Local Economic and Political Effects of Trade Deals: Evidence from NAFTA

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Preliminary and incomplete. Comments welcome.

Abstract

We show that counties whose 1990 employment depended on industries vulnerable to Mexican import competition via the 1994 North American Free Trade Agreement (NAFTA) suffer large employment losses (relative to the bottom quartile of counties, counties in the top quartile of NAFTA exposure see 5-8 log-point declines in employment by 2000). Despite large employment losses, we can reject even modest population declines. Trade-adjustment-aid relief rises, but covers a tiny share of the job losses we document, and Disability Insurance in fact displays a much larger response. Exposed counties (many in the upper South) begin the period more Democratic in terms of votes in House elections, but as NAFTA is debated in 1992-1994 they shift in the Republican direction and by 2000 vote majority-Republican in House elections. We show with a variety of microdata, including 1992-1994 respondent-level panel data, that opposition to free trade predicts shifts towards Republican party identification.

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1 Introduction

In September of 1993, the Clinton administration released a letter signed by 283 economists, including twelve Nobel laureates, urging Congress to ratify the North American Free Trade Agreement (NAFTA). "[T]he assertions that NAFTA will spur an exodus of U.S. jobs to Mexico are without basis," the economists wrote. "The letter is part of a concerted White House campaign to rebut the criticisms of the trade agreement made by Texas billionaire Ross Perot, who has begun spending large amounts of his considerable fortune to promote his view that NAFTA will destroy American jobs," reported the *Los Angeles Times*.[1]

The White House indeed succeeded in passing NAFTA in a close and bi-partisan vote a few months later, and it was implemented on January 1st, 1994. However, a quarter of a century later, it remains controversial. President Donald Trump made opposition to NAFTA a key part of his successful 2016 campaign, claiming in the first presidential debate that "NAFTA is the worst trade deal maybe ever signed anywhere, but certainly ever signed in this country." While somewhat forgotten, as his administration was generally pro-free-trade, Senator Barack Obama campaigned against NAFTA in the 2008 Democratic primary, tying Hillary Clinton to her husband's championing of the policy. "[T]rade deals like NAFTA ship jobs overseas and force parents to compete with their teenagers to work for minimum wage at Wal-Mart. That's what happens when the American worker doesn't have a voice at the negotiating table, when leaders change their positions on trade with the politics of the moment."

Economists have long argued that despite being welfare-increasing overall, free trade creates some "losers." However, only recently have the costs to the losers received major attention in the literature. In particular, the important work of Autor *et al.* (2013) has highlighted the large and durable negative effects to local labor markets that were exposed to Chinese import competition from 1990 to 2007.

In light of its enduring political controversy and the renewed focus on the local effects of trade agreements, we revisit NAFTA. Surprisingly, the empirical, reduced-form evidence on local employment effects of trade agreements and imports more generally was rather sparse until the recent set of papers on the "China shock." The work on local employment effects of NAFTA is even more limited. In contrast to the work on NAFTA that does exist, which is much more structural in nature, we take a simple event-study approach to the question. We classify communities based on the share of their 1990 (pre-NAFTA) employment in industries that would become exposed to Mexican imports by the terms of NAFTA. We then examine

[1]See"283 Top Economists Back Trade Pact, Letter Shows," *Los Angeles Times*, September 4, 1993, `https://www.latimes.com/archives/la-xpm-1993-09-04-mn-31519-story.html`.

how this fixed county trait predicts economic and other outcomes each year in our sample period.

