausibly correlated with unobservable factors that would influence support for trade with that region, but whether that location is located near to ports that trade with all world regions is less likely to be correlated with region-specific unobservables.

Borusyak and Hull (2023) show that one can isolate the variation in the instrument due to the more exogenous port importance M^o_t and X^d_t terms by permuting the instrument, as follows:

1. Permute the vector of total imports and exports being shipped to all world regions via each FAF zone (M_o^t and M_d^t), giving $M_t^{o,\text{permute}}$ and $M_t^{d,\text{permute}}$—I only permute total imports and exports between FAF zones with total trade flows of at least 100 million in any year of the period studied, to avoid identifying off places not close to any port.

2. Calculate permuted imports and exports to the world region in question from ports in each FAF zone: $M_{jt}^{o,\text{permute}} = M_t^{o,\text{permute}} \cdot \frac{M_{jt}^o}{M_t^o}$, $X_{jt}^{d,\text{permute}} = X_t^{d,\text{permute}} \cdot \frac{X_{jt}^d}{X_t^o}$.

3. Calculate permuted log gate proximity according to equation (11) using $M_{jt}^{o,\text{permute}}$ and $X_{jt}^{d,\text{permute}}$.

4. Repeat steps 1–4 1000 times and subtract the average permuted log gate proximity from log gate proximity to obtain recentered log gate proximity.

Table C.1 regresses various non-gravity measures of cultural and economic similarity against the recentered instrument, merged into the main analysis dataset so the identifying variation (accounting for weights and individual-level controls) is the same as in the main analysis. Models (1) and (2) show that the recentered instrument is uncorrelated with the presence of immigrants from the country in question. (3) and (4) show that it is uncorrelated with shift-share import penetration and export exposure with the country in question, based on the mix of industries in the FAF zone. This null result suggests that locations that score high on the recentered instrument do not differ in the kinds of industries that tend to trade with the world region in question. (5) shows the recentered instrument is uncorrelated with a measure of social network connections through Facebook, which helps to further increase confidence that it is orthogonal to unobservable forms of cultural proximity. (6) shows that the same is true of the un-recentered instrument with the full set of controls. These exercises increase confidence in the exclusion restriction for the recentered instrument.

D Adjusting for the lack of year-specific gains from liberalization

The primary source for zone-specific trade data is the 2017 Freight Analysis Framework. One potential limitation is that the survey data is from various years. Using 2017 trade data thus introduces measurement error: gains from liberalization in 2017 are a noisy proxy for gains from liberalization in the year of interest.

This appendix provides evidence to address this concern. First, I show that, using gate proximity, spatial patterns of trade exposure are extremely stable over time, suggesting that regional differences in gains from liberalization change little over the period studied. Second, I use year-specific trade data to create a year-specific measure of gains from liberalization and show that my results are robust to using this measure. Provided that the instrumental variables are uncorrelated with the measurement error, the TSLS estimates will not be affected by measurement error. The third analysis shows that the instruments are uncorrelated with the difference between year-specific and 2017 gains from liberalization, suggesting that they should address this measurement error concern.

	ln immig.	% immig.	imports	exports	Facebook connections	
	(1)	(2)	(3)	(4)	(5)	(6)
log gate proximity (recentered)	0.326	0.344	−0.002	0.001	61.461	
	(0.219)	(0.274)	(0.001)	(0.001)	(60.182)	
log gate proximity						17.339
						(21.288)
Full controls						x
N	353887	353887	353887	353887	189856	189856
R^2	0.936	0.674	0.936	0.882	0.420	0.577

This table presents evidence that the recentered instrument is orthogonal to measures of cultural and economic proximity. The sample is the same as in Table 1, this is so that the variation in the independent variables is that same as in the main regressions; these models are to gauge whether the instruments in those specifications are correlated with forms of proximity to the countries being asked about: CAFTA, Peru and Colombia, Korea, and China. Instead of the respondent's support for trade with the country in question, the dependent variable is a FAF-zone measure of connections to the country in question. In (1) the dependent variable is the log number of immigrants from the country in question, in (2) immigrants from the country in question as a percentage of the population, in (3), industry average import penetration from the country in question, in (4), industry average export exposure with the country in question, in (5) and (6) average rate of Facebook connections between users in the FAF zone and country in question (scaled so the maximum is 1,000,000) from (Bailey et al., 2018). Note that because Facebook is banned in China, there is no data for China in (5) and (6). All models include fixed effects for combinations of race, education level, and gender interacted with an indicator for the survey question and year, and FAF zone fixed effects. (1)–(5) also control for log imports and exports via the zone, (1) controls for log population (so the dependent variable is proportional to population), (6) includes the full set of controls from Table 1 (6). Observations are weighted using CES survey weights. Standard errors clustered by FAF zone in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table C.1: Recentered instrument is orthogonal to immigration, industry-based trade exposure, and Facebook connections

Whether it is valid to use 2017 gains from liberalization to study support for trade in another year depends on how far the spatial distribution of these gains vary over time. If the same set of locations gain from trade with a given region in 2005 and in 2021, then using data from a different year should not lead to different estimates. Because I only observe gains from liberalization in 2017, I cannot directly verify that claim. I can however examine it for gate proximity, because the availability of port-by-year trade flows allow me to construct that for all years in my sample. Gate proximity captures the most theoretically-relevant component of gains from liberalization: the contribution to trade gains of being near relevant ports. Figure D.1 plots log gate proximity in 2021 against log gate proximity in 2005, for trade with the Rest of Americas, Eastern Asia, and the world. The two sets of variables are extremely strongly correlated: 0.93 for Asia, 0.96 for Rest of Americas, and 0.99 for the world. This strong correlation reflects the importance of geography for trade flows: places on the Pacific coast are better-positioned to trade with Asia in both 2005 and 2021. The persistence of gate proximity over time suggests that gains from liberalization will also persist over time, which implies that measurement error from changing trade patterns will be small.

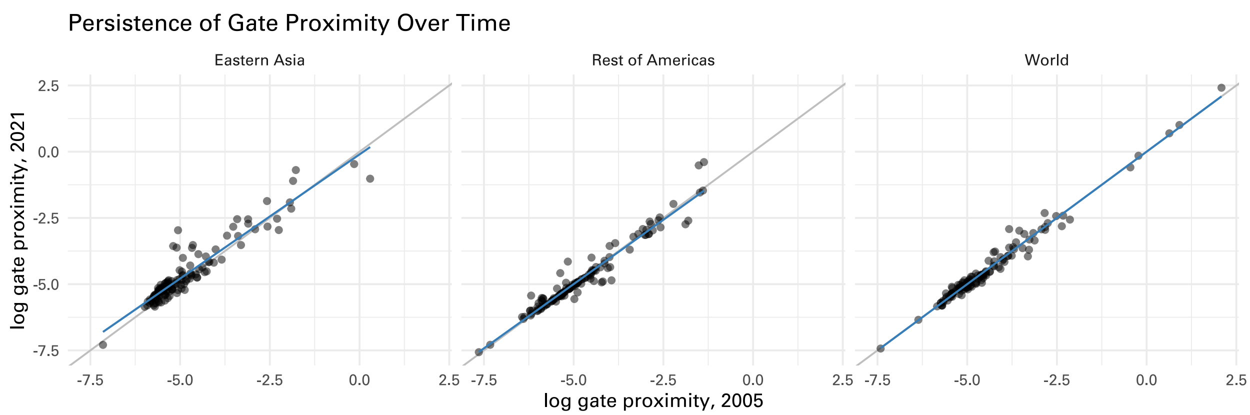

Figure D.1: Gate proximity is largely time invariant

This figure plots log gate proximity at the FAF zone level in 2021 against log gate proximity in 2005, for Eastern Asia, the Rest of Americas, and the entire World. Blue lines show the OLS fit, gray lines the 45 degree line. The correlations between the variables are 0.93 for Asia, 0.96 for Rest of Americas, and 0.99 for the world. These strong correlations indicate that there is little within-FAF zone-world region variation in gate proximity over time, suggesting that estimates should not be sensitive to the year in which gate proximity or gains from liberalization are measured.

