Winners and Losers in International Trade: The Effects on U.S. Presidential Voting[1]

J. Bradford Jensen Dennis P. Quinn Stephen Weymouth

7 November 2016

[1] Some of the analysis in the paper was conducted at the Center for Economic Studies at the U.S. Census Bureau. Any opinions and conclusions expressed herein are those of the authors, and do not necessarily represent the views of the U.S. Census Bureau. All results have been reviewed to ensure that no confidential information is disclosed. We thank James Vandeventer for excellent research assistance and Annalisa Quinn and Kelley Friel for editorial assistance. Kent Carlson, Brian Saba, and Jennifer Yan participated in a student working group on economic voting in spring 2012, and we thank them as well. Alexis Antoniades, Neal Beck, Tim Hellwig, Michael Lewis-Beck, Quynh Nguyen, Pietra Rivoli, and David Steinberg offered helpful comments and suggestions. We thank participants at the Mortara Georgetown Political Economy series, the Georgetown Government American Politics Seminar Series, Georgetown Center for Business and Public Policy seminar, the University of Rochester, the 2015 American Political Science Association, the 2015 International Political Economy Society, the 2016 European Political Science Association, Johns Hopkins SAIS, George Mason University, New York University-Abu Dhabi, Georgetown-Qatar, and the World Trade Institute (Bern) for helpful comments on earlier drafts. All remaining errors are our own.

Winners and Losers in International Trade: The Effects on U.S. Presidential Voting

Abstract This paper demonstrates that international trade directly influences U.S. presidential elections. In contrast to prior studies, we explore the electoral implications of the increasing tradability of services and the large U.S. surplus in services trade. Our paper builds on prior work showing that job insecurity from import competition in manufacturing diminishes political support for incumbents. We construct novel measures of the tradability of an industry using establishment-level data covering nearly all U.S. economic activity. We find increases in incumbent party vote shares in counties with large numbers of workers in high-skilled tradable services as well as goods, and decreases in counties with high employment in low-skilled manufacturing. Incumbent parties are particularly vulnerable to losing votes in swing states with many low-skilled manufacturing workers. In national-level models, we show for the first time that increasing imports (exports) are associated with decreasing (increasing) presidential incumbent vote shares. These effects are large and politically consequential. We find an Electoral College incentive to protect the manufacturing sector and to oppose trade agreements.

Do the economic effects of international trade influence who wins the U.S. presidency? The expansion of trade has produced favorable employment conditions for firms producing high-skilled tradable goods (e.g. petrochemical manufacturing) and services (e.g. software) because the United States has a comparative advantage in these activities. Likewise, trade has led to increased competition and unfavorable employment conditions for firms producing low-skilled goods (e.g. apparel). Building on research demonstrating that economic conditions explain support for incumbent presidents and their parties,[2] we expect citizens to cast their votes for president in part based upon their employment exposure – either favorable or unfavorable – to trade. Employees in high-wage tradable goods and services sectors are more likely to support incumbent presidents and their parties, whereas those in low-wage manufacturing jobs will be more likely to support the opposition. Examining county-level election results from 1992 to 2012 and national-level results beginning in 1936, we find strong support for our argument: voters' exposure to trade influences who wins the U.S. presidency.

Our primary contribution is to examine both the favorable and unfavorable effects of trade exposure on U.S. presidential elections. To do so, we advance the literature by developing novel comprehensive measures of trade exposure in goods *and services* using U.S. Census data covering nearly all economic activity in the United States.

Including trade-exposed service workers in the analysis is important for three reasons. First, the manufacturing sector's share of employment has been in secular decline for decades, and now accounts for less than 10 percent of the labor force. Due to data limitations on services trade, prior studies necessarily focused on the electoral consequences of goods trade

[2] Fair 1978, Tufte 1978, Lewis-Beck and Tien 2008, Wright 2012, Margalit 2011.

competition.[3] However, those working in tradable goods are a declining portion of the electorate. Second, trade in services is increasing, and now accounts for 30 percent of U.S. exports. Casual observation and recent studies suggest that trade in services significantly increases the trade exposure of the U.S. economy.[4] Third, tradable services have qualitatively different factor demands: they are significantly more skill intensive than either the manufacturing sector or non-tradable services.[5] The United States remains a relatively skill-abundant country, suggesting that it should have a comparative advantage in skill-intensive industries; the persistent and growing trade surplus in services demonstrates its comparative advantage in this sector.

The consideration of tradable service workers enables us to identify those who are likely to gain from increased trade, and to better isolate trade's impact on trade-exposed manufacturing workers who are likely to lose from increased international competition.[6] We are thus able to determine the types of firms, industries and locations that benefit – or are displaced by – increased economic integration. We estimate how county-level variation in employment in firms in comparatively advantaged and disadvantaged sectors affects voting in U.S. presidential elections. County-level data also allow us to aggregate results by states. We compare the estimated results in swing states (in which the outcomes of U.S. presidential elections are generally determined) to those of non-swing states.

[3] An important exception is Chase 2008, who examines demands for protection by lower skilled service workers.

[4] See Jensen 2011 and Gervais and Jensen 2013.

[5] See Jensen 2011 and Gervais and Jensen 2013.

[6] See Bernard, Jensen and Schott 2006 and Autor, Dorn and Hanson 2013 for research documenting the impact of increased import competition on U.S. manufacturing industries. See Che et al. 2016 and Autor et al. 2016 for research on how Chinese imports affect U.S. voting in legislative elections.

Our main results are as follows. We find that more workers in high-skilled exportable services and high-skilled exportable manufacturing are associated with increasing incumbent party vote shares. To our knowledge, we are the first to demonstrate that increasing employment in high-skilled industries is associated with increasing support for incumbents. We confirm Margalit's[7] finding that manufacturing losses harm incumbent vote shares over an extended period (1996–2012).[8] Examining the crucial swing states, we find that the negative effect of comparatively disadvantaged manufacturing employment on incumbent vote shares is approximately three times as large as in non-swing states, which leads to a powerful Electoral College incentive to protect this sector. We also study, to our knowledge for the first time, the effects of trade in established U.S. national-level election models from the American politics literature. Our results indicate that voters punish (reward) the incumbent party against a backdrop of rising imports (exports).

This paper contributes most directly to a nascent literature on the effects of trade on voting. Building on recent research demonstrating that the employment dislocations and wage adjustments from trade are larger and more long-lasting than previously thought,[9] the trade and voting literature has focused on the effects of increasing import competition on citizen voting preferences.[10] This work, detailed below, finds that import shocks influence voting in congressional and presidential elections. With the exception of Margalit, the existing research focuses exclusively on the electoral consequences of manufacturing import competition from

[7] Margalit 2011.

[8] Margalit 2011 primarily examines the 2000 and 2004 elections.

[9] Autor, Dorn, and Hanson 2013.

[10] Margalit 2011; Feigenbaum and Hall 2016; Autor, Dorn, Hanson and Majlesi 2016, Che, Lu, Pierce, Schott, and Tao 2016.

China. Our paper extends the research by considering the voting activities of trade's potential winners as well as losers**.**

By focusing on trade's varied distributional consequences, we contribute more broadly to a large literature examining how firms' and individuals' exposure to the global economy affects support for trade. Prior work demonstrates that firms' demands for trade protection (or liberalization) depend on their international integration through global supply chains and trade patterns,[11] or as a result of industry characteristics such as the degree of exchange rate pass-through to prices,[12] global sourcing,[13] and product differentiation.[14] Evidence from survey data finds that the globalization of production increases wage and employment volatility, leading workers to feel economically insecure.[15] To date, the impact of employment in comparatively advantaged sectors on voter support for incumbent presidents has not been explored.

Our paper also relates to studies examining how the subnational distribution of economic activity in comparatively advantaged and disadvantaged sectors influences trade policymaking. Following Rogowski, who argues that political divisions over trade reflect factor-based distributional concerns,[16] a number of studies link the expected winners and losers of global trade and financial flows to U.S. international economic policymaking in Congress. Hiscox finds that legislator support for trade between 1824 and 1994 reflects the expected gains and losses

[11] See, for example, Milner 1988; Jensen, Quinn, and Weymouth 2015; Blanchard and Matschke 2015.

[12] Broz and Werfel 2014.

[13] Chase 2003; Manger 2009; Osgood 2016a.

[14] Osgood 2016b; Kim 2016.

[15] Scheve and Slaughter 2004; Walter 2010.

[16] Rogowski 1987, 1990.

experienced by class- and industrial-based constituencies.[17] Other studies examine how industry structure at the district level, which proxies for concentrations of voters with similar economic interests, influences legislator voting on trade and other international economic policymaking issues.[18] Districts with concentrations of high-skilled voters are associated with greater legislator support for trade.[19] Representatives from districts affected by import competition from China[20] and those representing higher concentrations of offshorable employment[21] vote in a more protectionist manner. If trade has the distributional consequences implied by these studies and developed in the ensuing section, voters who are harmed by (benefit from) trade will be more likely to shift away from (toward) the incumbent or the incumbent's party.

U.S. Trade Integration, Economic Attribution, and Presidential Voting

We draw on a long tradition in the American politics literature investigating how economic conditions affect voting. These established national-level (macro) studies show that voters are more likely to reward incumbent presidents and their parties during good economic times, and to

[17] Hiscox 2002. See also Baldwin and Magee 2000 and Fordham and McKeown 2003.

[18] An important assumption of this work is that the distributional consequences of policy reflect local-level economic characteristics.

[19] Milner and Tingley 2011. Conconi, Faccini, and Zanardi 2012 demonstrate that congressional support for trade promotion authority reflects how export oriented the constituency is compared to the country as a whole. Rickard 2015 demonstrates the linkage between export success in a Congressional House member's district and his or her likelihood to support TAA.

[20] Feigenbaum and Hall 2015

[21] Owen 2015.

reward the opposition when economic conditions deteriorate.[22] Starting with the Fair and Tufte models, scholars have empirically demonstrated that positive economic performance strongly improves either incumbent or incumbent party re-election prospects.[23]

The macro voting models are necessarily parsimonious, however, because of the few degrees of freedom involved in the data, and have yet to include trade variables explicitly.[24] Invariably, macro models assume that certain aspects of economic performance are the key determinants of incumbent support: economic growth,[25] disposable income, employment, job growth[26] and business sentiment[27] are contending variables. Quinn and Woolley show that economic volatility drives down vote shares for incumbent candidates and parties in a comparative, cross-national setting.[28] Given the few degrees of freedom and the many competing

[22] Initial works in the area include Fair 1978 and Tufte 1978. Other contributions include the papers in a 2008 special issue of the *Journal of International Forecasting* Campbell and Lewis-Beck 2008. See also Fair 2009, Erikson 2009, Lewis-Beck and Stegmaier 2000, and Lewis-Beck and Nadeu 2011. Lewis-Beck and Tien 2008 provide a comprehensive review of the literature. See also the April 2014 special issue of *PS*, "US Presidential Election Forecasting."

[23] Fair 1978 and Tufte 1978. See the reviews in Campbell 2008, Kayser and Leininger 2015, and Lewis-Beck and Tien 2008.

[24] Most studies date from either 1948 or 1952, owing to changes in the U.S. economy after the Second World War. Fair 2009, discussed below, is an exception.

[25] Fair 2009.

[26] Lewis-Beck and Tien 2008.

[27] Erikson 2009.

[28] Quinn and Woolley 2001. For a contending view on the effects of economic volatility, see Hibbs 2000, who suggests that volatility is not relevant in the U.S. setting at the macro level.

plausible correlates of incumbent vote shares, it is not surprising that trade variables have so far been omitted in general from the discussion.