We begin by showing that NAFTA had a major, negative effect on employment in areas exposed to Mexican import competition. By 2000, counties in the top quartile of our measure of NAFTA exposure saw a 5-8 log point decline in total employment, relative to the bottom quartile. These losses were concentrated in manufacturing and, importantly, exhibit no pre-trends from the mid 1980s to 1994. While we begin all of our analysis by showing trends with *county*×*year* raw data, the basic shape of our event-study coefficients are unchanged as we add a large number of controls: pre-period county-level measures (e.g., 1990 manufacturing share of employment, 1990 share with a college degree) interacted with year fixed effects, to control flexibly for other secular changes (e.g., automation, skill biased technological change) that may affect communities differentially across time; the "China shock" measure from Autor *et al.* (2013) interacted with year fixed effects, to ensure we isolate the NAFTA effect from the rise of Chinese imports; and fixed effects at the *state*×*year* level, to pick up any policy or other unobserved variation within states across time.

The large employment losses might lead to population declines (as in Blanchard *et al.*, 1992, though they examine data from an earlier period), so we examine annual population measures. We find no population respond to NAFTA-driven employment losses, at least in the medium-run captured by our sample period. We have the power to reject even small effects. Note that Autor *et al.* (2013) also find limited migration response to the China shock, so our result deepens the puzzle of why population does not appear to respond to these large, trade-driven employment shocks.

W examine whether DI grows in these areas from 1994 onward, given past work suggesting that DI applications respond to local economic downturn (Autor and Duggan, 2003). We only have data for a subset of counties (though they capture about three-fourths of the population), but at least in this subset the DI response is large and sustained—roughly equal in percentage terms to the employment effect. We estimate that for every ten job losses due to NAFTA in these counties, XX apply to DI. While the response in per capita Trade Adjustment Assistance aid is statistically significant and visually detectable, it is far smaller in magnitude: XXX.

Having documented large, negative local employment effects in communities exposed to Mexican import competition, we then ask how voters in these communities reacted. NAFTA was a major issue in the 1992 U.S. presidential campaign, with Ross Perot making opposition to it a major motivation for his third-party campaign, a third-party campaign that picked up 19 percent of the popular vote, making it the most successful such campaign since Teddy Roosevelt's run as the Bull Moose Party candidate in 1912. President Bill Clinton made

passage of NAFTA a key goal of the first year of his administration, which he accomplished via a close, controversial and bi-partisan vote in November of 1993.

We focus on House election votes in most of our political analysis, as every House seat is up for election every two years, allowing for a balanced panel of years.[2] While NAFTA-exposed counties (many in the upper South) begin the sample period more Democratic as measured by House election votes than the rest of the country, they exhibit a sharp change in trend and become increasingly Republican. In contrast to our employment effects, which show no pre-1994 pre-trend regardless of specification, this political turning point occurs in either the 1992 or the 1994 election, depending on the controls we include in the event-study analysis. We find this ambiguity unsurprising, given the political salience of NAFTA in the 1992 election, even though its provisions did not go into effect until January 1994. Beyond the ambiguity between 1992 and 1994, there is no political pre-trend in NAFTA-exposed counties from 1980 to 1990. The shift we document is large. While these counties are in 1990 the most Democratic of our four quartile groups, by 2000 they are as or more Republican than any of the quartiles.

We present a variety of microdata-based evidence that the political shift was indeed due to NAFTA. First, we show that in the areas we define as most vulnerable to NAFTA, survey respondents significantly oppose NAFTA and this opposition continues to the present day. Second, in repeated cross-section data from the American National Election Surveys (ANES) we show that, in each year of survey data from 1986 to 1992, Democrats enjoy a significant and steady advantage among those with protectionist views, but between 1992 and 1996 a significant number of protectionist voters move toward the GOP and remain there. Finally, in an ANES panel dataset from 1992 to 1994, we can look at the same voters over time during this key moment. We indeed find that a significant share of those who in 1992 express protectionist views have moved their party-identification toward the GOP by 1994. We show these effects are robust to flexibly controlling for a variety of demographic variables as well as views on other political and policy questions.