In a further robustness check I use port-by-country import and export data from the Census Bureau and impute trade data for other years. This exercise gives a year-specific measure of gains from liberalization. I do so as follows. Write the value of imports entering location o of the US from world region f in year t as $m_{f,o,t}$, and the value of exports to world region f leaving location d of the US at t as $e_{d,f,t}$. This data is provided by the Census Bureau. Write shipments from location o to location d, recorded in the 2017 FAF, as X_{od}. Write imports from f to d imported via o as $x_{f,o,d}$, and exports from o to f via d as $x_{o,d,f}$. Total imports to d from f are then $X_{fd} = \sum_o x_{f,o,d}$, and total exports to f from o are $X_{of} = \sum_d x_{o,d,f}$. Total exports shipped to f via d are $\sum_o x_{o,d,f}$. To impute trade flows in year t, $X_{fd,t}$ and $X_{of,t}$, I scale trade flows in 2017 by changes in the magnitude of imports

	Support for free trade							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gains from liberalization (year specific)	2.335*	2.027*	6.397*	5.949*	5.622*	3.901*	7.757*	6.008*
	(0.329)	(0.627)	(1.151)	(1.149)	(1.174)	(1.086)	(2.252)	(2.425)
Model	OLS	OLS	TSLS	TSLS	TSLS	TSLS	TSLS	TSLS
Recentered instrument							x	x
Zone FE		x	x	x	x	x	x	x
Controls: flows via zone				x	x	x	x	x
- industry exposure					x	x		x
- immigrants						x		x
First stage F-stat			27.895	25.255	29.477	25.698	10.44	9.451
N	327303	327303	327303	327303	327303	327303	327303	327303
R^2	0.057	0.061	0.060	0.060	0.060	0.061	0.060	0.060

This table replicates Table 1, using year-specific imputed gains from liberalization in place of gains from liberalization calculated from the 2017 FAF. Note that all other variables are year-specific in both this table and Table 1. (1) and (2) are estimated by OLS, (3)–(6) instrument for gains from liberalization with log gate proximity, the average distance-related inverse trade cost with locations where imports and exports to the world region in question enter or leave the US, (7)–(8) instrument with log gate proximity, recentered as in Borusyak and Hull (2023). All models include fixed effects for combinations of race, education level, and gender interacted with an indicator for the survey question and year, (2)–(8) control for FAF zone fixed effects, (4)–(8) control for the log value of imports and exports to the world region shipped via ports in the zone, (5)–(6) and (8) control for average import penetration and export exposure with the countries in question, (6) and (8) controls for the log share of immigrants from the country in question relative to population, Observations are weighted using CES survey weights. Standard errors clustered by FAF zone in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table D.1: Main results with year-specific imputed gains from liberalization

and exports passing via each zone:

$$X_{fd,t} = \sum_o x_{f,o,d} \left(\frac{m_{f,o,t}}{m_{f,o,2017}} \right), \; X_{of,t} = \sum_d x_{o,d,f} \left(\frac{e_{d,f,t}}{e_{d,f,2017}} \right)$$

I then use the resultant year-specific measures of trade flows to calculate the various independent variables and controls.

Note that because gate proximity is calculated simply using proximity to the regions in which imports enter and leave the US, I am able to calculate gate proximity using year-specific trade data. A limitation of the imputed gains from liberalization measure is that it holds US internal trade fixed.

Table D.1 replicates Table 1 using these variables, giving very similar estimates.

Some specifications instrument for gains from liberalization with gate proximity. A standard result in econometrics is that a TSLS estimate is consistent in the presence of measurement error provided that, in addition to standard TSLS assumptions, the instrument is uncorrelated with the measurement error (Greene, 2003, p. 86). If gate proximity is a valid instrument and uncorrelated with measurement error, the resulting estimates will not be

	Year specific gains minus 2017 gains (x1000)			
	(1)	(2)	(3)	(4)
log gate proximity	−0.250*	−0.132		
	(0.120)	(0.151)		
log gate proximity (recentered)			−0.240	−0.118
			(0.208)	(0.221)
Controls: flows via zone	x	x	x	x
- industry exposure		x		x
- immigrants		x		x
N	353908	353908	353908	353908
R^2	0.400	0.404	0.398	0.404

This table shows the relationship between the instrumental variables and the difference between year-specific imputed gains from liberalization and 2017 gains from liberalization. The dependent variable—this differnce—is multiplied by 1000 for legibility. All models include fixed effects for the FAF zone in question and for combinations of race, education level, and gender interacted with an indicator for the survey question and year, and control for the log value of imports and exports to the world region shipped via ports in the zone, as in Table 1 models (4) and (7). Models (2) and (4) add controls for average import penetration and export exposure with the countries in question, and the log share of immigrants from the country in question relative to population, as in Table 1 models (6) and (8). Observations are weighted using CES survey weights. Standard errors clustered by FAF zone in parentheses. $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table D.2: Instruments are uncorrelated with the difference between year-specific and 2017 gains from liberalization

affected by measurement error. Because I do not observe the measurement error, I cannot directly verify whether gate proximity is uncorrelated with it. I can however examine the relationship between gate proximity and the difference between year-specific and 2017 gains from liberalization. The logic for doing so is that year-specific imputed gains will have less measurement error, and so the difference between the two should reflect measurement error.

Table D.2 shows the results of regressions of the difference between year-specific imputed and 2017 gains from liberalization against the two instruments. Because the coefficients are extremely small, I multiply them by 1000. In the more restrictive specifications, the instruments are uncorrelated with this difference, raising confidence that they are uncorrelated with measurement error and, therefore, that the instrumental variables estimates are free of measurement error.

E Accounting for regional variation in tradable employment

This appendix extends the model to include a non-traded sector. Doing so shows that the original gains from liberalization measure still captures general equilibrium changes to wages and prices from trade liberalization, but must be weighted by the share of employment in tradable sectors of the economy to capture the overall effect on average welfare from liberalization. Adjusting the measure of gains from liberalization accordingly, I obtain very similar estimates of the relationship between gains from liberalization and support for trade.

E.1 *Model Extension*

Workers have Cobb-Douglas preferences over consumption of tradable goods c_t and of non-tradable goods c_n:

$$u_o(c_t, c_n) = \left(\frac{c_t}{\alpha_o}\right)^{\alpha_o} \left(\frac{c_n}{1-\alpha_o}\right)^{1-\alpha_o},$$

where α_o is the parameter that determines how much of a consumer's budget she spends on tradable relative to non-tradable goods. I allow this parameter to vary by location.

Demand for and supply of tradable goods is the same as in the main section of the paper, except that now workers in o spend fraction α_o of their total income on tradable goods. Spending on tradable goods by location o is thus $\alpha_o w_o L_o$. As before, the price of the consumption bundle of tradable goods is P_o.

Non-tradable goods are produced using labor in each location under perfect competition and constant returns to scale, with productivity A_o. The equilibrium price of non-tradable goods in o is r_o, and employment in the non-tradable sector in o is n_o. Profits of non-tradable firms are then $r_o A_o n_o - w_o n_o$. Perfect competition implies that these profits are competed away in equilibrium, giving equilibrium price

$$r_o = \frac{w_o}{A_o}.$$

In equilibrium, demand for non-tradables in o equals the supply of non-tradables:

$$(1-\alpha_o) w_o L_o = r_o A_o n_o.$$

Inserting the identity for non-tradables prices r_o and rearranging gives

$$\frac{n_o}{L_o} = 1 - \alpha_o. \tag{13}$$

The share of employment in the non-tradables sector is equal to the share of non-tradables in consumption. If consumers in a location spend more on non-tradables, a larger share of the population must work in the non-tradable sector to supply enough non-tradable products.

Indirect utility is

$$u_o = \frac{w_o}{P_o^{\alpha_o} r_o^{1-\alpha_o}}.$$

This expression differs from that in the main body of the paper in that the price index is now a geometrically-weighted average of tradable and non-tradable good prices, with the weights corresponding to expenditure shares. Inserting our identity for r_o gives

$$u_o = \left(\frac{w_o}{P_o}\right)^{\alpha_o} A_o^{1-\alpha_o}. \tag{14}$$

Worker utility now depends on two components: the ratio of wages to tradable prices as before, and the productivity of the non-tradables sector A_o, where the relative weights on each component correspond to the tradable and non-tradable budget shares. Welfare is less responsive to wages because rising wages in a location now also push up the price of non-tradable goods in that location.

Note that fixing non-tradables productivity and budget shares, this expression is increasing in w_o/P_o, and so our conclusions about whether a given change increases or decreases welfare in a location will be qualitatively unchanged.