We expect that voters will hold incumbents of both major U.S. political parties responsible for trade outcomes, with incumbents gaining or losing votes from gains or losses in trade balances (respectively).[29] This is because, as Destler shows, all Presidents since 1936 have supported trade liberalization to one degree or another.[30] This is in contrast to Congressional trade politics, where Democrats from the mid-1990s onward began to oppose trade liberalization.[31]

While the macro studies have neglected the direct impact of trade on voting outcomes, as noted above, several recent studies examining subnational election results find that trade's distributional effects influence how people vote. Examining county-level election results, Margalit demonstrates that job loss from import competition – measured as applications for Trade Adjustment Assistance (TAA) – had a negative aggregate effect on county-level Presidential voting in the 2004 election.[32] Studying the specific impact of economic shocks from Chinese import competition, Feigenbaum and Hall find that legislators from exposed districts

[29] Wright 2012 notes that some issues are "partisan" issues compared to "valence" issues. An area of future research is to explore whether voters will increasingly hold incumbents of one party compared to another responsible for trade outcomes.

[30] Destler (2005, 2016). President Obama, with the Trans-Pacific Partnership agreement, is an exemplar case.

[31] Destler (2016). The 1994 Uruguay Round Agreements Act was the last major trade liberalizing bill with strong Democratic support, with nearly two thirds of Democratic House members and three-quarters of Democratic Senators voting in favor.

[32] Margalit (2011, 175). Antoniades and Calomiris (2014) study county-level presidential voting and find that constrained credit conditions hurt incumbent vote shares.

vote in a more protectionist manner,[33] while Autor et al. find increased polarization in U.S. congressional districts.[34] Che et al. show that counties that face more competition from China are more likely to elect House Democrats, and that these Democratic House members are more likely to oppose free trade legislation.[35] These studies are persuasive in demonstrating that foreign competition affects electoral and other outcomes, although trade exposure in low-skilled manufacturing is unlikely to be the only channel through which international integration influences voting behavior.

We note, however, that the increasing global integration of an economy might diminish voter attribution of responsibility to incumbent parties under some circumstances. Hellwig and Samuels demonstrate that, among democratic countries generally, the effects of economic voting on incumbent vote shares diminish with the increasing exposure of an economy to economic globalization.[36] Kayser and Peress decompose economic growth for a panel of countries into domestic and exogenous (international shock) components, and find the voters punish incumbents for national performance that lags international performance, but not economic performance per se.[37]

These studies also find, however, that U.S. voters are among the global voters most likely to attribute responsibility for economic performance to incumbent policymakers. The United

[33] Feigenbaum and Hall 2015.

[34] Autor et al. 2016. They demonstrate that districts that experienced a larger import shock were more likely to remove moderate incumbents (that is, to replace a moderate Republican with a more conservative Republican or a moderate Democrat with a more liberal Democrat).

[35] Che et al. 2016.

[36] Hellwig and Samuels 2007.

[37] Kayser and Peress 2012.

States in the period examined here is one of the least economically open advanced industrial countries examined by Hellwig and Samuels;[38] for the U.S., economic growth is associated with increasing incumbent vote shares (2007, 293). Moreover, Hellwig found that U.S. respondents overwhelmingly attributed to either Congress or the President responsibility "for national economic conditions."[39] Kayser and Peress, in turn, exclude the U.S. from their study of voter attribution of economic performance because, unlike their foreign counterparts, U.S policymakers continue to exert strong influence on U.S. economic conditions.[40] We therefore expect U.S. voters to hold incumbents electorally accountable for economic conditions.

Our argument emphasizes how a voter's position in the global economy may influence her support for the incumbent party. The logic that we develop does not require that voters possess a sophisticated understanding of the distributional implications of trade. Indeed, recent work suggests that voters' knowledge about the general effects of trade on employment and wages is quite low.[41] Moreover, voters' trade policy preferences—which we do not explicitly examine—may be shaped by non-material objectives.[42]

---

[38] Hellwig and Samuels 2007. U.S. exports and imports as a percentage of GDP were between 7% in the 1950s to 30% in the recent period (Owen and Quinn 2016). In that range of observed values, citizens attribute responsibility to incumbents.

[39] See Hellwig 2011, q9, where 14% of U.S. respondents agreed that "ups and downs in the world economy" were "most responsible for economic conditions in the United States" vs. 57% of respondents who said either Congress or the President. See also Hellwig 2014. In contrast, nearly 60% of Canadian respondents blamed the global economy. Hellwig 2011 does not provide a breakdown by education.

[40] Kayser and Peress 2012. More explicitly, the U.S. violates their modeling assumption that international economic performance is exogenous to domestic incumbent policy choices (2012, 666, fn. 9).

[41] Rho and Tomz 2016

[42] Hainmueller and Hiscox 2006; Mansfield and Mutz 2008; Sabet 2014.

Our paper proposes two modifications to the existing literature. We argue and demonstrate at the county-level using newly available measures of trade exposure in services that trade's likely winners – workers employed in tradable, high-skilled industries – are more likely to vote for incumbents and their parties. That is, we explore the electoral consequences of the gains, as well as the losses, from U.S. trade exposure. Because our argument has national as well as sub-regional implications, we also extend the national-level voting models to include trade indicators, including changes in imports and exports.

Our local and national level analyses provide a more comprehensive picture of the relationship between trade and U.S. presidential voting. The county-level analyses allow for greater granularity regarding economic conditions, and for the incorporation of precisely estimated measures of citizen exposure to trade. The disadvantage of the county level data is that only six elections can be considered. The national levels models, while offering less precision and fewer degrees of freedom, allow for the consideration of direct trade flows and a greater number of elections (back to 1936). The results from multiple levels of analysis provide strong and consistent evidence that citizen exposure to trade influences U.S. presidential elections.

Next, we develop a conceptual framework to guide our analysis.

The Possible Effects of Trade Integration on U.S. Presidential Voting

Here we develop the intuition that guide our empirical analysis of the effects of trade exposure on citizen voting. In particular, we highlight how service sector trade exposure may influence voting behavior in U.S. elections. Our emphasis on the services sector is based on three facts.

First, the service sector is large, accounting for at least half and, depending on how it is defined, upwards of 80 percent of the U.S. labor force.[43] (In contrast, the manufacturing sector is a relatively small share of the labor force – accounting for less than 10 percent in 2012.) Figure 1 shows the changing levels of employment in two broad categories of employment that are largely tradable – manufacturing (NAICS 31–33) and business and professional services (BPS, NAICS 54–56). The figure indicates that employment in BPS has nearly doubled since 1990, whereas manufacturing employment has contracted by nearly a third.[44] If even some relatively small portion of the service sector is trade exposed, increased international integration potentially affects a larger number of service jobs than manufacturing jobs.

Second, while services were traditionally considered to be largely non-tradable, the 'tradability' of the service sector has increased markedly with technological changes and financial current account liberalizations that make trade in intangibles such as intellectual property, possible.[45] Services accounted for 33 percent of the value of U.S. exports in the first quarter of 2016.[46]

---

[43] U.S. Census Bureau, 2012 Economic Census, USDA Agricultural Census, and Census of Governments. If we define services as business services NAICS industries in the 1950s plus personal services NAICS industries in the 1960s, 1970s, and 1980s – but exclude retail and wholesale trade and government – the service sector accounts for about 50 percent of the labor force. If retail and wholesale trade; transportation, warehousing, and utilities; and government are included in the service sector, it would account for more than 80 percent of the labor force.

[44] We distinguish below between and among types of tradable and non-tradable services and manufacturing goods.

[45] Jensen, Quinn, Weymouth 2014.

[46] Bureau of Economic Analysis. Through the 1950s, U.S. services exports were less than 1 percent of U.S. GDP, and roughly 15 percent of the total value of U.S. exports. In the 2010s, U.S. services exports are 4–5 percent of GDP. Authors' calculations from BEA data.

Third, tradable services are more skill-intensive than both non-tradable services and the manufacturing sector. Jensen and coauthors report that tradable services are significantly more skill-intensive (as measured by educational attainment or average earnings) than service industries classified as non-tradable and the manufacturing sector.[47] Because tradable services differ in the intensity of their use of high skilled labor relative to other sectors, they are likely to face different levels of competition and different levels of opportunity from increased international integration. Heckscher-Ohlin trade theory suggests that regions with an abundant factor will have a comparative advantage in industries that make intensive use of that factor. The United States is still skill-abundant vis-à-vis the rest of the world – suggesting that it should have comparative advantage in skill-intensive activities like tradable services. The United States' persistent and growing trade *surplus* in services is evidence that it indeed has a comparative advantage in services (in stark contrast to its large and persistent trade deficit in goods).[48]

Because the United States is a relatively high-skill-abundant country, it has a comparative advantage in high-skilled activities and a comparative disadvantage in low-skilled activities. Jensen argues that tradable business service activities are consistent with U.S. comparative advantage, and that therefore, firms and workers in high-skilled tradable service activities will benefit from the increased tradability of services.[49] By contrast, firms in low-skill, labor-intensive tradable manufacturing industries tend to face greater import competition, particularly as trade agreements have brought previously trade-isolated countries, especially China, into the

[47] Jensen and Kletzer 2005, Jensen 2011, and Gervais and Jensen 2013.

[48] See also Weymouth 2016.

[49] Jensen 2011.

global economy.[50] The differential effects of trade exposure on workers in these two tradable sectors suggest that workers voting behaviors will differ.

The differences in the effects of trade exposure are compounded by differences in wage premia across sectors. Previous empirical literature strongly suggests that workers with similar skills receive higher wages in the manufacturing sector than in the service sector.[51] Because that wage premium is significantly reduced if the worker leaves the sector, workers in the manufacturing sector suffer greater harm when being displaced from their jobs compared to workers in the service sector.

Moreover, the differences in worker trade exposure in services versus manufacturing are potentially amplified by the geographic concentrations of industrial production. As can be seen in the upper panel of Figure 2, workers in business services, many of which are tradable, are concentrated in urban areas and on the East and West coasts. In contrast, the lower panel of Figure 2 shows that manufacturing workers tend to be concentrated in Midwestern and Southern states, many of which are 'swing' states. We thus explore below possible differences between swing and non-swing states.

We expect that employees' votes will reflect their experiences of their industry's, their employer's, and their own economic circumstances. Employees in firms producing in

[50] Bernard, Jensen and Schott 2006 document these patterns. One study finds that import competition resulting from China's integration into the world trade system explains a quarter of the decline in U.S. manufacturing employment since 1990 Autor, Dorn and Hanson 2013.

[51] See, for example, Krueger and Summers 1988. In 2009, the wage premium in tradable manufacturing for those industries in which fewer than 20% of employees had college degrees (compared to services industries with similar employee educational attainment levels) was $9,136. (The average wages, given the 20% educational attainment cutoff, in the sectors were $39,906 and $30,770, respectively.) Authors' calculations from Census Data.

comparatively disadvantaged tradable sectors, especially low-skilled employees, experience directly that their jobs are internationally contestable and are thus vulnerable to increased trade competition—even before job losses or gains are reflected in the unemployment rate. In contrast, employees of firms in industries in which the United States has a comparative advantage, especially employees who are highly-skilled, experience directly the benefits of U.S. trade integration, including increased demand for their skills, or increased demand for the services provided by their firm.

Measuring Tradable Services

If employment in tradable services is higher than in the manufacturing sector, and if the workers employed in tradable services are qualitatively different from those in the manufacturing sector, then tradable service workers may influence elections differently than manufacturing workers do. To empirically investigate this possibility, we need to identify employment in tradable services.