Our paper contributes to the literature on the local employment effects in rich countries of exposure to import competition from poorer countries. Shortly after NAFTA's passage, Rodrik (1997) warned that academics and policy-makers were underestimating the effects of globalization on high-income country governments' ability to pursue domestic policy goals. But it was not until more recently that empirical evidence on the employment effects of

[2]Obviously, House elections are determined by votes in Congressional Districts, which change over time. However, data breaking down these votes into counties is readily available and we use them so that we can examine consistent geographical unites over longer periods of time, as county boundaries are very stable.

trade deals gained prominence. In the U.S. context, Autor *et al.* (2013) highlighted the large and lasting effects of Chinese import competition on exposed U.S. communities in terms of declining employment and labor force participation and rising transfer payments.

There has been limited work of this type for NAFTA. The closest is likely Hakobyan and McLaren (2016). Like Autor *et al.* (2013), they use Census data, so focus on longer (ten-year) differences than we do. In particular, they use decennial Census data and model industry-level effects of NAFTA (proxied as changes in earnings by industry from 1990 to 2000) as a function of both 1990 tariff levels and the *change* in tariff levels between 1990 and 2000.[3] We bring much less structure to our empirical approach, allowing each county's 1990-level of protection to have an unrestricted effect on employment (as well as myriad other outcomes) in every year of our sample period and then plot these estimated effects. Relative to both Hakobyan and McLaren (2016) and Autor *et al.* (2013), our use of annual data as opposed to Census microdata (which are available at lower frequency) allow us to visually test for pre-trends and moreover show that breaks in trend are highly correlated in time with NAFTA's implementation.

The literature on the effect of NAFTA on the U.S. has focused on examining the policy's impact on prices and trade flows as well as measuring its aggregate wage and welfare impact. Krueger (1999) documents the expansion of trade flows among the three North American countries during the first four years of NAFTA, with a potential trade diversion away from non-NAFTA countries. Romalis (2007) uses detailed trade flow and tariff data to estimate import supply and demand elasticities and evaluates the price and welfare impact on the U.S. The paper finds a positive impact on the trade quantities but moderate impact on prices and welfare. Caliendo and Parro (2014) develop a structural general equilibrium model that incorporates the sectoral linkages (e.g., intermediate goods and input-output linkages) and show that NAFTA had a positive impact on U.S.'s welfare by 0.08 percent, while it increased Mexico's welfare by 1.31 percent and decreased Canada's welfare by 0.06 percent.[4]

It is interesting to speculate why there has been so little work on the local employment effects of NAFTA, and we can imagine at least two likely reasons. First, economists pushing for its passage in the early 1990s emphasized it would have small effects. A good exam-

[3]A potentially important issue with including both the *change* in tariff levels from 1990 to 2000 and the *level* of tariff levels in 1990 is that the two are nearly one-for-one (negatively) correlated, as tariffs are mostly stable from 1990 to 1993 and then from 1994 to 2000 almost all tariffs go to zero as a result of NAFTA. Thus, identification is reliant on the relatively small share of industries whose tariffs with Mexico do not go to zero by 2000.

[4]There are papers that document the effect of NAFTA on Mexico, including Hanson (1998) that shows NAFTA affected the regional employment in Mexico by contracting manufacturing employment in Mexico City and increasing the manufacturing employment in northern Mexico.

ple is the public letter referenced in the first paragraph of the paper. While signatories acknowledged that trade deals create "winners and losers," they stressed that the Mexican economy was too small to appreciably affect U.S. employment. Second, they also emphasized that the provisions of NAFTA would ease tariffs downward gradually. In fact, both claims are debatable. As we discuss in the next section, Mexican import value to the US were in fact greater to that from China until 2004. Moreover, more than half of the tariffs that existed on Mexican goods pre-NAFTA were set to zero immediately upon the agreement's implementation in January of 1994.[5]