E.2 *Exact-Hat Algebra*

I now extend the measure of gains from liberalization to account for these model extensions. The key difference to the tradables market is that each location o now only spends fraction α_o of total income on tradables. Total purchases by location d sum to $\alpha_d w_d L_d$. Sales from o to d are then

$$X_{od} = T_o w_o^{-\theta} \tau_{od}^{-\theta} \alpha_d P_d^{\theta} w_d L_d.$$

The condition that the amount of the tradable good that each location buys equals the amount it sells (4) is now

$$\alpha_o w_o L_o = \sum_{d=1}^{N} X_{od} = T_o w_o^{-\theta} \sum_{d=1}^{N} \tau_{od}^{-\theta} P_d^{\theta} \alpha_d w_d L_d.$$

Considering a change in trade cost $\hat{\tau}_{od} = \frac{\tau'_{od}}{\tau_{od}}$ gives the following equation

$$\alpha_o w_o L_o \hat{w}_o = T_o w_o^{-\theta} \sum_{d=1}^{N} \tau_{od}^{-\theta} P_d^{\theta} \alpha_d w_d L_d \hat{w}_o^{-\theta} \hat{\tau}_{od}^{-\theta} \hat{P}_d^{\theta} \hat{w}_d,$$

which we can rearrange to give

$$\hat{w}_o = \left(\frac{T_o w_o^{-\theta} \sum_{d=1}^{N} \tau_{od}^{-\theta} P_d^{\theta} \alpha_d w_d L_d \hat{\tau}_{od}^{-\theta} \hat{P}_d^{\theta} \hat{w}_d}{\alpha_o w_o L_o} \right)^{\frac{1}{1+\theta}} = \left(\frac{\sum_{d=1}^{N} X_{od} \hat{\tau}_{od}^{-\theta} \hat{P}_d^{\theta} \hat{w}_d}{\sum_{d=1} X_{od}} \right)^{\frac{1}{1+\theta}}.$$

The right side of this expression is identical to the one for $\hat{w}_o$ in the main text. We obtain the same expression from an extended model with a non-tradable sector because, in the extended model, observed trade flows now incorporate the share of the budget spent on tradables.

The expressions for tradable goods prices and thus of changes to tradable goods prices are unchanged from the main text.

These results imply that the gains from liberalization measure, $\hat{w}_o/\hat{P}_o$, calculated as in the main text, provides a measure of the change in real wages that is consistent with a model with a non-tradable sector. This measure does not however capture the full effect on worker utility of changes in trade costs.

From the derivation of worker utility in equation (14), we instead have

$$\hat{u}_o = \frac{u'_o}{u_o} = \frac{(w'_o/P'_o)^{\alpha_o} A_o^{1-\alpha_o}}{(w_o/P_o)^{\alpha_o} A_o^{1-\alpha_o}} = \left(\frac{\hat{w}_o}{\hat{P}_o} \right)^{\alpha_o}.$$

The change to worker utility from a change in trade costs is the gain from liberalization measure raised to α_o, the share of spending on non-tradables in the location.

From equation (13), we also have that α_o, the share of spending on non-tradables, is equivalent to the share of employment in o in the tradables sector.

With these results in hand, I calculate *Tradables-adjusted gains from liberalization*, the $\hat{w}/\hat{P}$ measure raised to the share of employment in tradable sectors, which I calculate with data from the County Business Patterns.

Table E.1 replicates the results in Table 1, using this adjusted measure of gains from liberalization. Doing so gives very similar results and patterns of significance. The key differences is that the variance of the tradables-adjusted gains is smaller—its standard deviation is 0.27 times that of the main measure—and so the coefficient estimates are correspondingly larger. These results indicate that accounting for non-tradable sectors of the economy does not alter the paper's conclusions about the role of gravity in influencing trade preferences.

F Relationship between gains from liberalization and support for trade in elections

Table F.1 examines presidential voting. There are three elections in recent history when trade policy has been salient and American voters have been presented with candidates offering distinct positions on trade policy. Ross Perot ran for president in 1992 and 1996 on third-party platforms critical of NAFTA and the WTO. In 2016, Donald Trump's campaign called for renegotiating NAFTA and withdrawing from the Trans Pacific Partnership. I examine the relationship between the aggregate gains from liberalization and support for these three candidacies, conditioning on Republican voteshare in 1988 in the case of Perot and 2012 in the case of Trump. Voters in locations that gain more from liberalization were less likely to vote for anti-trade candidates, an association that is robust to controlling for urbanization and the presence of Black voters, college graduates, and manufacturing employment.

G Support for trade in congress

This appendix details how the gains from liberalization correlate with voting in the House of Representatives on Free Trade Agreements. I use the Congressional Research Service's 2023 classification of the final votes on Free Trade Agreements, and data on congressional voting from Lewis et al. (2021). I spatially intersect district boundaries from Lewis et al. (2013) with FAF zones and allocate members of congress to zones. Studying behavior in congress helps address the concern that trade policy preferences among voters may not translate into policy.

Table G.1 shows the resulting estimates, indicating that legislators are more supportive of a trade agreement if it benefits their district. These incorporate legislator-by-FAF zone fixed effects and thus account for different areas electing legislators with differing levels of support for trade. Model (4) also controls for the legislator's first-dimension DW-Nominate score, and so accounts for more conservative legislators voting differently on different bills.

	Support for free trade							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Tradables-adjusted gains from liberalization	7.620*	12.412*	20.920*	19.420*	18.332*	13.029*	23.603*	18.590*
	(1.439)	(2.497)	(3.455)	(3.430)	(3.565)	(3.357)	(5.982)	(6.572)
log imports via zone				0.331	0.527	0.387	0.093	0.135
				(0.755)	(0.795)	(0.736)	(0.809)	(0.779)
log exports via zone				0.856	1.005†	0.786	0.648	0.586
				(0.557)	(0.571)	(0.544)	(0.641)	(0.608)
Industry import penetration					0.076	0.116		0.115
					(0.227)	(0.237)		(0.227)
Industry export exposure					1.425†	1.294†		1.068
					(0.726)	(0.720)		(0.798)
log % immigrants						0.014*		0.011*
						(0.004)		(0.005)
Model	OLS	OLS	TSLS	TSLS	TSLS	TSLS	TSLS	TSLS
Recentered instrument							x	x
Education x race x gender x question x year FE	x	x	x	x	x	x	x	x
Zone FE		x	x	x	x	x	x	x
First stage F-stat			34.38	31.022	34.441	28.516	12.089	10.646
N	327303	327303	327303	327303	327303	327303	327303	327303
R^2	0.057	0.061	0.061	0.061	0.061	0.061	0.061	0.061

This table presents evidence of the relationship between gains from liberalization and support for free trade, reproducing the results in Table 1 using a measure of gains from liberalization that is adjusted to take into account differences in tradables employment across locations. Note that the standard deviation of this tradables-adjusted gains from liberalization measure is 0.27 times that of the main gains from liberalization measure. Data is at the individual level. The dependent variable is coded as 1 if the respondent's answer aligns with support for trade: opposition to tariffs on Chinese goods, support for the US joining CAFTA-DR and KORUS, and support for extending NAFTA to Peru and Colombia. Gains from liberalization are those with Eastern Asia in the case of Chinese tariffs and KORUS, and Rest of America in the case of CAFTA-DR and NAFTA extension. (1) and (2) are estimated by OLS, (3)–(6) instrument for gains from liberalization with log gate proximity, the average distance-related inverse trade cost with locations where imports and exports to the world region in question enter or leave the US, (7) and (8) recenter the instrument as in Borusyak and Hull (2023). All models include fixed effects for combinations of race, education level, and gender interacted with an indicator for the survey question and year, (2)–(8) control for FAF zone fixed effects, (4)–(8) control for the log value of imports and exports to the world region shipped via ports in the zone (these coefficients and standard errors are multiplied by 1000 for legibility), (5)–(6), and (8) control for average import penetration and export exposure with the countries in question, and (6) and (8) control for the log share of immigrants from the country in question relative to population. Observations are weighted using CES survey weights. Standard errors clustered by FAF zone in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table E.1: Relationship between gains from liberalization and support for trade, adjusting the gains from liberalization to account for non-tradable employment