While we would ideally use statistics on international trade in service flows to identify tradable and traded services (as can be done for trade in manufacturing), the U.S. trade-in-services data, which are collected by the U.S. Bureau of Economic Analysis (BEA), are inadequate for our purposes. An important shortcoming of the BEA trade-in-services data is that, in contrast with merchandise trade statistics that are produced for 10,000 manufacturing product categories – allowing detailed identification of the trade exposure of individual manufacturing industries – service trade data are only available for about 30 categories (beginning in 2006). Prior to that year, fewer than 20 categories are available for trade in services. The highly

aggregated categories of services trade are therefore certainly combining tradable and non-tradable industries into the same category, making identification of exposed industries difficult.[52]

Another shortcoming is that the BEA data are believed to understate the size of trade in services because official BEA trade statistics are potentially missing a significant share of service trade. Because services do not pass through ports (as merchandise does), the data collection system for international trade-in-services statistics relies on surveys instead of Customs forms. Relatively small budgets for service trade data collection and very high service trade reporting thresholds suggest that the services trade is not well measured.[53]

Given these data limitations for trade in services, we instead identify variation in tradability among disaggregated industries within the manufacturing and services sectors by adapting the methodology developed in Jensen and Kletzer[54], who classify industry tradability according to the geographic concentration of the six-digit NAICS industry in the United States.[55] They make the assumption that when production exceeds local demand, the excess supply must be consumed elsewhere – that is, exported to another region.[56] For example, grocery stores are distributed throughout the United States in proportion to population. For grocery stores, trade costs are high, so local demand is served by local production: low concentration implies low

[52] See Gervais and Jensen 2013 for evidence on the heterogeneity in tradability across industries within service sectors.

[53] BEA requires firms to report service transactions greater than $6 million; in contrast, the reporting threshold in manufacturing is $2,500. See Jensen 2011 and Sturgeon et al. 2006 for more details.

[54] Jensen and Kletzer 2006.

[55] NAICS is the North American Industrial Classification System used by U.S., Canadian, and Mexican government agencies to classify products produced by establishments.

[56] Ibid.

tradability. In contrast, software production is highly concentrated in Silicon Valley and Seattle. In software, trade costs are low, so production is concentrated in a few regions and shipped around the country (and around the world). This intuition can be applied to goods as well as services, and allows us to construct consistent measures for the whole economy.

In particular, we use the Gini coefficient of the geographic concentration of production above what would be predicted by local demand to identify tradable industries.[57] Since we have a good understanding of the tradability of manufactured goods, we use the manufacturing sector as the basis for setting the cutoff for the geographic concentration Gini that signifies tradability. We define the tradability cutoff as the Gini coefficient that classifies 90 percent of manufacturing sector employment being tradable.[58] We use the same Gini coefficient as the tradability cutoff for the service sector. If the Gini coefficient for a service industry is above the threshold that results in 90 percent of manufacturing sector employment being classified as tradable, that industry is classified as tradable. (We also applied cut-offs of 75, 80, and 85 percent, and obtained substantively identical results.)[59]

[57] We classify the manufacturing and service industries as being tradable according to this definition using data from the 1992 Economic Census. For a more formal development of the intuition, see Gervais and Jensen 2013.

[58] See Jensen 2011 for further discussion of choosing a tradability cutoff.

[59] Jensen and Kletzer develop a methodology that compares the geographic concentration of production to the geographic concentration of demand as a means to identify industries that are traded within the US. Here, the relevant notion of geography is not political, but instead economic – it is the notion of a local market. Jensen and Kletzer use Bureau of Economic Analysis defined "labor market areas" as their unit of geography. The labor market areas are metropolitan areas and adjoining counties chosen based on commuting patterns that fully cover the US.

There is a literature within political science that examines whether industrial concentration affects the political process. For example, Busch and Reinhardt 2000 use a geographic concentration measure "based on the distance between each employee and the national "centroid," or midpoint, for a given industry to identify the impact

We note here that we adopt the definition of services trade defined by balance-of-payments accounting conventions and the World Trade Organization's General Agreement on Trade in Services (GATS).[60] These include cross-border exports ("Mode 1"), services consumption abroad ("Mode 2"), a commercial presence abroad ("Mode 3) and foreign services contractors abroad ("Mode 4"). For services, our measure of tradability, which is based on the geographic concentration of production in the United States, captures the employment impact of Modes 1, 2 and 4.[61]

Tradability under GATS differs from the concept of offshorability, which relates to the ability to perform work from abroad. Not all tradable services and not all tradable manufacturing jobs are offshorable.[62] For instance, tradable service industries include U.S.-based tourism-

---

of industrial concentration on political outcomes. The latter measures geographic dispersion of industrial production and its impact on the political process whereas Jensen and Kletzer generate measures of a good's or service's tradability based on supply and demand within a labor market area

[60] See https://www.wto.org/english/tratop_e/serv_e/cbt_course_e/c1s3p1_e.htm#boxa.

[61] Mode 3 service exports are those that require "face to face" interactions to undertake commercial activity and which therefore require a commercial presence abroad. For example, Walmart, in order to do sell products in India, needs to establish a commercial presence in India. We deem it unlikely that Walmart (or other service firm) workers in the U.S. will be concerned about the impact of service firms' Mode 3 investments in other countries. Our methodology does not include Mode 3 type services in tradable services.

[62] There are two notions of offshorability. The first is related to moving particular tasks in the production process (typically back-office service activities) overseas. (The second is described in the footnote below.) Measures of the first type of offshorability are typically constructed using occupation characteristics from the O*Net database, a catalog of occupational titles and job descriptions. See, for example, Crino 2010, Jensen and Kletzer 2010, Oldenski 2014, and Owen and Johnson 2015. This conception of offshorability has important political implications. See Owen 2015 and Walter 2016. An important limitation of the implementation of offshorability measures for this study is that most manufacturing production jobs require the worker to be physically present to complete a task.

related industries. (For example, Disney World is an exporter of amusement park services under the Balance of Payments Manual classification when non-residents "consume" this amusement park service.) Moreover, most manufacturing jobs require workers to be physically present in an establishment to complete a job, implying tradability of the product, but not always the offshorability of the manufacturing job.[63]

Table 1 provides examples of industries that we classify as tradable and non-tradable, high skilled and low skilled, in manufacturing and services. The results are intuitively appealing. The manufacturing industries classified as tradable are well-known examples of manufacturing industries that are geographically concentrated and traded. Those classified as non-tradable – corrugated boxes, cement and quick printing – all have high transport cost-to-value ratios. In these industries, production is distributed throughout the United States, and international trade shares are low.

The service industries are also intuitively appealing. Computer system design services, investment banking and software publishing are all highly tradable and geographically concentrated in the United States. The same is true for credit card issuing, amusement parks, and limousine services. The latter two are tourism-related industries that are geographically concentrated; they are examples of Mode 2 trade, serving customers from all over the world. The

---

Thus, in this methodology, manufacturing industries often end up being classified as non-tradable because they are non-offshorable, against all reasonable evidence. Most manufacturing is clearly contestable by imports, and so measures of offshorability are not appropriate for our purposes. See Jensen and Kletzer 2006, 2010 for a discussion.

[63] The second conception of offshorability – different from the task-based conception – is, for example, embedded in the TAA legislation, in which a company relocates a production plant abroad for comparative advantage reasons, and the workers are therefore eligible for TAA owing to their jobs being offshored. Our measure of trade contestability picks up the risks of such relocations.

non-tradable service industries make sense as well. Restaurants, dentist offices and grocery stores all have high trade costs relative to value. Production in these industries is distributed throughout the country.

In addition to tradability, we also expect that skill intensity is an important dimension for trade exposure. High-skill-intensive activities are consistent with U.S. comparative advantage, and thus the United States should specialize in these activities (that is, these industries should grow relative to others) in the face of trade liberalization. In contrast, low-skill intensive industries are not consistent with U.S. comparative advantage and should shrink in response to trade liberalization.[64] We use average wages at the establishment (described in more detail in the empirical methodology section) to identify workers in high- and low-skill firms.

Hypotheses and Empirical Implications

Building on the above discussion, we distinguish between and among: goods and services that are tradable vs. non-tradable (that is, internationally contestable or not), high- vs. low-skilled work (consistent with U.S. comparative advantage) and manufacturing vs. services industries (owing to inter-industry wage differentials). Given these distinctions, we propose that:

- Low-skilled tradable manufacturing workers are experiencing deep economic losses due to international trade competition, because their products are tradable and intensively use factors in which the United States lacks a comparative advantage. Moreover, low-skilled manufacturing workers receive a relatively large inter-industry wage differential compared to

[64] For example, Bernard, Jensen and Schott 2006 find significant variation in manufacturing firm survival probabilities and employment growth across and within industries that is consistent with import competition affecting low-wage manufacturing industries and firms more than capital-intensive firms and industries. Autor, Dorn and Hanson 2013 exploit this variation across manufacturing industries to identify the impact of China's rise.

their peers in service sector work. Employees in low-skilled tradable manufacturing firms are likely to vote against incumbents.

- High-skilled tradable service workers are gaining from increased globalization because of the United States' comparative advantage in high-skilled activities, which is consistent with U.S. factor abundance in educational attainment. These employees are likely to vote for incumbents.
- High-skilled workers in manufacturing have a wage premium (owing to inter-industry wage differentials) that contributes to the sector's potential import vulnerability, as employee wages are "higher" than skills require. However, the United States has factor abundance in skilled workers, which some U.S. manufacturing firms use intensively. We expect, on average, support for incumbents from employees in high-skilled manufacturing.

We have ambiguous expectations regarding how trade exposure affects voting among workers in low-skilled tradable services. The risks that these workers will be displaced are lower than for their manufacturing low-skilled counterparts, because their alternative employers pay similarly (that is, services have lower inter-industry wage differentials).

Here we summarize the empirical implications of our conceptual framework that we will examine using county- or national-level data.

At the county level, we expect:

H1. More workers in high-skilled tradable services and manufacturing will be associated with increasing support for the incumbent.

H2. More workers in low-skilled tradable manufacturing will be associated with decreasing support for the incumbent.

H3. There will be no statistically meaningful association between the number of workers employed in non-tradable industries and support for the incumbent.

At the national level, we expect:

H4. Imports (exports) will be associated with decreased (increased) support for the incumbent.

Voters' Trade Exposure and Presidential Voting at the County Level

We first examine the determinants of incumbent party presidential vote share at the county level. To do so, we generate a number of different measures of voters' exposure to trade. Our goal is to examine the international exposure of the entire local economy – not merely to assume, for example, that all manufacturing industries are trade exposed. For this task, we need to classify workers according to their skill and the tradability of the goods or services produced by their employer.

Our measures of trade exposed employment capture employment in high- and low-wage tradable services and manufacturing. To capture county-level variation in trade exposure within sectors, we rely on confidential, establishment-level data from the Census Bureau's Longitudinal Business Database (LBD), which contains information on plants and other establishments in the Census Bureau's County Business Patterns (CBP) program.[65] The CBP program covers most of the country's private sector economic activity.[66] The data allow us to measure the number of employees who are: (1) engaged in tradable activities and producing goods and services for

[65] See Jarmin and Miranda 2002.

[66] The major exclusions are self-employed individuals, employees of private households, railroad employees, agricultural production employees and most government employees.

which the United States has a comparative advantage (for example, high skilled, capital intensive) and (2) in positions vulnerable to import competition, such as low-skilled manufacturing.[67] We categorize establishments based on the sector and the tradability of the industry to construct measures of the number of jobs in a county that is potentially exposed to international trade.