We also contribute to a small but growing literature on the political effects of trade shocks. To date, this literature has found mixed results in the U.S. context. In a follow-up to Autor *et al.* (2013) work on local labor markets, Autor *et al.* (2016) find that voters more impacted by Chinese import competition move ideologically to the right on average, sending more polarizing representatives to Congress as voters in initially Democratic districts send slightly more liberal candidates while voters in initially Republican districts send substantially more conservative candidates. Their findings echo papers on Germany and France that demonstrate that greater import competition results in a larger vote share for the far right party (Malgouyres (2017) and Dippel *et al.* (2015)). In the British case, greater exposure to trade predicts votes for Brexit (Colantone and Stanig (2018)). Che *et al.* (2017), on the other hand, using a longer time period (1990 to 2010 where Autor *et al.* (2016) examine 2002-2010) level of geography (counties, which stay constant over a 20 year period as opposed to districts) and methodological approach (focusing on a policy change that resulted in greater Chinese import competition for some areas) than Autor *et al.* (2016) find that the most exposed to Chinese imports are more likely to vote Democratic.

By contrast with the literature on the political response to the China shock, we find a clear shift in the Republican direction in places most exposed to NAFTA and among voters opposed to free trade. We suspect that the difference lies in the political saliency of NAFTA. The debate over NAFTA motivated a highly successful third-party presidential campaign in 1992 and remains a politically controversial point to this day. As we discuss in Section 6, NAFTA captured much more attention on network nightly news than did the later easing of trade relations with China. Why NAFTA captured media and public attention more than did easing of trade relations with China is an interesting question for future work.

The rest of the paper is organized as follows. Section 2 provides a short background on NAFTA's provisions and describes how we measure local vulnerability to NAFTA. Section 3

[5]See U.S. Information Agency (1998), p. 25. Also, our documentation of tariff protection by year in the next section shows a large and immediate decline in tariff rates in 1994 and 1995, and then a slower convergence thereafter to zero.

outlines the empirical strategy for our event-study analysis. Section 4 describes the employment results, Section 5, the demographic and transfer-program results and Sections 6 and 7 the political results. Section 8 concludes and offers ideas for future work.

2 Measuring local vulnerability to NAFTA

2.1 Background on the agreement

By 1992, diplomats from Canada, Mexico and the US had hammered out the details of an historic agreement to substantially reduce trade barriers across the North American continent, though the agreement awaited ratification by the governments of the three countries. In fact, trade between the US and Canada had mostly been tariff-free due to earlier agreements, so the debate over NAFTA in the US focused on whether to liberalize trade with Mexico.

As noted in the introduction and discussed in greater detail in Section 6, NAFTA became a major issue in the 1992 election in the US. President Clinton eventually secured its passage in November 1993, and many of its provisions went into effect in January 1994. While NAFTA phased out some tariffs more gradually, in fact over one-half of tariffs on Mexican goods were immediately set to zero in 1994.

Figure 1 shows the value of imports to the US from Mexico (and, for context, also includes China). While growing before NAFTA, Mexican imports enjoy more rapid growth beginning in 1994. Interestingly, despite the larger focus on China in the empirical labor economics literature, it is not until 2004 that China supplants Mexico as the most important low-income source of imports (though its rise since 2004 is indeed more rapid than any period for Mexico).

Which industries were most affected by NAFTA? Not surprising given Mexico's comparative advantage in low-skilled labor, they were labor-intensive, low-wage manufacturing industries such as apparel, shoes, textiles and leather. It is important to note that these industries had long complained about import competition from poor countries and were declining even before NAFTA and the China Shock.[6] In fact, industry lobbyists often complained about an assumption among politicians and economists that these jobs were in "sunset industries" and moreover were low-quality jobs that were not worth saving. But at the time of NAFTA's passage, the apparel and textile industries still employed nearly two million people. Whether via a successful (at least in terms of visibility) "Made-in-America"

[6]Much of the information provided in this paragraph is taken from Minchin (2012a), a history of the decline of the U.S. textile industry.

campaign pitched toward consumers or other factors, employment decline had also slowed in these industries in the years leading up to NAFTA. We show in Appendix Figure A.1 that employment in textile mills was in fact quite stable in the early 1990s (at half a million workers) before beginning a rapid decline in the middle of the decade.