	Perot '92		Perot '96		Trump '16	
	(1)	(2)	(3)	(4)	(5)	(6)
Gains from global liberalization	−0.609	−0.729*	−0.646*	−0.231*	−1.047*	−0.465*
	(0.455)	(0.309)	(0.119)	(0.074)	(0.269)	(0.209)
Republican share 1988	−0.027	−0.056	0.042*	−0.014		
	(0.047)	(0.039)	(0.017)	(0.013)		
Republican share 2012					1.061*	0.914*
					(0.019)	(0.022)
Controls		x		x		x
N	3060	3060	3110	3110	3111	3111
R^2	0.025	0.240	0.166	0.586	0.923	0.965

This table presents evidence of the relationship between gains from trade liberalization and voting for anti-trade presidential candidates. Data is at the county level. In (1)–(2) the dependent variable is the share of the vote won by Ross Perot in 1992, in (3)–(4), the share won by Perot in 1996, in (5)–(6), the share of the two-party vote won by Donald Trump in 2016. Models (1)–(4) control for the Republican share of the two-party presidential vote in 1988, (5)–(6) control for the Republican share of the two-party presidential vote in 2012. (2), (4), and (6) control for the share of the population that is urban, the share that is Black, the share of those over 25 with college degrees, and the share of those over 16 employed in manufacturing. In (2) and (4) these variables are measured in 1990, in (6), 2010. All models include an intercept. Observations are weighted by the number of votes. Standard errors clustered by FAF zone in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table F.1: Relationship between gains from liberalization and voting for anti-trade presidential candidates

	Voting for Free Trade Agreement			
	(1)	(2)	(3)	(4)
Gains from liberalization	3.961*		10.718*	7.256*
	(1.628)		(3.604)	(3.128)
log gate proximity		0.023*		
		(0.007)		
Model	OLS	Reduced Form	TSLS	TSLS
Nominate x FTA controls				x
First stage F-stat			77.071	81.904
N	17804	17804	17804	17804
R^2	0.696	0.696	0.695	0.727

This table presents evidence of the relationship between gains from liberalization, gate proximity, and voting in the House for Free Trade Agreements. Data is at the member-bill-FAF zone level. The dependent variable is coded as 1 if the member voted for the Free Trade Agreement, 0 if against. All models include bill fixed effects and member-by-FAF zone fixed effects. (1) shows the OLS relationship between gains from liberalization and support for trade, (2) shows the reduced form relationship between log gate proximity and support for trade, (3) and (4) instrument for gains from liberalization with log gate proximity. (4) controls for the legislators first-dimension DW-Nominate score interacted with the trade agreement in question. In cases where a congressional district falls into more than one FAF zone, observations are weighted by the share of the district in the FAF zone. Standard errors clustered by FAF zone in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table G.1: Relationship between gains from liberalization and voting on Free Trade Agreements

H Measuring Gains from European Union Expansion

This appendix describes in detail the data and estimation used to link gravity-predicted gains to different regions from countries joining the EU to voter support for countries joining the EU, used in Table 2.

H.1 *Data on Public Opinion*

The dependent variable is individual-level support for different countries joining the European Union. Over successive waves from 1994 to 2010, the Eurobarometer surveys asked respondents questions of the form "For each of the following countries and territories, would you be in favour or against it becoming part of the European Union in the future?" The potential joiner countries I consider are Albania, Austria, Bulgaria, Croatia, the Czech Republic, Estonia, Finland, Hungary, Latvia, Lithuania, Macedonia, Malta, Norway, Poland, Romania, Slovakia, Slovenia, Sweden, Switzerland, and Turkey. These are the countries for which I also have the regional GDP data necessary to construct a measure of regional gains from lower trade barriers, discussed below. Eurobarometer also asks about a few other potential joiners, including Iceland and Russia, for whom I am unable to calculate this measure. I allocate respondents to NUTS 2 or 3 regions, preferring the more granular regions where possible. I drop country-years for which I am unable to do this, either because the data is not reported for NUTS regions or regions close to NUTS regions, or because it is only available at the NUTS 1 level. The resulting dataset includes respondents in Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Romania, Spain, Slovakia, Slovenia, Sweden, and the UK. The vast majority of the dataset consists of voters in pre-Eastern Enlargement countries being asked about support for different Eastern Enlargement countries.

H.2 *Gains From Lower Trade Barriers*

The independent variable is the estimate from a gravity model of the change to real wages in the respondent's region from the country in question joining the European Union. Ideally, I would observe region-level trade flows in the year of the survey, and would use exact-hat algebra to solve for this quantity, as in the main body of the paper. Unfortunately, such region-level trade data does not exist, though Santamaría, Ventura and Yeşilbayraktar (2023) have aggregated freight flows at the NUTS 2 level for the period 2011–2017. I first use this trade data to estimate trade costs as functions of distance and borders. Then with these trade costs, and regional GDP and population data, I solve for the regional productivities T_o that rationalize observed regional GDP and population in the year of a given survey. Finally, I solve for the effects on regional real wages of reducing trade barriers between the EU and the country in question.

Instead of using trade flows directly, I use the Santamaría, Ventura and Yeşilbayraktar (2023) data to estimate the contributions of distance and region, country, and EU borders to trade costs, by running the following regression (standard errors clustered by origin and destination in parentheses):

$$\ln X_{od} = \underset{(0.052)}{-1.223} \ln distance_{od} - \underset{(0.267)}{3.864}\, same\ region_{od} - \underset{(0.076)}{1.580}\, different\ countries_{od} - \underset{(0.075)}{0.856}\, EU\ border_{od} + \delta_o + \delta_d + \varepsilon_{od}. \quad (15)$$

In a gravity model, log trade flows can be expressed as an additive function of origin fixed effects (δ_o), destination fixed effects (δ_d), and origin-by-destination trade costs ($\ln \tau_{od}^{-\theta}$). This regression thus estimates the contributions of log geographical distance and indicators that the two regions are the same, in different countries, or on opposite sides of the EU border to inverse trade costs. Note that the negative coefficient for $EU\ border_{od}$ indicates that trade flows are lower across pairs of regions where one is in the EU and one is not, over and above the effect of these regions being in different countries, which is captured by the $different\ countries_{od}$ coefficient. In a given year, I can then use these estimated coefficients, and the distances and borders between regions to calculate year-specific trade costs. I calculate these at the NUTS 3 level.

Taking year-specific trade costs, and observed year-specific regional GDP and population from Eurostat's ARDECO database, I solve for regional productivities, T_o. Writing observed regional GDP as $Y_o := w_o L_o$ (where L_o is observed regional population, and w_o, the wage, is thus regional GDP per capita), and unobserved regional producer prices as $p_o^{-\theta} := T_o w_o^{-\theta}$, we can rewrite Equation (3) as $P_d^{-\theta} = \sum_j T_j (w_j \tau_{jd})^{-\theta} = \sum_j p_j^{-\theta} \tau_{jd}^{-\theta}$, and rewrite Equation (4) as $p_o^{-\theta} \sum_{d=1}^{N} \frac{Y_d}{P_d^{-\theta}} \tau_{od}^{-\theta} = Y_o$, which we can rearrange to $p_o^{-\theta} = \frac{Y_o}{\sum_{d=1}^{N} Y_d P_d^{\theta} \tau_{od}^{-\theta}}$. In these equations, Y_o, Y_d, and $\tau_{od}^{-\theta}$ are observed GDP and distance-related trade costs, $p_o^{-\theta}$ is unknown, and $P_d^{-\theta}$ is a function of $p_o^{-\theta}$ and $\tau_{od}^{-\theta}$. We can thus numerically solve for $p_o^{-\theta}$ and then back out T_o. Given prices P_d we can also calculate real wages, w_o/P_o.

Finally, having estimated $\tau_{od}^{-\theta}$, and solved for T_o, we can estimate the change in real wages in each region from reducing trade barriers. Specifically, using Equation (15) we can calculate trade barriers between regions eliminating the EU border effect between the potential joiner country and regions in EU countries (and holding others fixed). With these counterfactual trade costs, estimated productivities T_o and observed population L_o, we can solve Equations (3) and (4) for the resulting counterfactual wages w'_o and prices P'_d, and so calculate counterfactual real wages, w'_o/P'_o, and compare these to the real wages estimated from the observed data. My measure is thus the ratio of real wages under the counterfactual with the country joining the EU, relative to the estimated real wages:

$$\text{Gain to region from country joining EU}_o = \frac{w'_o/P'_o}{w_o/P_o}.$$

I multiply this variable by 100 so it can be interpreted in percentage terms and winsorize at the 2.5th and 97.5th percentiles to avoid identifying off extreme outliers.