Our argument emphasizes how trade integration influences employment conditions, but an important argument in the economic literature highlights how technological changes affect returns to skills and wages regardless of global competition, especially for low-skilled manufacturing workers.[68] Since technological innovations and productivity gains occur in both tradable and nontradable industries in goods and services, we use employment in *non-tradable* manufacturing and services in a county as base cases for comparing the effects of trade integration to those of technological innovation. We know that the non-tradable manufacturing and service sectors have both experienced productivity improvements from technological changes.[69] If technology innovation is a main effect and not (or not just) exposure to trade, low-skilled employment in non-tradable manufacturing, e.g., should have similar effects to those found in non-tradable manufacturing. All else equal, we do not expect employment in non-tradable industries to influence presidential voting.

[67] We use "tradability" as defined in Jensen and Kletzer 2006 and conceptualize tradable activities as those that are internationally "contestable" as described in Leamer 2007.

[68] See, for example, Krugman 2000. Recent work suggests however that, compared to technological innovations per se, trade and financial flows are largely responsible for returns to skilled and unskilled labor in the United States (Burstein and Vogel 2016).

[69] Mano and Castillo 2015.

We classify employment in establishments as high or low skilled using the median national household income in the relevant year as the threshold for "high wage."[70] Workers are classified as high wage and high skill if their place of employment has average wages above the national median household income. Using these data, we are further able to distinguish between employment in high-wage, highly traded industries and employment in non-traded industries. We sum across establishments to capture the number of workers in each county that is in each of the following bins: high-wage tradable services, high-wage tradable manufacturing, low-wage tradable services, low-wage tradable manufacturing.[71] We also construct measures of the number of workers in the manufacturing sector, the number of workers at manufacturing establishments that export (derived from establishment-level responses to the Census of Manufacturers question about whether the establishment has direct exports), and the number of workers at establishments that export with high and low wages. We aggregate establishment-level employment for each category to the county level.

Our estimates control for economic conditions using county-level data on unemployment and wages. The variable *Unemployment Volatility* is the standard deviation of the unemployment

[70] Appendix Figure A1 demonstrates the relatively strong correlation between wages and education in both the manufacturing and tradable services sectors. Nontradable service sector jobs exhibit a much lower correlation between wages and education than either of the other sectors.

[71] As previously noted, we also construct measures of the number of workers in non-tradable services and manufacturing goods, distinguishing between high- and low-skilled employment. We do so to distinguish the potential effects of job losses or gains from technological innovation vs. from trade. The indicators are entered as control variables.

rate in county *i* over the three years prior to the election year and the election year.[72] The income data are from the Quarterly Census of Employment and Wages, conducted by the Bureau of Labor Statistics (BLS). We also enter change in unemployment from the year prior to the election and change in average income. Following Margalit, some of our models control for aggregate job losses due to globalization – the lagged sum of the estimated number of workers filing for TAA as a share of the labor force.[73]

The analysis with census microdata includes 3,105 U.S. counties for which complete economic and voting data are available for our period of study (1992–2012). Consistent with Margalit (2011) and Wright (2012), we exclude Alaska because the voting data are reported in districts that cannot be mapped to specific counties.

The baseline ordinary least squares (OLS), year- and county-fixed effects model is:

$$\Delta \text{Incumbent 2-Party Vote Share}_{i,t} = ß_0 + ß_1 (\text{Unemployment Rate}_{i,t}) + ß_2 (\Delta \text{ Unemployment (1-year}_{i,t})) + ß_3 (\text{Unemployment Volatility}_{i,t}) + ß_4(\text{LnAveragePay}_{i,t}) + ß_5 (\Delta \text{ Average Pay (1-year)}_{i,t} + ß_6(\text{High-Wage Tradable Manufacturing Employment}_{i,t}) + ß_7(\text{Low-Wage Tradable Manufacturing Employment}_{i,t}) + ß_8(\text{High-Wage Tradable Services Employment}_{i,t}) + ß_9(\text{Low-Wage Tradable Services Employment}_{i,t}) + \varphi_i + \tau_t + \varepsilon_{i,t}$$

$$t=1992, 1996, 2000, 2004, 2008, 2012 \qquad (1)$$

[72] For example, in 1996, *Employment Volatility* is the standard deviation of the unemployment rate in county *i* for the years 1993, 1994, 1995 and 1996. The unemployment data are from the BLS.

[73] Margalit 2011. The TAA data come from Public Citizen. Available at http://www.citizen.org/Page.aspx?pid=4536 accessed March 2, 2015.

The dependent variable, $\Delta Incumbent\ 2\text{-}Party\ Vote\ Share_{i,t}$, is the change in incumbent party vote as a share of the total Democratic and Republican votes in county *i* in year *t*.[74] The models begin in 1992 because the key census coverage of all services industries begins in that year. We include county φ_i and election year τ_t dummies.[75] The coefficients of interest are those corresponding to employment in tradable sectors, which measure the estimated effect of employment in trade exposed jobs on changes in presidential voting.[76]

One potential concern is that the spatial distribution of workers in adjacent counties may influence how each county's voters vote. This may be particularly likely among industries that are vulnerable to import competition and are highly geographically concentrated (such as apparel). Our measures of trade-exposed workers at the county-level do not account for neighborhood effects in spatial agglomerations that cross county borders (Chase 2015). This

[74] The data are from Leip 2016.

[75] A Hausman test of random vs. fixed effects rejects the random-effects model: a χ^2 test produces a typical value of over 500. An alternative to year fixed effects is to enter an indicator for the number of continuous successive terms of a presidential party (the variable *Duration*). The post-estimation properties of county models with *Duration* are very poor at the county level, however. An alternative to county fixed effects is to include prior incumbent vote share as a regressor $Incumbent\ 2\text{-}Party\ Vote\ Share_{it-1}$, as in Fair 2009 and Powell and Whitten 1993. Diagnostic statistics for the county-level regressions suggest that the fixed-effects model is preferred. In contrast, at the macro level the lagged vote share is entered, which improves the diagnostic statistics.

[76] An alternative approach is to use $Incumbent\ 2\text{-}Party\ Vote\ Share_{i,t}$ as the dependent variable in (1). The resulting estimated model has, however, very weak explanatory power in a fixed effect equation, which is unsurprising given that the level of incumbent vote share will be loosely correlated with the time invariant county fixed effects and other independent variables. The residual properties of the resulting model are also quite poor. The approach here is similar to Margalit (2011, 170-71). The substantive interpretation is – given the initial starting point in a county – how changes in the independent variables affect changes in incumbent vote share within a county.

could lead to the so-called "checkerboard problem" (White 1982) whereby workers with similar economic interests who are in close geographic proximity—even if spread across adjoining counties—exhibit political behavior that is different from that of workers who are more geographically dispersed (Busch and Reinhardt 2002, 2005). As Chase (2015) notes, the consideration of space raises complicated methodological obstacles: county boundaries may not capture spatial dependence of local economies since counties often reflect political boundaries rather than an area's local economy.

To address this issue, we also therefore estimate models using the 182 Labor Market Areas (LMAs) as defined by the BEA[77] as the voting unit by aggregating county-level vote counts to the LMA-level. The LMAs are based on commuting zones that represent clusters of U.S. counties characterized by strong within-cluster and weak between-cluster commuting and employment ties. LMAs are better indicators of economic agglomeration than counties since they are designed to delineate local economies with a common labor market.[78] The LMAs therefore group employees who can be considered to be in the same economic area, allowing us to account for the possibility that voting reflects similar economic interests among voters with spatially proximate employment ties. The obvious disadvantage, however, for our study of LMAs is that LMAs cut across state boundaries and are not political units per se.[79]

[77] The 1990 BEA labor market areas (also known as "Economic Areas") are constructed by observing the economic interconnectedness of an "economic county node" with related "non-nodal" counties that are economically tied to the node. The economic ties are the commuting/labor market interconnectedness of counties.

[78] According to the U.S. Department of Agriculture,

> "CZs and LMAs are geographic units of analysis intended to more closely reflect the local economy where people live and work. Beginning in 1980 and continuing through 2000, hierarchical cluster analysis was used along with the Census Bureau's journey to work data to group counties into these areas. In 2000, there were 709 CZs delineated for the U.S., 741 in 1990, and 768 in 1980."

[79] Eighteen percent of LMAs crossed state boundaries in our sample.

County-level Election Results

The results using the census microdata employment measures are presented in Table 2. Column 1 reports the relationship between the levels of employment at manufacturing establishments that export and incumbent party presidential vote shares. We find a negative relationship between employment in low-skilled manufacturing firms that export and incumbent vote shares, and a null effect corresponding to employees of high-skilled manufacturing exports. This result is consistent with the prior findings in Feigenbaum and Hall, and Margalit, in which exposure to competition from low-wage imports influences either Congressional roll-call votes or incumbent president vote shares, respectively.[80]

These goods export-employment measures are, however, unavailable for a wide range of export industries, especially in services (as noted above). That is, the potential winners from trade are not identified. The rest of our estimates thus rely on our measures of trade-exposed employment in manufacturing and services.

We find that exposure to trade is strongly associated with presidential voting. The results in Column 2 use our preferred indicators of tradability in services and manufacturing. They indicate that employment in low-wage tradable manufacturing industries is associated with lower incumbent vote shares. In contrast, employment in high-wage tradable services and high-wage tradable manufacturing is associated with higher incumbent vote shares. The estimated coefficients are statistically significant.

The results can be interpreted as follows. Substantively, a one-standard-deviation increase in (the log of) high-wage tradable manufacturing employment is associated with a 0.5

[80] Feigenbaum and Hall 2015, Margalit 2011.

percent increase in incumbent vote share. The estimates indicate substantively larger effects for low-wage manufacturing, where a one-standard-deviation change is associated with a decrease of 1.3 percent. For high- and low-wage tradable services, a one-standard-deviation change increases incumbent vote share by 1.3 percent and 1.5 percent, respectively. [81] The trade exposure variables add slightly less than one percent explanatory power to the county-level models.

We re-estimate the model in Column 2 using the 182 LMAs as the unit.[82] The signs of the estimated coefficients are identical to the estimates using county-level data. The magnitude of the estimated coefficients is three to four times larger for the LMA models compared to the county-level models, and with the exception of high-skilled manufacturing, the coefficient estimates are statistically significant. The consistency of the result across counties and LMAs alleviates concerns about the "checker-board" problem.

In Column 3 we add four indicators of non-tradable high- and low-skilled goods and services to Model 2 in an effort to isolate the effects of trade from those of technological change, which would affect tradable and nontradable industries alike. The estimated effects of the indicators for the tradeable sectors retain the general size, sign and level of statistical significance. The coefficient estimates for most of the non-tradable sectors are not statistically significant in this (or other) models. The exception is nontradable high skilled manufacturing, with a positive and statistically significant coefficient.

Column 4 reports the results for swing states, which display a few notable differences from the baseline estimates. The coefficient estimate for low-wage tradable manufacturing

[81] The corresponding 95 percent confidence intervals appear in brackets: high-wage tradable manufacturing [.22, 1.21]; low-wage tradable manufacturing [.82, 1.70]; high-wage tradable services [1.88, .63]; and low-wage tradable services [.91, 2.20].

[82] To save space, these results are not reported but available upon request.

employment is larger than the baseline model (approximately double) and statistically significant. High-wage tradable manufacturing and service employment are not statistically significant in the swing states subsample.

The results of estimates from non-swing states appear in Column 5. The coefficient estimate for tradable, low-wage manufacturing employment is about a third of the size in non-swing states compared to swing states. In addition, the tradable, high-wage manufacturing and service employment measures are positively and statistically significantly associated with incumbent vote share.