I Additional tables and figures

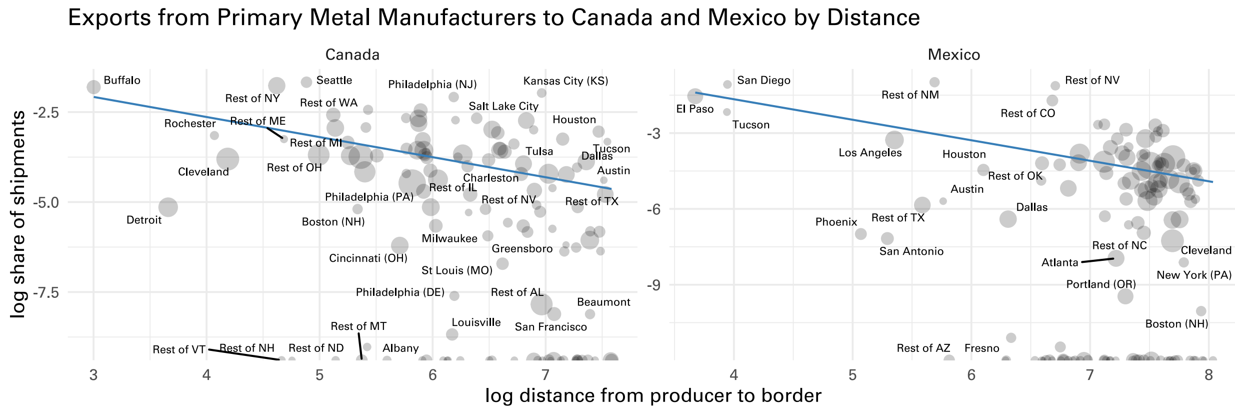

Figure I.1: Gravity in US Exports of Metals to Canada and Mexico

This figure plots the log share of shipments of primary metal manufactures (NAICS 331) from each Commodity Flow Survey zone to Canada and Mexico against log distance to the relevant border. Data is for 2017.

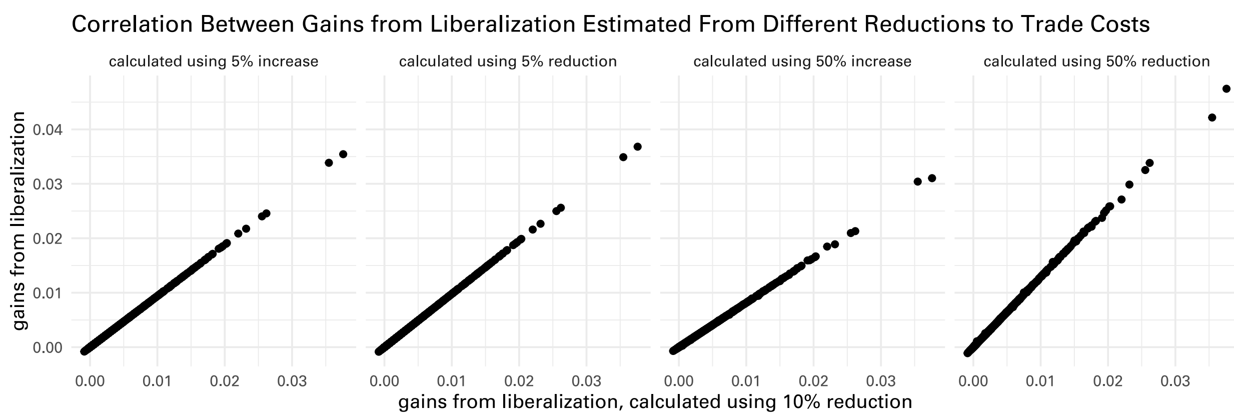

Figure I.2: Gains from liberalization are not sensitive to the magnitude of the tariff change used to calculate them

This figure plots gains from liberalization calculated from different simulations with different reductions to trade costs. On the x axis are the gains as calculated from a 10% reduction to trade costs, which is the main measure used in the paper. The y axis in the four panels gives the gain from liberalization calculated from a 5% increase, 5% reduction, 50% increase, and 50% reduction.

	Global liberalization			Region-specific liberalization		
	(1)	(2)	(3)	(4)	(5)	(6)
Exports / Total sales	0.218*		0.152*			
	(0.023)		(0.008)			
Imports / Total purchases		0.215*	0.171*			
		(0.013)	(0.005)			
Exports to region / Total sales				0.229*		0.132*
				(0.017)		(0.010)
Imports from region / Total purchases					0.212*	0.159*
					(0.005)	(0.005)
N	132	132	132	1056	1056	1056
R^2	0.563	0.729	0.972	0.617	0.810	0.967

This table presents evidence of the relationship between importing and exporting activity and the modeled welfare effects of reductions in global trade costs. In (1)–(3), the dependent variable is the welfare effect of a marginal decrease in trade costs with all world regions, converted into an elasticity, in (4)–(6) the equivalent for each of 8 world regions, estimated separately. (1)–(3) are at the FAF region level, with robust standard errors, (4)–(6) are at the FAF region-world region level, with standard errors clustered by FAF region. All models include an intercept. $^*p < 0.05$; $^\dagger p < 0.1$.

Table I.1: Relationship between counterfactual effects of trade liberalization, imports and exports

	Gains from liberalization				
	(1)	(2)	(3)	(4)	(5)
Share with positive net exports	-0.002^{*}				
	(0.001)				
Import penetration		0.049^{*}			0.027
		(0.015)			(0.017)
Export dependence			0.061^{*}		0.041^{*}
			(0.019)		(0.019)
Net import penetration				0.008	
				(0.014)	
World region FE	x	x	x	x	x
N	1056	1056	1056	1056	1056
R^2	0.304	0.324	0.326	0.301	0.331

This table presents evidence of the relationship between industry-based measures of exposure to trade with all world regions, and gains from liberalization. Data is at the FAF zone level level. The dependent variable is the elasticity of welfare to reductions in trade costs with all world regions. In (1) the independent variable is the share of manufacturing workers in industries for which exports to the region in question exceed imports. Import penetration is industry-level imports to the region divided by domestic purchases, calculated as domestic production plus total imports minus total exports, weighted by employment in the FAF zone across manufacturing industries. Export dependence is industry exports to the region in question divided by domestic production, weighted by FAF zone manufacturing employment. Net import penetration is import penetration minus export dependence. Industry refers to 4 digit NAICS manufacturing industries. All models include world region fixed effects. Standard errors clustered by FAF zone in parentheses. $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table I.2: Relationship between gains from liberalization and industry-based measures of exposure to trade

Table I.3: CES questions and sample sizes

Year	Full Question or Questions	Sample
2006	This year Congress also debated a new free trade agreement that reduces barriers to trade between the U.S. and countries in Central America. Some politicians argue that the agreement allows America to better compete in the global economy and would create more stable democracies in Central America. Other politicians argue that it helps businesses to move jobs abroad where labor is cheaper and does not protect American producers. What do you think? If you were faced with this decision, would you vote for or against the trade agreement?	28,101
2007	What do you think? If you were faced with this decision [CAFTA], would you vote for or against the trade agreement?	7,825
2008	Congress considered many important bills over the past two years. For each of the following tell us whether you support or oppose the legislation in principle. Roll Call Votes - Extend NAFTA Extend the North American Free Trade Agreement (NAFTA) to include Peru and Columbia	21,247
2012	Congress Considered many important bills over the past two years. For each of the following tell us whether you support or oppose the legislation in principle: U.S.-Korea Free Trade Agreement. Would remove tariffs on imports and exports between South Korea and the U.S.	52,265
2014	US - Korea Free Trade Agreement. Would remove tariffs on imports and exports between South Korea and the US.	54,905
2018	On the issue of trade, do you support or oppose the following proposed tariffs? $50 billion worth of tariffs on goods imported from China	59,881
2019	On the issue of trade, do you support or oppose the following proposed tariffs? Tariffs on $200 billion worth of goods imported from China	17,701
2020	On the issue of trade, do you support or oppose the following proposed tariffs? Tariffs on $200 billion worth of goods imported from China	60,426
2021	On the issue of trade, do you support or oppose the following proposals? 20 percent tariffs on goods imported from China	25,682

	Support for free trade							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gains from liberalization	2.934*	2.518*	1.772*					
	(0.660)	(0.750)	(0.663)					
log gate proximity				0.023*	0.021*	0.015*		
				(0.004)	(0.003)	(0.004)		
log gate proximity (recentered)							0.023*	0.015*
							(0.007)	(0.006)
Controls: industry exposure		x	x		x	x		x
- immigrants			x			x		x
N	327303	327303	327303	327303	327303	327303	327303	327303
R^2	0.061	0.061	0.061	0.061	0.061	0.061	0.061	0.061

This table presents OLS estimates evidence of the relationship between gains from liberalization and gate proximity and support for free trade. Models (1)–(3) show that the OLS relationship between gains from liberalization and support for trade is robust to the controls used in Table 1 models (4)–(6), models (4)–(6) show the reduced-form relationship between gate proximity and support for trade, (7)–(8) use the recentered instrument. Data is at the individual level. The dependent variable is coded as 1 if the respondent's answer aligns with support for trade: opposition to tariffs on Chinese goods, support for the US joining CAFTA-DR and KORUS, and support for extending NAFTA to Peru and Colombia. All models include fixed effects for combinations of race, education level, and gender interacted with an indicator for the survey question and year and for the FAF zone, and control for the log value of imports and exports to the world region shipped via ports in the zone, (2), (3), (5), (6) and (8) control for average import penetration and export exposure with the countries in question, (3), (6) and (8) control for the log share of immigrants from the country in question relative to population. Observations are weighted using CES survey weights. Standard errors clustered by FAF zone in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table I.4: OLS relationship between gains from liberalization, gate proximity and support for trade

	Favorable view of nation						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Gains from liberalization	3.044*	−11.692*	−0.047				
	(0.858)	(2.734)	(1.134)				
log gate proximity				−0.010	0.011	0.029	
				(0.009)	(0.014)	(0.022)	
log gate proximity (recentered)							0.013
							(0.019)
Zone FE			x	x	x	x	x
Partners	E. Asia	Americas	Both	Both	Both	Both	Both
Excluding Cuba/N.Korea					x		
Just China/S.Korea/Colombia						x	
N	75688	31671	107359	97950	58320	26493	97950
R^2	0.033	0.094	0.053	0.051	0.083	0.154	0.051

This table presents evidence of the relationship between gains from liberalization, gate proximity, and whether voters hold favorable views of countries in the Eastern Asia and Rest of Americas regions. The countries in question are China, Japan, North Korea, South Korea, Taiwan, Brazil, Colombia, Cuba, Haiti, and Venezuela. Data is at the individual by partner level. The dependent variable is coded from 0 for very unfavorable to 3 for very favorable. All models include fixed effects for combinations of race, education level, gender, and the partner in question. Model (1) is restricted to questions about countries in Eastern Asia, (2) to questions about countries in the Rest of Americas, (3)–(7) includes all and adds zone fixed effects. Model (5) excludes Cuba and North Korea and so compare compares favorability to countries that are US trading partners, (6) is restricted to China, South Korea, and Colombia, which are asked about in Table 1. Observations are weighted by Gallup's survey weights. Standard errors clustered by FAF zone in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table I.5: Conditional on place fixed effects, gains from liberalization and gate proximity are orthogonal to positive views of counties in Eastern Asia or Rest of Americas

	Support for free trade					
	(1)	(2)	(3)	(4)	(5)	(6)
Gains from liberalization	2.992*	5.360*	3.398*	2.817*	4.347*	2.429*
	(0.570)	(0.948)	(1.036)	(0.546)	(1.084)	(1.208)
Born in US	x	x	x	x	x	x
Parents born in US				x	x	x
Model	OLS	TSLS	TSLS	OLS	TSLS	TSLS
Controls			x			x
First stage F-stat		28.042	26.194		27.162	25.494
N	303985	303985	303985	273819	273819	273819
R^2	0.062	0.062	0.062	0.063	0.063	0.064

This table shows the robustness of the relationship between gains from liberalization and support for free trade, dropping immigrants and children of immigrants. Data is at the individual level. The dependent variable is coded as 1 if the respondent's answer aligns with support for trade: opposition to tariffs on Chinese goods, support for the US joining CAFTA-DR and KORUS, and support for extending NAFTA to Peru and Colombia. Models (1)–(3) are restricted to those born in the US, (4)–(6) are further restricted to those also with parents born in the US. (2), (3), (5), (6) instrument for gains from liberalization with log gate proximity. All models include fixed effects for combinations of race, education level, and gender interacted with an indicator for the survey question, and FAF zone fixed effects. (3) and (6) also control for log imports and exports via the zone, export exposure and import penetration, and the log share of immigrants. Observations are weighted using CES survey weights. Standard errors clustered by FAF zone in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table I.6: Relationship between gains from liberalization and support for trade, dropping immigrants and children of immigrants

	Support for free trade					
	(1)	(2)	(3)	(4)	(5)	(6)
Gains from liberalization	2.119*	4.035*	3.295*	3.989*	1.928*	3.443*
	(0.721)	(1.187)	(0.749)	(1.076)	(0.794)	(1.113)
Model	OLS	TSLS	OLS	TSLS	OLS	TSLS
Region x question FE	x	x				
Rural-urban x question FE			x	x		
Party ID x question FE					x	x
Controls		x		x		x
First stage F-stat		39.311		27.474		27.412
N	326580	326580	327218	327218	327129	327129
R^2	0.061	0.061	0.062	0.062	0.111	0.111

This table presents evidence of the relationship between gains from liberalization and support for free trade, adjusting for region, urbanization, and partisanship. Data is at the individual level. The dependent variable is coded as 1 if the respondent's answer aligns with support for trade: opposition to tariffs on Chinese goods, support for the US joining CAFTA-DR and KORUS, and support for extending NAFTA to Peru and Colombia. Gains from liberalization are those with Eastern Asia in the case of Chinese tariffs and KORUS, and Rest of America in the case of CAFTA-DR and NAFTA extension. All models include fixed effects for combinations of race, education level, and gender interacted with an indicator for the survey question and year, and for FAF zone fixed effects. Even-numbered models instrument for gains from liberalization with log gate proximity and include the full set of controls from Table 1 model (6). Models (1)–(2) include fixed effects for census region interacted with question fixed effects, (3)–(4) for the rural-urban continuum code of the respondent's zipcode interacted with question fixed effects, (5)–(6) for 3-level Party ID interacted with question fixed effects. Observations are weighted using CES survey weights. Standard errors clustered by FAF zone in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table I.7: Robustness of relationship between gains from liberalization and support for trade to controlling for region, urban-rural, and partisanship

	Support for free trade							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gains from liberalization	2.753*	2.846†	3.451*	4.213*	4.298*	5.895*	1.672*	2.442*
	(0.854)	(1.493)	(0.792)	(1.390)	(0.813)	(1.174)	(0.708)	(1.067)
Excluding	CAFTA	CAFTA	Peru/ Colombia	Peru/ Colombia	KORUS	KORUS	China tariffs	China tariffs
Model	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS
Controls		x		x		x		x
First stage F-stat		29.595		25.192		28.447		24.948
N	291442	291442	306058	306058	220138	220138	164271	164271
R^2	0.056	0.056	0.063	0.063	0.055	0.055	0.064	0.064

This table presents presents estimates of the relationship between gains from liberalization and support for free trade, dropping countries asked about. Odd numbered models are estimated by OLS with fixed effects for education-race-gender-issue-wave combinations and zone, these are the same specification as Table 1 model (2), even-numbered models instrument with log gate proximity and also control for log imports and exports via the zone, log population, import penetration and export exposure, and the log number of immigrants. (1)–(2) drop questions about CAFTA, (3)–(4) Peru and Colombia, (5)–(6) KORUS, (7)–(8) tariffs on China. Observations are weighted using CES survey weights. Standard errors clustered by FAF zone in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table I.8: Relationship between gains from liberalization and support for trade, dropping cases