In Column 6 we report the baseline specification plus county-level demographic controls, including education, for the full sample of counties. The coefficient estimates are quantitatively very similar to the baseline specifications.

We note that voter turnout is also important electoral consideration.[83] We estimate county level turnout models using a version of the demographic model in Column 6 as the benchmark. Consistent with prior findings on turnout, we find, for example, educational attainment and race to be associated with country-level turnout.[84] Of relevance to this study, greater economic volatility is associated with higher turnout whereas concentrations of manufacturing workers is associated with lower voter turnout.[85] This is an area for future research.

In an online appendix we provide the results of a number of robustness tests designed to subject our analysis to prior findings. Table A5 demonstrates that TAA is negatively associated with incumbent votes shares, a result that confirms Margalit's finding from the 2004 presidential

[83] See Pew Research Center 2016.

[84] Ibid. "Demographic Profile of Voters and Likely Voters."

[85] Available by request. The Leip data are not available at the county level prior to 2000 (author correspondence).

election.[86] Our measures of exposure to trade retain statistical significance to the inclusion of TAA, with the exception of low-wage tradable manufacturing, which loses statistical significance in the full sample but remains strongly significant in the swing states. This is not surprising, given that TAA is largely designed to address dislocations in that sector.

Our results from the county-level and labor market area analyses can be summarized as follows. Employment volatility and unemployment vary substantially across the United States, and we find strong evidence that both outcomes significantly reduce support for the incumbent. More workers in trade-exposed industries that are inconsistent with U.S. comparative advantage (that is, tradable low-wage manufacturing) are less likely to vote for the incumbent. Increases in workers in tradable, high-wage manufacturing and tradable services are more likely to vote for the incumbent. The larger coefficient estimate for tradable, low-wage manufacturing employment and the lack of statistical significance of high-wage manufacturing and high-wage services employment in swing states might explain the persistence of policy attention to the manufacturing sector in spite of its declining share of the labor force.

Imports, Exports and National-level U.S. Presidential Voting

We now turn to examine the implications of our framework for national-level economic voting models from the American politics literature. Our theory predicts that trade should have an independent, direct effect – above and beyond trade's potential indirect effects on national economic performance per se – on voting in U.S. presidential elections. In this section, we examine this conjecture using national election data covering an extended period.

[86] Margalit 2011.

The standard approach in the national-level economic voting literature has been to estimate OLS time-series models of incumbent party presidential two-party vote shares with a necessarily parsimonious set of explanatory variables. While investigators differ in specifications, the most commonly used approach contains measure(s) of economic performance, voter sentiment, and either prior incumbent terms or vote share. We adapt these core models and methods from the literature,[87] adding changes to the U.S. trade balance as a variable of interest. Additional independent variables used in prior studies include retrospective indicators of economic performance: per capita real economic growth, changes in personal disposable income, job growth during a presidential term,[88] inflation during the 12 months prior to the election and changes in unemployment. Common variables for representing voter sentiment are perceived business confidence in quarter 15,[89] net candidate advantage[90] and presidential approval in the election-year July Gallup poll.[91] Abramowitz also incorporates how long a party has governed (*Duration*), which captures the "costs of governing."[92] As we do not take a stand on the "right" macro model, we present many variants of the models with these regressors. [93]

[87] We do not seek to identify a single "right" model of economic voting. Rather, we assume that each of the main scholarly models of economic voting has merit, but that much can be gained from examining the role of international trade and considering subnational variation in exposure to trade.

[88] Lewis-Beck and Tien 2004.

[89] Erikson 2009.

[90] Erikson 1989. Net candidate advantage is given by subtracting 'unfavorable' from 'favorable' in Gallup surveys.

[91] Abramowitz 2008, Lewis-Beck and Tien 2004.

[92] Abramowitz 1988, 2008. Abramowitz's argument is that "the longer a party has been in power, the more likely the public is to feel that "it's time for a change."" (1988, 844). (Quotes in the original.) Abramowitz operationalizes *Duration* as the number of terms that an Incumbent's party has governed, and we follow his example.

[93] Figure A2 displays the time series of the key dependent and independent trade variables.

Because the list of plausible measures of the explanatory variables of *Incumbent Vote Share*$_t$ exceeds the plausible degrees of freedom given at most 20 observations, there is a risk of omitted variable bias in the estimations. As noted above, prior incumbent vote share (*IncVoteShare* $_{t-1}$) is a plausible correlate of current vote share, and is entered to attenuate this possible bias.[94] We also estimate and report instrumental variable models using two-stage least squares (2SLS) estimators.[95]

The dependent variable is the post-war incumbent party's share of the two main party presidential votes (*Incumbent 2-Party Vote Share*$_t$) from 1952 to 2012. The sample is determined by the availability of quarterly data on economic growth.[96] In most of our models, the investigation starts with the 1952 data. We also estimate a model, 1936–2012, using data from Fair.[97] The passage of the Reciprocal Trade Agreements Act (RTAA) of 1934 repealed the

[94] The absence of a cross-sectional dimension to the data precludes the use of unit fixed effects.

[95] Owen and Quinn 2016. The instruments for changes in U.S. trade flows are the global averages of the subcomponents of a liberalization index of restrictions on payments and receipts of international trade and finance transactions for all countries except the United States lagged by two periods, and used previously as instruments for trade flows by Owen and Quinn. The intuition is that the ability of foreigners to export to the United States and U.S. firms to export abroad is limited by the ability of foreign nationals to make payments for U.S. goods or to receive payments for their exports to the United States. The instruments are plausibly theoretically exogenous, as global averages of financial restrictions several years in advance of an election are theoretically unlikely to respond to expectations about incumbent party vote shares. In any event, the instruments satisfy the exogeneity tests; the first stages are highly significantly significant.

[96] Quarterly data for the four quarters prior to the election Q12 through Q15 are used rather than annual growth data Q13 through Q16. The latter indicator includes information for the 53 to 59 days of economic activity after the election depending on the date of the election in a particular year.

[97] Fair 2009.

Smoot-Hawley Tariff, and is widely seen as marking the modern era of U.S. trade integration.[98]

In light of prior theory and statistical modeling, our base time-series OLS macro model is:

$$\textit{Incumbent 2-Party Vote Share}_t = ß_0 + ß_1(\textit{Incumbent Vote Share}_{t-1}) + ß_2(\textit{Economic Growth}_{t-1}) + \varepsilon_t \; t=1952\text{-}2012 \qquad \textbf{(2)}$$

To this model will be added change in the trade indicators:

either $ß_3(\Delta \textit{TradeBal/GDP}_{t-1})$ or $ß_3(\Delta \textit{Import/GDP}_{t-1})$ *and* $ß_4(\Delta \textit{Exports/GDP}_{t-1})$, plus an indicator of either *Business Sentiment* or *July Approval*: $ß_5(\text{Sentiment/Approval}_{t-1})$. A model that replaces prior incumbent vote share with prior incumbent terms (*Duration*) is also reported.[99] The timing of the variables is such that monthly data (when available) after the presidential elections in November are excluded.

To assess the statistical adequacy of the OLS time-series models, a number of diagnostic tests, correlations, and factor analyses are reported. These can be found in the online appendix. The statistical adequacy of the model is especially important in the context of a small number of observations with potentially correlated errors.[100]

National-level Election Results

[98] See Bailey, Goldstein and Weingast 1997 and Hiscox 1999 for discussions of the RTAA. As Goldstein 1994 notes, U.S. trade policy post-RTAA contained important legacies of prior protectionist policies and programs, which attenuated slowly over time. Therefore, we expect and find weaker estimated effects in earlier periods. Results are available from the authors.

[99] We also estimate a "least absolute deviations" or quartile regression as a robustness check alternative to the main time-series OLS models. OLS can magnify the influence of outliers, in contrast to quartile regressions.

[100] See Grant and Lebo 2016.

Table 3 reports the main results. In column 1, prior incumbent vote share and economic growth are entered. The estimation properties of the model are good, and the results are consistent with prior findings. Importantly, economic growth has an estimated coefficient that is positive, significant and substantively large. The lagged endogenous variable has a negative and significant coefficient, which is consistent with the theories regarding the "costs of governing" and the standard findings of a decline in incumbent vote margins in subsequent elections.

In column 2, change in the trade balance enters with a statistically significant positive coefficient that is substantively large and consistent with the theory developed above. A one-unit increase (decrease) in the U.S. trade balance as a percentage of GDP is associated with a 4 percent estimated increase (decrease) in incumbent vote shares.[101] Column 3 substitutes prior incumbent terms from the Abramowitz 'time for change' model[102] for incumbent vote shares: a one-unit increase (decrease) in the U.S. trade balance as a percentage of GDP is associated with a 3 percent estimated increase (decrease) in incumbent vote shares. Change in imports (column 4) has a statistically significant negative coefficient, which is substantively large and also consistent with our theory. A one-unit increase (decrease) in imports as a percentage of GDP is associated with a 4 percent decrease (increase) in incumbent vote shares. Change in exports as a percentage of GDP has a positive and statistically significant coefficient that is substantively large; a one-unit increase is associated with a 6 percent increase in presidential vote shares. The explanatory

[101] Using a quantile estimator for Model 3.2 produces identical signs on the coefficient estimates and similar levels of statistical significance. The coefficient estimates are modestly smaller than the estimates using OLS time-series methods.

[102] Abramowitz 1988. The OLS version of this model shows strong evidence of serial correlation. We therefore estimate and report the results of a Prais-Winsten AR1 regression with a correction for serial correlation.

power of the models, judged via adjusted R-squared indicators, rises 19 points with the inclusion of the trade variables.[103]

Columns 5 and 6 report the 2SLS models (described earlier). The estimated coefficients for the trade variables are similar in size, sign and level of statistical significance to their OLS counterparts. The levels of statistical significance of the models (given as the generalized adjusted R^2 for instrumental variable (IV) models from Pesaran and Smith)[104] are similar to their OLS counterparts.

In columns 7 and 8, using $\Delta Import/GDP_{t-1}$ and $\Delta Exports/GDP_{t-1}$, we add *Business Sentiment Q15* and *July Gallup*, respectively. The models have good estimation properties and explanatory power. Both *Business Sentiment Q15* and *July Gallup* have positive, statistically significant, and substantively large estimated coefficients that are consistent with prior theory and findings.[105] The estimated coefficient of $\Delta Import/GDP_{t-1}$ remains negative and highly statistically significant, and the estimated coefficient of $\Delta Export/GDP_{t-1}$ remains positive and statistically significant.[106]

---

[103] The factor analysis reported in Table A3 shows that change in exports loads on Factor 1 along with the growth indicators. The variable therefore contains overlapping information with the indicators of economic growth.

[104] Pesaran and Smith 1994.

[105] The *Business Sentiment Q15* data are available only from 1954 onward, making the 1956 election the first election in the sample. The *July Gallup* variable is available from the 1940s onward. In order to compare the estimated effects of changes in imports across the different specifications, the 1956–2012 sample is used. The results for the models with *July Gallup* in the 1952–2012 sample are nearly identical to the models reported.

[106] The economic conditions as of 7 November 2016 that are relevant for our models are 1.5% growth rate over the prior 4 quarters, a 0.13% change in the trade balance as a percentage of GDP. The parsimonious column 5 (IV) model leads to a forecast that the incumbent party nominee (Hillary Clinton) will receive 51.9% of the two party

As a further test, we extend the sample back to the 1936 election, which is post-RTAA, using data and models from Fair.[107] Column 9 enters changes in the trade balance, and column 10 enters changes in imports and exports. The coefficient estimates retain similar signs and levels of statistical significance.