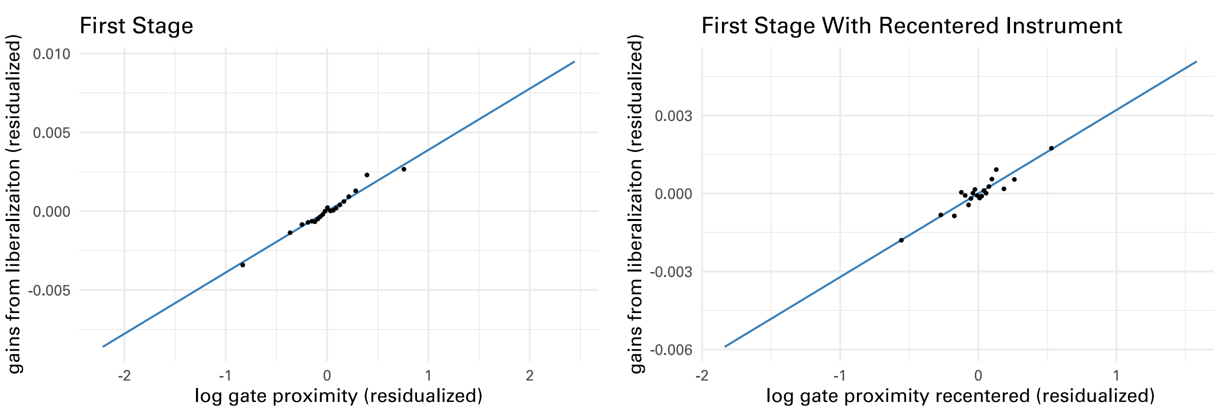

Figure I.3: First Stage for Instrumental Variables Estimates

This figure shows binned scatterplots of the first stage and regressions. The left panel includes the full set of controls corresponding to Table 1 model (6). The right panel uses the recentered instrument and controls for log import and export via the zone and other controls in Table 1 model (7). Both figures show that the first stage relationship is positive and monotonic.

	Support for free trade					
	(1)	(2)	(3)	(4)	(5)	(6)
Gains from liberalization	4.777*	2.404*	4.999*	3.241*	4.770*	2.675*
	(1.109)	(0.691)	(1.689)	(1.071)	(1.086)	(1.101)
Model	OLS	OLS	TSLS	TSLS	OLS	OLS
College graduate	Yes	No	Yes	No		
Union member					Yes	No
Education x race x gender x question x year FE	x	x	x	x	x	x
Zone FE	x	x	x	x	x	x
Controls			x	x		
First stage F-stat			21.856	29.994		
N	116254	211049	116254	211049	20045	218089
R^2	0.052	0.056	0.053	0.056	0.140	0.061

This table presents evidence of the relationship between gains from liberalization and support for free trade, subset by different characteristics. Data is at the individual level. The dependent variable is coded as 1 if the respondent's answer aligns with support for trade: opposition to tariffs on Chinese goods, support for the US joining CAFTA-DR and KORUS, and support for extending NAFTA to Peru and Colombia. All models include fixed effects for combinations of race, education level, and gender interacted with an indicator for the survey question and year and for FAF zone fixed effects, corresponding to Table 1 model (2). (1) and (3) subset to college graduates, (2) and (4) to non-graduates, (5) to current union members, (6) to those who have never been union members. (3) and (4) instrument for gains from liberalization with gate proximity and include the full set of controls from Table 1 model (6). Observations are weighted using CES survey weights. Standard errors clustered by FAF zone in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table I.9: Heterogeneity by education and union membership

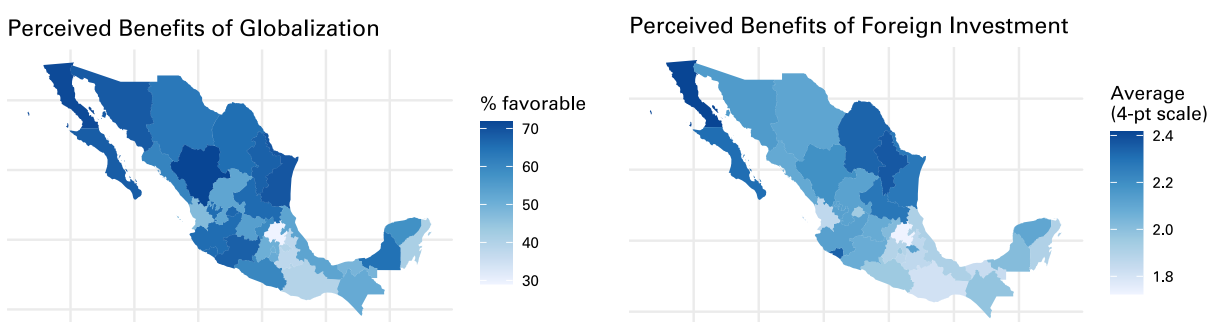

Figure I.4: Greater Support for Globalization in Mexico Closer to the US Border

These maps show attitudes to globalization and foreign investment in Mexican states. The left map shows the percentage saying "mostly good" to the question "Economic globalization, or the increased contact of our economy with other economies in the world, has its disadvantages (for example, greater vulnerability in the face of international crises). Do you believe that this is mostly good or mostly bad for Mexico?" The right map shows the average score given in answer to the question "To what extent do you believe that foreign investment benefits Mexico: very much, somewhat, a little, or not at all", coded so that "very much" equals 3 and "not at all" equals 0. The data is from Centro De Investigacion Y Docencia Economicas Poll: The Americas and the World 2010, 2012 and 2014.

	Concern about impact of trade war				
	(1)	(2)	(3)	(4)	(5)
Gains from liberalization	22.349*	9.044*	6.960		38.766*
	(5.078)	(3.625)	(6.492)		(17.192)
log gate proximity				0.101*	
				(0.036)	
Model	OLS	OLS	OLS	Reduced Form	TSLS
Partner	Mexico	China	Both	Both	Both
Zone FE			x	x	x
First stage F-stat					12.286
N	1030	982	2012	2012	2012
R^2	0.096	0.059	0.184	0.188	0.172

This table presents evidence of the relationship between gains from liberalization and concern about the impact of a trade war with China or Mexico on the local economy of the respondent's area, using data from the 2018 Chicago Council Survey. Data is at the individual level. The dependent variable takes values between 0 and 3 ranging from "Not concerned at all" to "Very concerned" about the impacts of a trade war. All models include fixed effects for combinations of race, education level, and gender interacted with an indicator for the country in question. Models (3)–(5) add fixed effects for the respondent's FAF zone of residence. Model (1) is subset to those asked about the impact of a trade war with Mexico, (2) is subset to those asked about the impact of a trade war with China, (3)–(5) include both. The independent variable for those asked about a trade war with Mexico is the gain from liberalization or log gate proximity with Mexico, for those asked about China it is the equivalent for Eastern Asia. (5) instruments for gains from liberalization with gate proximity, (4) shows the reduced form. Observations are weighted using survey weights. Standard errors clustered by FAF zone in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table I.10: Gains from liberalization correlate with concerns about impact of trade wars on local economy

	Important to US economy			Important for US security		
	(1)	(2)	(3)	(4)	(5)	(6)
Gains from liberalization	3.358*		4.419*	0.859		2.320
	(1.260)		(2.212)	(1.296)		(2.310)
log gate proximity		0.013*			0.007	
		(0.006)			(0.007)	
Model	OLS	Reduced Form	TSLS	OLS	Reduced Form	TSLS
First stage F-stat			47.102			47.118
N	22258	22258	22258	22202	22202	22202
R^2	0.140	0.140	0.140	0.118	0.118	0.118

This table presents evidence of the relationship between gains from liberalization, gate proximity, and perceptions of the importance of different countries for the US economy and US security. Data is at the individual-by-foreign country level, from the 2018 Chicago Council Survey. In models (1)–(3), the dependent variable is how important on a scale of 0 to 3 the respondent thinks relationships with the country in question are for the US economy, in (4)–(6) how important the respondent thinks relationships are for US security. All models include FAF zone fixed effects and fixed effects for combinations of race, education level, and gender interacted with an indicator for the country in question. The countries in question are Japan, China, South Korea, Germany, France, Israel, Russia, Canada, Great Britain, Mexico and India; the measures of gains from liberalization and gate proximity are for the world regions containing these countries. (3) and (6) instrument for gains from liberalization with gate proximity. Observations are weighted using survey weights. Standard errors clustered by FAF zone in parentheses. ${}^*p < 0.05$; ${}^\dagger p < 0.1$.

Table I.11: Gains from liberalization correlate with perceptions of importance of foreign countries for US economy but not security

	Support for free trade			
	(1)	(2)	(3)	(4)
Gains from liberalization	3.410*	3.100*	3.574*	3.205*
	(0.805)	(0.819)	(0.676)	(0.738)
Employed	Yes	No		
Home-owner			Yes	No
Education x race x gender x question x year FE	x	x	x	x
Zone FE	x	x	x	x
N	159957	167346	189402	327303
R^2	0.067	0.064	0.081	0.061

This table presents evidence of the relationship between gains from liberalization and support for free trade, subset by different characteristics. Data is at the individual level. The dependent variable is coded as 1 if the respondent's answer aligns with support for trade: opposition to tariffs on Chinese goods, support for the US joining CAFTA-DR and KORUS, and support for extending NAFTA to Peru and Colombia. All models include fixed effects for combinations of race, education level, and gender interacted with an indicator for the survey question and year and for FAF zone fixed effects, corresponding to Table 1 model (2). (1) subsets to those employed full or part time, (2) to those not employed, (3) to those who report owning their home, (4) to those who do not. Observations are weighted using CES survey weights. Standard errors clustered by FAF zone in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table I.12: Lack of heterogeneity by employment or home-ownership

Table I.13: Chinese survey questions and PCA weights

Question	Weight
Universality of human rights take precedence over sovereignty.	0.400
National unity and territorial integrity are the highest interest of society.	-0.447
The state has an obligation to provide foreign aid.	-0.317
If it has sufficient state capabilities, China has the right to take any action to defend its national interests.	-0.347
Force should be used to reunfy Taiwan with China if conditions permit.	-0.332
It is impossible for western countries led by the United States to tolerate the rise of China into a major power.	-0.223
The state should take measures to train and support athletes so they can win glory for the country in various international competitions.	-0.406
A high tariff should be imposed on imported goods that are also produced domestically to protect domestic industries.	-0.123
Foreign capital in China should enjoy the same treatment as national capital.	0.283

This table show the questions from Chinese surveys aggregated into a measure of foreign policy preferences and the weights of the first principal component used for that measure.

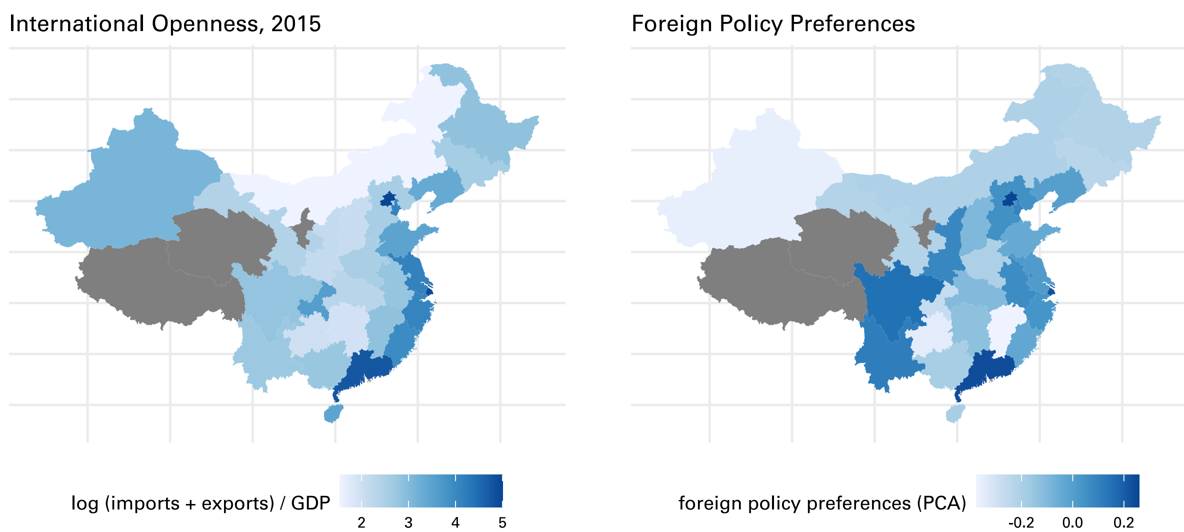

Figure I.5: Greater International Trade in Coastal Chinese Provinces, and More Liberal Foreign Policy Preferences

The left panel shows log trade openness—exports and imports relative to GDP—for Chinese provinces. Provinces on the coast are far more open to trade. The right panel shows average foreign policy preferences, calculated as the first principal component of answers to questions relating to foreign policy, more negative values are more nationalistic, more positive values are more supportive of international openness. Both figures use data from Pan and Xu (2018).

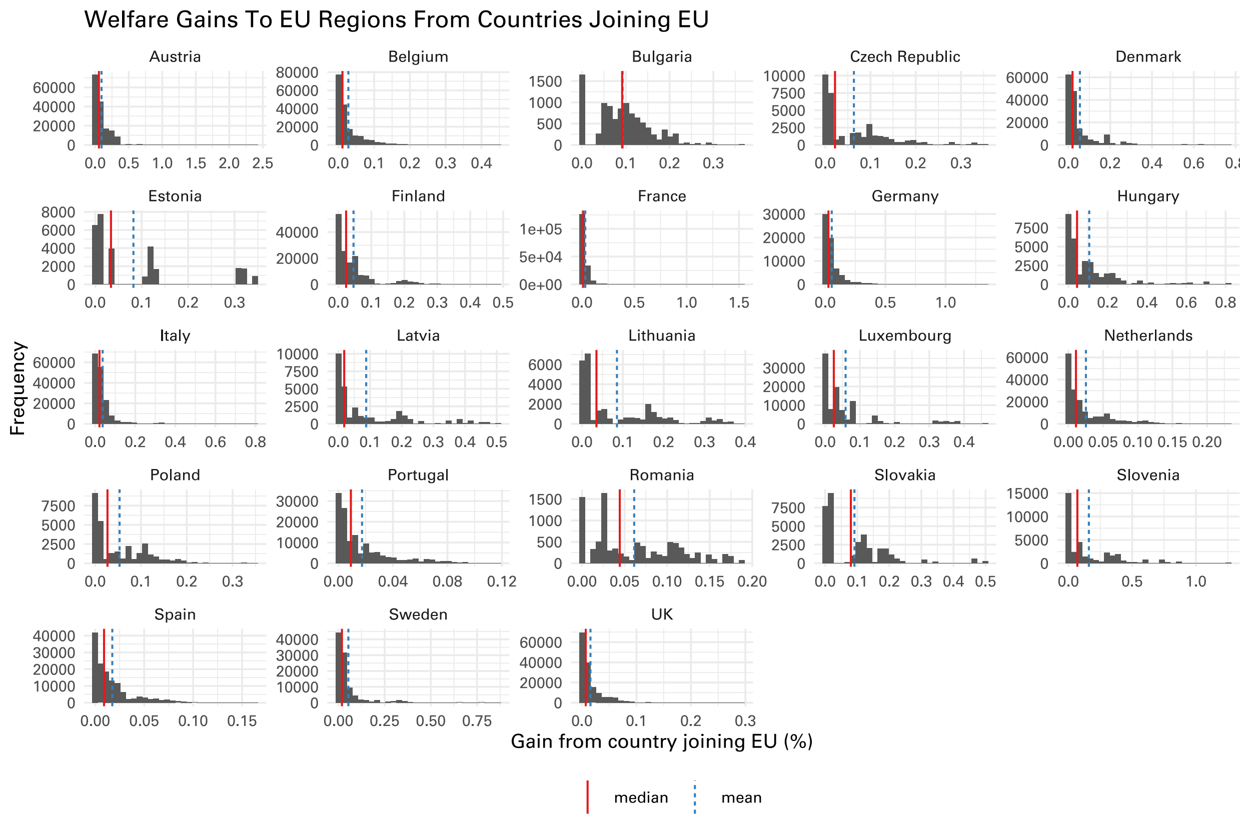

Figure I.6: The distribution of gains within EU countries from countries joining the EU is right-skewed

This figure plots the distribution of gains to different NUTS 2 regions of a given country from different countries joining the EU, weighted by the number of survey respondents in each region answering questions about each potential entrant. Each figure shows the distribution within a given country across potential EU entrants. The solid red line plots the NUTS region's gain, the dashed blue line the mean NUTS region's gain. In each figure the mean is to the right of the median.