In the online Appendix (Table A4), we use Model 3.4 as the base model and add additional indicators proposed by other investigators, including changes in Multifactor Productivity to measure technological innovation, changes in the unemployment rate, changes in inflation and a time trend.[108] The magnitudes, directions and statistical significances of the trade results are strongly robust to including these other regressors. In all cases, the export and import coefficient estimates retain the expected sign, and the estimated coefficients are statistically significant at the 0.05 level or better.[109]

Conclusion

---

vote share. If, however, the trade conditions that prevailed in the period before the 2004 election prevailed now (a -0.7% change), the column 5 model would otherwise lead to a forecast of 48.0% for Ms. Clinton.

[107] Fair 2009.

[108] The time trend is included in light of observation in Abramowitz (2014) that U.S. presidential elections have become increasingly competitive over time.

[109] We also experiment with estimating national level models with separate indicators for trade in goods and trade in services. When we distinguish between trade in goods and trade in services, the estimated coefficient for trade in goods is highly statistically significant and in the expected direction. The trade in services coefficient estimate, when entered by itself, is positive and highly statistically significant. The services coefficient estimate is less precisely estimated with trade in goods entered in the model also, falling below traditional levels of statistical significance. The preliminary evidence is that trade in goods is largely responsible for the national results found here. This in unsurprising given that, until 1995 and the passage of GATS, services trade faced a deep web of restrictions.

Prior academic research indicates that globalization – characterized by increases in financial integration, rising exports and import competition, and the offshoring of production – shapes politics through its effects on employment, wages and economic insecurity. Our paper demonstrates that changes in trade flows and changes in employment in firms in winning and losing service and manufacturing industries influence presidential voting.

One novel contribution is that we have shown that rising employment in high-skilled service exports – which captures trade's expected winners in the U.S. – is associated with increasing incumbent vote shares. Rising employment in high-skilled tradable manufacturing is also associated with increasing incumbent vote shares, although the magnitude of the estimated effects is much smaller than for high-skilled tradable services. In line with other studies, we find strong evidence that the concentration of economic activity in low-skilled tradable manufacturing diminishes incumbent vote shares. At the national level, using established models and IV estimations, we report the novel finding that rising exports (imports) are associated with rising (declining) incumbent vote shares.

We find some evidence that Electoral College considerations provide an incentive against the further liberalization of trade. The estimated negative effects of low-skilled manufacturing are largely found in the swing states. In contrast, the estimated effects of rising employment in both high-skilled services and high-skilled manufacturing are found only in non-swing states. The extent, therefore, to which the contestability of employment and economic insecurity from trade, rather than purely domestic economic concerns, shapes presidential election outcomes suggests a necessary coupling of previously isolated research streams in American politics and international political economy.

Our results also offer a contrast to recent findings regarding sociotropic theories of trade wherein the economics of trade per se have little to do with voter attitudes toward trade. While our work does not explicitly examine voter attitudes, we find a very robust correlation between objective economics of trade indicators and citizen voting behavior at the county and labor market area. Voters appear to be acting as if they were responding to the trade exposure of their geographic region.

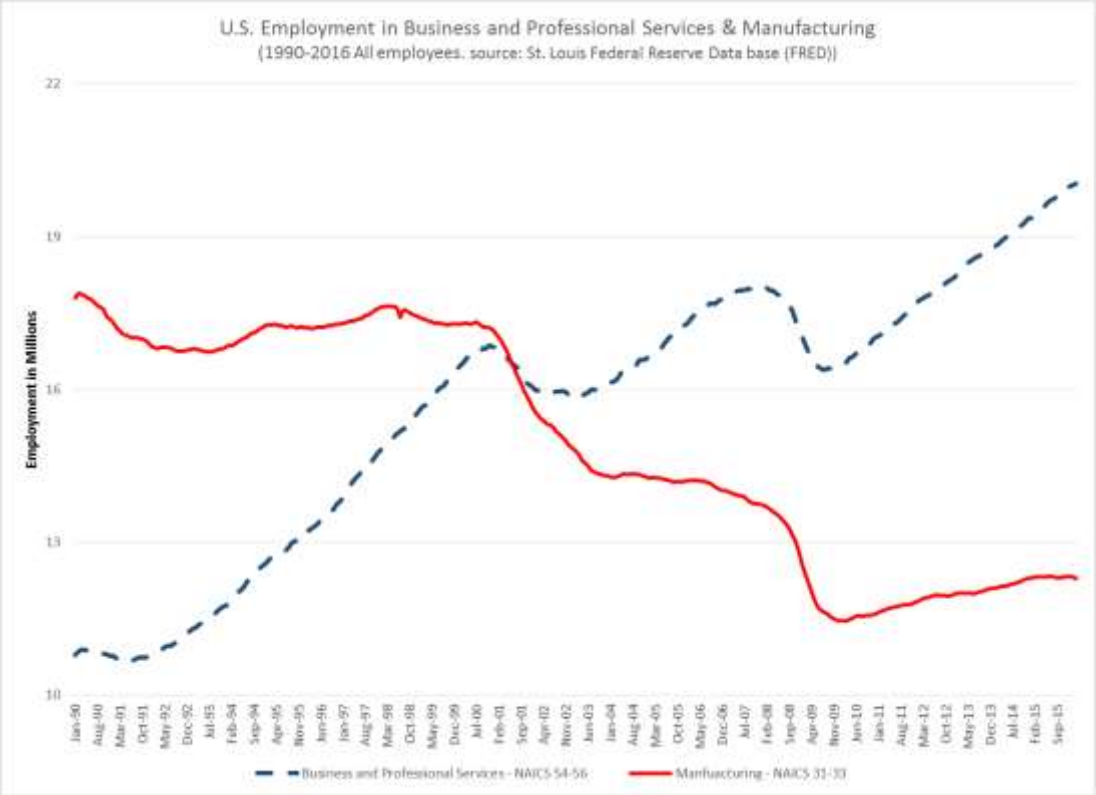

FIGURE 1. *Changing Composition of U.S. Employment, 1990-2016*

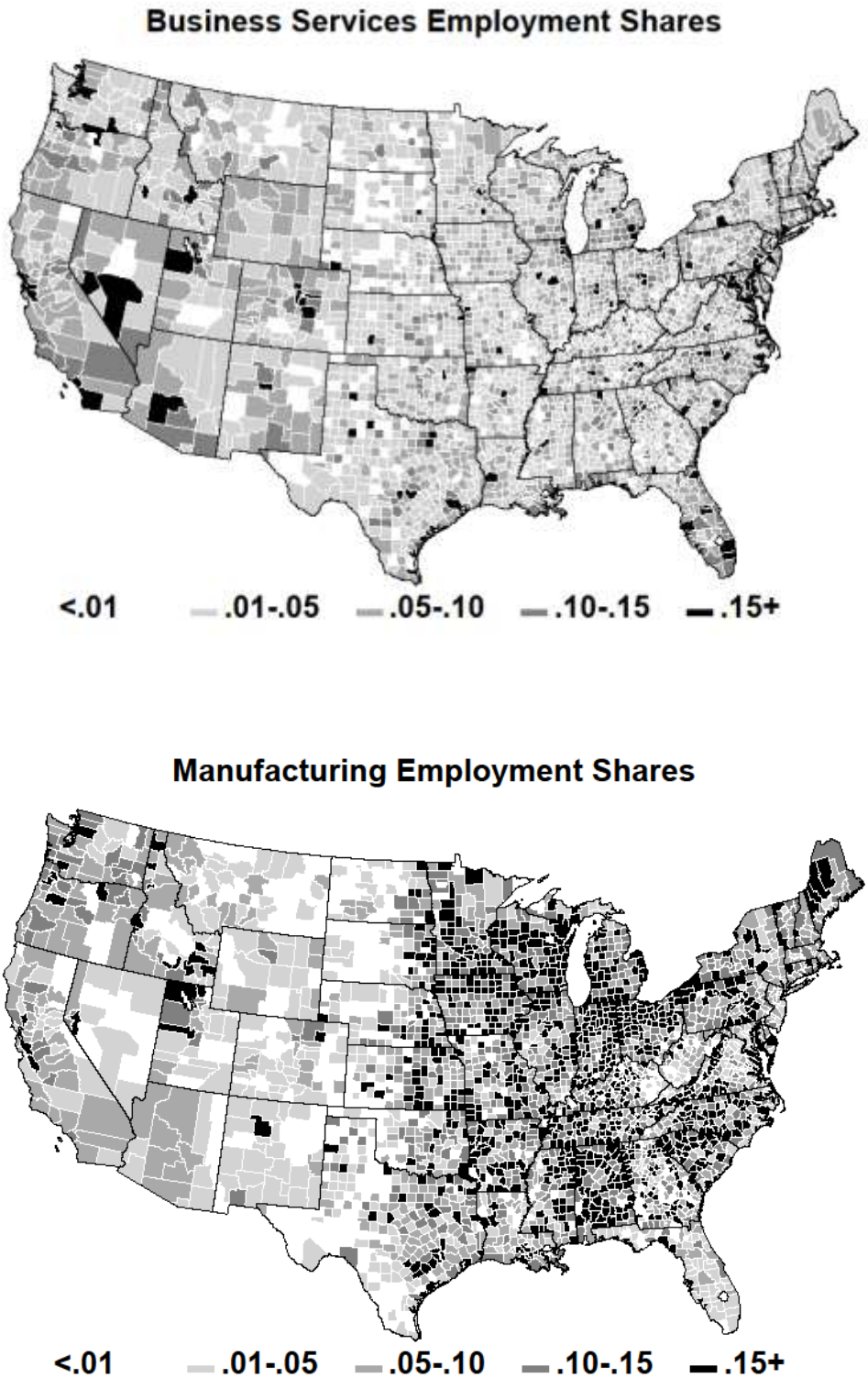

FIGURE 2. *Proportional Employment Shares (0 – 1.0) in 2012 by County. Data from the U.S. Bureau of Labor Statistics.*

TABLE 1. *Industry Classifications by Tradability, Product, and Skill*

Tradable High-skill Manufacturing Automobile Manufacturing (336111) Breakfast Cereal Manufacturing (311230) Petrochemical Manufacturing (325110)	**Tradable High-skill Services** Computer System Design Services (541512) Investment Banking and Securities Dealing (523110) Software Publishing (511210)
Tradable Low-skill Manufacturing Carpet and Rug Mills (314110) Yarn Spinning Mills (313111) any industry in 313, 314 and most in 315, 316	**Tradable Low-skill Services** Amusement and Theme Parks (713110) Credit Card Issuing (522210) Limousine Services (485320)
Non-Tradable Manufacturing Corrugated and Solid Fiber Boxes (322211) Ready-Mix Concrete Manufacturing (327320) Quick Printing (323114)	**Non-Tradable Services** Dentist Offices (621210) Full Service Restaurants (722110) Grocery Stores (445110)

Notes: Authors' Calculations using Economic Census data.

TABLE 2. *County-level Determinants of Incumbent Two-Party Vote Shares, 1992–2012 Presidential Elections*

	(1)	(2)	(3)	(4)	(5)	(6)
			Including non-Tradables	Swing States	Non-Swing States	Additional Controls
Unemployment	-0.002**	-0.0014**	-0.0013**	-0.0046***	-0.0007	-0.0015**
	(0.001)	(0.0068)	(0.0007)	(0.001)	(0.0008)	(0.0007)
Change in Unemployment (1 year)	-0.002	-0.0017	-0.002	-0.0002	-0.0021	-0.0015
	(0.001)	(0.0012)	(0.0023)	(0.0011)	(0.0014)	(0.0011)
Unemployment Volatility	-0.017***	-0.0172***	-0.017***	-0.0121***	-0.0182***	-0.0174***
	(0.002)	(0.0023)	(0.002)	(0.002)	(0.0027)	(0.0021)
Average Pay	0.020	0.0137	-0.013	-0.0317	0.0284*	0.0190
	(0.014)	(0.014)	(0.014)	(0.021)	(0.0157)	(0.0144)
Change in Avg. Pay (1 year)	0.103***	0.0992***	0.098***	0.0399	0.1088***	0.0915***
	(0.021)	(0.021)	(0.021)	(0.0352)	(0.0248)	(0.0206)
Empl. High-wage Manuf. Exporters	0.000					
	(0.0004)					
Empl. Low-Wage Manuf. Exporters	-0.001*					
	(0.001)					
High-wage Tradable Manufacturing Empl.		0.001***	0.001**	-0.000	0.002***	0.001**
		(0.000)	(0.0005)	(0.001)	(0.001)	(0.001)
High-wage Tradable Service Empl.		0.005***	0.004***	0.002	0.006***	0.005***
		(0.001)	(0.0008)	(0.001)	(0.001)	(0.001)
Low-wage Tradable Manufacturing Empl.		-0.006***	-0.006***	-0.012***	-0.004**	-0.006***
		(0.002)	(0.001)	(0.003)	(0.002)	(0.001)
Low-wage Tradable Service Empl.		0.007***	0.006***	0.007***	0.007***	0.006***
		(0.0012)	(0.001)	(0.003)	(0.002)	(0.002)
High-wage non-Tradable Manufacturing Empl.			0.0015***			
			(0.0005)			
High-wage non-Tradable Service Empl.			0.006			
			(0.005)			

Low-wage non-Tradable Manufacturing Empl.			0.001			
			(0.001)			
Low-wage non-Tradable Service Empl.			0.006			
.			(0.006)			
Retired						-0.1513**
						(0.064)
Female						0.5222***
						(0.1413)
African American						0.0360
						(0.0395)
Hispanic Latino						-0.0182
						(0.0332)
Bachelor's Degree						-0.1156**
						(0.0559)
Population						0.0040
						(0.0081)
Constant		-0.2482*	0.308*	0.3090	-0.4282***	-0.5707***
		(0.1387)	(0.152)	(0.2003)	(0.1578)	(0.1635)
Observations	18,623	18,623	18,623	4,282	14,341	18,623
Adj. R-squared (Within County)	0.55	0.55	0.55	0.55	0.56	0.55
Counties	3,105	3,105	3,105	714	2,391	3,105

Notes: The dependent variable is the change in the incumbent two-party vote share. All models include county and year fixed effects. The 10 swing states are Colorado, Florida, Iowa, North Carolina, New Hampshire, Ohio, Pennsylvania, Virginia, Nevada and Wisconsin. The trade exposure measures are log (relevant employment measure + 1) from the Census LBD. All estimates are weighted by population size in 1990. The robust standard errors (reported in parentheses) are adjusted for clustering at the county level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Source: confidential plant-level employment data from the U.S. Census Bureau.

TABLE 3. *Base Models – Dependent Variable is National Incumbent Party (Two-Party) Vote Shares (1952–2012, 1936–2012)*

	Model 1	Model 2	Model 3	Model 4	Model 5 IV	Model 6 IV	Model 7	Model 8	Model 9 (1936-)	Model 10 (1936-)
Prior Incumbent Vote $_{t-1}$	-0.74***	-0.773***		-0.764***	-0.775***	-0.743***	-0.746***	-.542***	-0.443	-0.441
	(0.216)	(0.155)		(0.152)	(0.144)	(0.176)	(0.122)	(0.157)	(0.255)	(0.265)
Duration (# of prior incumbent terms)			-0.01*							
			(0.006)							
Growth Q12_15	0.022***	0.031***	0.018***	0.032***	0.031***	0.034***	0.018**	0.023***	0.018***	0.018***
	(0.005)	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)	(0.006)	(0.005)	(0.004)	((0.004)
ΔTradeBal Q12_15		0.045***	0.033***		0.048***				0.026**	
		(0.012)	(0.011)		(0.016)				(0.01)	
ΔImportsQ12_15				-0.04**		-0.043**	-0.036***	-0.028**		-0.025*
				(0.013)		(0.017)	(0.011)	(0.012)		(0.015)
ΔExportsQ12_15				0.06***		0.073***	0.038*	0.044**		0.028*
				(0.018)		(0.02)	(0.019)	(0.017)		(0.014)
BusSentimentQ15							0.001**			
							(0.0002)			
July Gallup								0.0014**		
								(0.0005)		
War									0.007	0.009
									(0.034)	(0.02)
Constant	0.865***	0.869***	0.502***	0.853***	0.869***	0.846***	0.817***	0.69***	0.722***	0.719***
	(0.113)	(0.081)	(0.018)	(0.081)	(0.076)	(0.094)	(0.069)	(0.095)	(0.139)	(0.144)
Obs.	16	16	16	16	16	16	15	16	20	20
Adj. R^2	0.61	0.798		0.802	0.81	0.81	0.915	0.91	0.41	0.44
AR 1-2 test [p-value]	[0.87]	[0.37]		[0.94]			[0.42]	[0.92]	[0.25]	[0.28]
ARCH 1-1 test [p-value]	[0.51]	[0.85]		[0.96]			[0.98]	[0.16]	[0.93]	[0.99]
Normality test [p-value]	[0.85]	[0.53]		[0.85]			[0.85]	[0.88]	[0.40]	[0.38]
AR1 ρ or [1st Stage F-test]			-0.42		[15.33***]	[75.14***]				

Notes: Model 3 omits the lagged dependent variable, and reports a Prais-Winsten AR1 regression with a correction for serial correlation. Data for the 1936, 1940, 1944 and 1948 elections are from Fair (2009) and the BEA. The standard errors for the IV models (5 and 6) are robust standard errors corrected for small sample bias. The IV Adj. R^2 is the Generalized Adj. R^2 from Pesaran and Smith 1994 for IV models. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

References

Abramowitz, Alan I. 1988. An Improved Model for Predicting Presidential-Election Outcomes. *PS: Political Science & Politics* 21 (4):843–7.

Abramowitz, Alan I. 2008. It's about Time: Forecasting the 2008 Presidential Election with the Time-for-Change Model. *International Journal of Forecasting* 24 (2):209–17.

Abramowitz, Alan I. 2014. Long-Term Trends and Short-Term Forecasts: The Transformation of U.S. Presidential Elections in an Age of Polarization. *PS: Political Science & Politics* 47 (2):289-292.

Antoniades, Alexis, and Charles W. Calomiris. 2015. Mortgage Market Credit Conditions and U.S. Presidential Elections. Paper presented at the Mortara Political Economy Seminar Luncheon Series, February. Washington D.C.

Autor, David H., David Dorn, and Gordon H. Hanson. 2013. The China Syndrome: Local Labor Market Effects of Import Competition in the United States. *American Economic Review* 103 (6):2121–68.

Autor, David H., David Dorn, Gordon H. Hanson, and Kaveh Majlesi. 2016. Importing Political Polarization? The Electoral Consequences of Rising Trade Exposure. MIT Working paper

Bailey, Michael A., Judith Goldstein, and Barry R. Weingast. 1997. The Institutional Roots of American Trade Policy. *World Politics* 49 (3):309–38.

Bernard, Andrew, J. Bradford Jensen and Peter K. Schott. 2006. Survival of the Best Fit: Exposure to Low-Wage Countries and the (Uneven) Growth of U.S. Manufacturing Plants. *Journal of International Economics* 68 (1):219–37.

Broz, J. Lawrence, and Steven H. Werfel, 2014. Exchange rates and industry demands for trade protection. *International Organization*, 68 (2):393-416.

Burstein, Ariel, and Jonathan Vogel. Forthcoming. International Trade, Technology, and the Skill Premium. *Journal of Political Economy*. In Press.

Campbell, James E., and Michael S. Lewis-Beck. 2008. US Presidential Election Forecasting: An Introduction. *International Journal of Forecasting* 24 (2):189–92.

Che, Yi, Yi Lu, Justin Pierce, Peter Schott, and Zhigang Tao. 2016. Does Trade Liberalization with China affect U.S. Elections? Working Paper 22178. Cambridge, MA: National Bureau of Economic Research.

Chase, Kerry A. 2015. Domestic Geography and Policy Pressures, in *The Oxford Handbook of the Political Economy of International Trade*, edited by Lisa L. Martin, New York: Oxford University Press, 2015. pp. 316-334.

Chase, Kerry A., 2003. Economic interests and regional trading arrangements: The case of NAFTA. *International Organization*, 57 (1):137-174.

Chase, Kerry A., 2008. Moving Hollywood Abroad: Divided Labor Markets and the New Politics of Trade in Services. *International Organization*, 62 (4):653-687.

Crino, R. 2010. Service Offshoring and White-collar Employment. *The Review of Economic Studies* 77 (2):595–632.

Erikson, Robert S. 1989. Economic Conditions and the Presidential Vote. *American Political Science Review* 83 (2):567–73.

Erikson, Robert S. 2009. The American Voter and the Economy, 2008. *PS: Political Science & Politics* 42 (3):467–71.

Fair, Ray C. 1978. Effect of Economic Events on Votes for President. *Review of Economics and Statistics* 60 (2):159–73.

Fair, Ray C. 2009. Presidential and Congressional Vote-Share Equations. *American Journal of Political Science* 53 (1):55–72.

Feigenbaum, James J. and Andrew B. Hall. 2015. How Legislators Respond to Localized Economic Shocks: Evidence from Chinese Import Competition. *Journal of Politics* 77 (4):1012–30.

Gervais, Antoine, and J. Bradford Jensen. 2013. The Tradability of Services: Geographic Concentration and Trade Costs. Working Paper 19759. Cambridge, MA: National Bureau of Economic Research.

Goldstein, Judith. 1994. *Ideas, Interests, and American Trade Policy.* Ithaca, NY: Cornell University Press.

Grant, Taylor, and Matthew J. Lebo. 2016. Error Correction Methods with Political Time Series. *Political Analysis* 24 (1):3-30.

Hainmueller, Jens, and Michael J. Hiscox. 2006. "Learning to Love Globalization: Education and Individual Attitudes toward International Trade." *International Organization* 60(2): 469–98.

Hellwig, Timothy. 2014. Balancing Demands: the World Economy and the Composition of Policy Preferences. *Journal of Politics* 76 (1):1-14.

Hellwig, Timothy. Economic Globalization and Mass Politics Ten Country Study [dataset]. October 20, 2011 version.

Hellwig, Timothy, and David Samuels. 2007. Voting in Open Economies: The Electoral Consequences of Globalization. *Comparative Political Studies* 40 (3):283-306.

Hibbs, Douglas A., Jr. 2000. Bread and Peace Voting in U.S. Presidential Elections. *Public Choice* 104 (1/2):149–80.

Hiscox, Michael J. 1999. The Magic Bullet? The RTAA, Institutional Reform, and Trade Liberalization. *International Organization* 53 (4):669–98.

Jarmin, R.S., and J. Miranda. 2002. The Longitudinal Business Database, <http://ideas.repec.org/s/cen/wpaper.html> Working paper 02-17. Washington, DC: Center for Economic Studies, U.S. Census Bureau.

Jensen, J. Bradford. 2011. *Global Trade in Services: Fear, Facts, and Offshoring.* Washington, DC: Peterson Institute for International Economics.

Jensen, J. Bradford, and Lori G. Kletzer. 2006. Tradable Services: Understanding the Scope and Impact of Services Offshoring. In *Brookings Trade Forum 2005, Offshoring White-Collar Work*, edited by Susan M. Collins and Lael Brainard, 75–134. Washington, DC: Brookings Institution.

Jensen, J. Bradford, and Lori G. Kletzer. 2010. Measuring Tradable Services and the Task Content of Offshorable Services Jobs. In *Labor in the New Economy*, edited by Katharine Abraham, Mike Harper and James Spletzer, 309–35. Chicago: University of Chicago Press.

Jensen, J. Bradford, Dennis P. Quinn, and Stephen Weymouth. 2015. The Influence of Firm Global Supply Chains and Foreign Currency Undervaluations on U.S. Trade Disputes. *International Organization* 69 (4):913–47.

Kayser, Mark A., and Arndt Leininger. 2015. Vintage Errors: Do Real-Time Economic Data Improve Election Forecasts? *Research and Politics.* doi: 10.1177/2053168015589624.

Kayser, Mark A., and Michael Peress. 2012. Benchmarking Across Borders: Electoral Accountability and the Necessity of Comparisons. *American Political Science Review* 106 (3):661-684.

Kim, In Song. 2016. "Political Cleavages within Industry: Firm-level Lobbying for Trade Liberalization" *American Political Science Review*, Forthcoming.

Krueger, Alan B., and Lawrence H. Summers. 1988. Efficiency Wages and the Inter-Industry Wage Structure. *Econometrica* 56 (2):259–93.

Krugman, Paul R. 2000. Trade, Technology and Factor Prices. *Journal of International Economics* 50 (1):51–71.

Leamer, Edward E. 2007. A Flat World, a Level Playing Field, a Small World After All, or None of the Above? A Review of Thomas L. Friedman's *The World is Flat. Journal of Economic Literature* 45 (1):83–126.

Leip, David. 2016. *Atlas of American Politics.* Data acquired 15 January 2015 and 12 October 2016.

Lewis-Beck, Michael S., and Richard Nadeau. 2011. Economic Voting Theory: Testing New Dimensions. *Electoral Studies* 30 (2):288–94.

Lewis-Beck, Michael S., and Mary Stegmaier. 2000. Economic Determinants of Electoral Outcomes. *Annual Review of Political Science* 3:183–219.

Lewis-Beck, Michael S. and Charles Tien. 2004. Jobs and the Job of the President: A Forecast for 2004. *PS: Political Science and Politics* 37 (4):753–58.

Lewis-Beck, Michael S., and Charles Tien. 2008. Forecasting Presidential Elections: When to Change the Model. *International Journal of Forecasting* 24 (2):227–36.

Mano, Rui C., and Morola Castillo. 2015. The Level of Productivity in Traded and Non-Traded Sectors for a Large Panel of Countries. Working Paper WP/15/48. Washington, DC: International Monetary Fund.

Manger, Mark S. *Investing in protection: The politics of preferential trade agreements between north and south*. Cambridge University Press, 2009.

Mansfield, Edward D. and Diana C. Mutz. 2013. US versus Them: Mass Attitudes toward Offshore Outsourcing. *World Politics* 65 (4):571–608.

Mansfield, Edward D., and Diana C. Mutz. 2009. "Support for Free Trade: Self-Interest, Sociotropic Politics, and Out-Group Anxiety." *International Organization* 63(3): 425–57.

Margalit, Yotam. 2011. Costly Jobs: Trade-Related Layoffs, Government Compensation, and Voting in U.S. Elections. *American Political Science Review* 105 (1):166–88.

Oldenski, Lindsay. 2014. Offshoring and the Polarization of the U.S. Labor Market. *Industrial and Labor Relations Review* 67 (3):734–61.

Osgood, Iain. 2016a. "Globalizing the Supply Chain: Firm and Industrial Support for US Trade Agreements." University of Michigan working paper.

Osgood, Iain., 2016b. "The breakdown of industrial opposition to trade: firms, product variety and reciprocal liberalization." *World Politics*.

Owen, Erica. 2015. Exposure to Offshoring and the Politics of Trade Liberalization: Debates and Votes on Free Trade in the 108th Congress. Paper Presented at the 2015 American Political Science Association Convention, August, San Francisco, CA.

Owen, Erica, and Noel Johnston. 2016. Occupation and the Political Economy of Trade: Job Routineness, Offshorability and Protectionist Sentiment. Texas A&M working paper.

Owen, Erica, and Dennis P. Quinn. 2016. Does Economic Globalization Influence the U.S. Policy Mood?: A Study of U.S. Public Sentiment, 1954-2011. *British Journal of Political Science* 49 (1)*:*95-125.

Pesaran, M. Hashem, and Richard J. Smith. 1994. A Generalize R^2Criterion for Regression Models Estimated by the Instrumental Variables Method. *Econometrica* 62 (3):705–10.

Pew Research Center. 2016. *Can Likely Voter Models be Improved?* available at: www.pewresearch.org

Pew Research Center. 2004. *The Internet and Democratic Debate: Pew Internet & American Life Project*. Washington, DC: Pew Research.

Powell, G. Bingham, and Guy D. Whitten. 1993. A Cross-National Analysis of Economic Voting – Taking Account of the Political Context. *American Journal of Political Science* 37 (2):391–414.

Quinn, Dennis P., and John T. Woolley. 2001. Democracy and National Economic Performance: The Preference for Stability. *American Journal of Political Science* 45 (3):634–57.

Rickard, Stephanie J. 2015. Compensating the Losers: An Examination of Congressional Votes on Trade Adjustment Assistance. *International Interactions* 41 (1):46–60.

Rho, Sungmin, and Michael Tomz. Forthcoming. Why Don't Trade Preferences Reflect Economic Self-Interest? *International Organization.*

Sabet, Shahrzad. 2016. "Feelings First: Non-Material Factors as Moderators of Economic Self-Interest Effects on Trade Preferences." Working paper.

Scheve, Kenneth, and Matthew J. Slaughter. 2004. Economic Insecurity and the Globalization of Production. *American Journal of Political Science* 48 (4):662–74.

Sturgeon, Timothy, Frank Levy, Claire Brown, J. Bradford Jensen, and David Weil. 2006. Services Offshoring Working Group Final Report. MIT IPC Working Paper Series 06-006. Cambridge, MA. Available at: https://ipc.mit.edu/sites/default/files/documents/IPC_Offshoring_Report.pdf

Tufte, Edward R. 1978. *Political Control of the Economy*. Princeton, NJ: Princeton University Press.

Walter, Stefanie. 2010. Globalization and the Welfare State: Testing the Microfoundations of the Compensation Hypothesis. *International Studies Quarterly* 54 (2):403–26.

Walter, Stefanie. 2016. Globalization and the Demand-Side of Politics. How Globalization Shapes Labor Market Risk Perceptions and Policy Preferences. *Political Science Research and Methods*. http://dx.doi.org/10.1017/psrm.2015.64.

Weymouth, Stephen. 2016. Services Firms in the Politics of U.S. Trade Policy. Georgetown University Working Paper.

Wright, John R. 2012. Unemployment and the Democratic Electoral Advantage. *American Political Science Review* 106 (4):685–702.

Appendix A

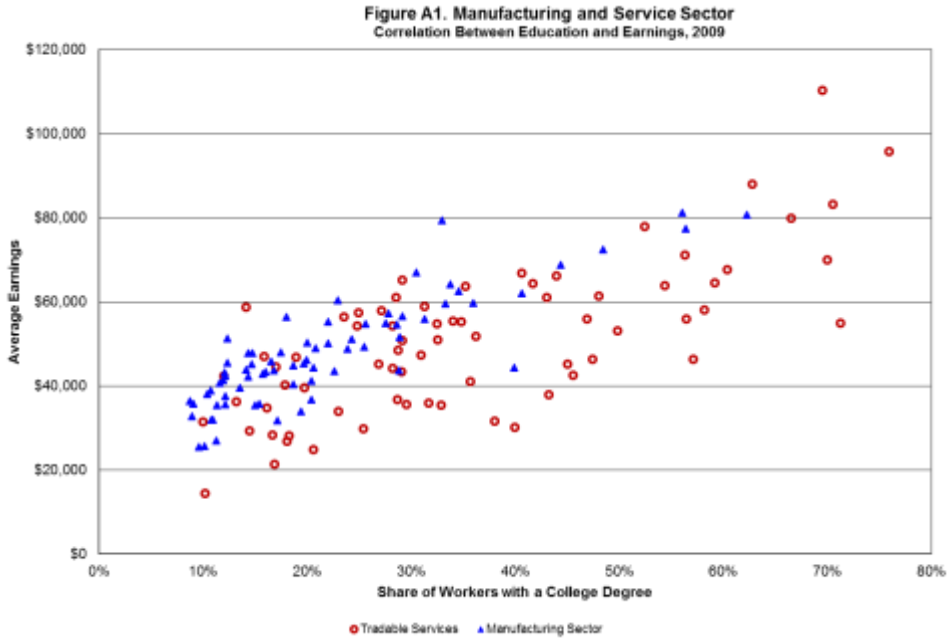

FIGURE A1. *Correlation between Education and Salary. Authors' Calculations from Census Data*

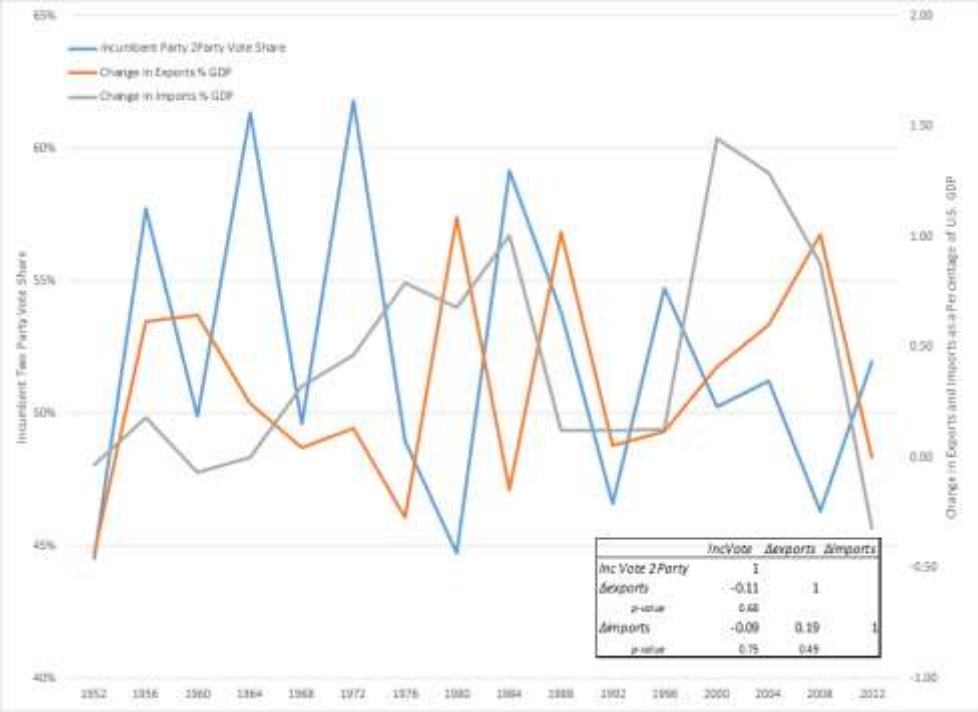

FIGURE A2. *Time Series of the Dependent and Key Independent Trade Variables*