2.2 Construction of our measure of NAFTA exposure

Our exposure measure draws heavily from Hakobyan and McLaren (2016), though we create county-level measures, whereas they examine exposure at the Public-Use Micro-data Area (PUMA) level. In spirit, it is also very similar to that used by Autor *et al.* (2013), as it takes the vector of industry-level measures of exposure to import competition and, for each community, multiplies it by a vector of pre-period industry employment shares.

Following Hakobyan and McLaren (2016), we begin by creating Mexico's "relative comparative advantage" (RCA) in a given industry $j \in \mathbf{I}$, using 1990 (pre-NAFTA) data:

$$\text{RCA}^j = \frac{\left(x^{MEX}_{j,1990}/x^{ROW}_{j,1990}\right)}{\left(\sum_i x^{MEX}_{i,1990}/\sum_i x^{ROW}_{i,1990}\right)}. \tag{1}$$

In the numerator of the above expression, $x^{MEX}_{j,1990}$ is the 1990 value of Mexican exports (to all countries, not just the US) in industry j, $x^{ROW}_{j,1990}$ is the 1990 value of the rest of the world's (ROW) exports (again, to all countries) in j. The ratio of the two expressions is roughly equal to Mexico's share of exports in industry j. Of course, the share will be in part driven by Mexico's size. The denominator adjusts for Mexico's *overall* share of all exports, not just those in industry j. Thus, the overall expression in equation (1) captures, in 1990, Mexico's relative advantage in producing exports in industry j relative to other industries $i \in \mathbf{I}$.

Because we use so many different data sources in this paper (and many of them are well known to economists) we do not have a separate data section and instead in the interest of space briefly describe the data we use in each section and refer readers to Appendix B for more detail. We use data from XXX to calculate the the RCA for each industry j.

How much a U.S. county is likely to be affected by NAFTA depends on its pre-period reliance on employment from industries with the following two characteristics: (a) Mexico has large RCA in that industry, *and* (b) the industry had previously enjoyed tariff protection before NAFTA.

We can now write our full county-level vulnerability measure:

$$\text{Vulnerability}_{c,1990} = \frac{\sum_{j=1}^{J} L^{cj}_{1990}\text{RCA}^j\tau^j_{1990}}{\sum_{j=1}^{J} L^{cj}_{1990}\text{RCA}^j}, \tag{2}$$

where L^{cj}_{1990} is employment of industry j in county c in year 1990 and τ^j_{1990} is the ad-valorem equivalent tariff rate of industry j in 1990. Note that the measure uses only *pre-period* measures of both Mexican RCA and community-level industrial composition, and thus does not pick up any endogenous reaction to NAFTA itself. County-level employment data come from XXX and tariff data from XXX.

There are three conceptual points to discuss about the vulnerability expression in equation (2). First, it is a constant within county—as we take the τ^j values from 1990, it captures how much tariff protection from Mexican RCA a county enjoyed in 1990. The event-study specification asks what predictive value this county-level constant has in each year of the sample period.

Of course, while our τ^j_{1990} are taken from a specific year, the τ^j values in fact change over time, in particular a large decline in the mid-1990s due to NAFTA. Figure 2 shows, separately by quartile of 1990 vulnerability, how the protection measure in equation (2) changes if we allow the τ to follow their *actual* course over time (all other variables in the expression are kept at their 1990 levels, so the value of the four series in 1990 is in fact the average county vulnerability measure, as defined in equation 2, for the four groups). Before 1993, there is little change, as tariff rates were largely stable in this pre-NAFTA period. Between 1993 and 1995, there is a large decline in protection, consistent with NAFTA setting the majority of tariffs to zero within the first year. By 2000, even the most protected quartile of counties by the 1990 measure have essentially zero tariff protection.

Second, as there is little change in tariffs between 1990 and 1993, and between 1994 and 2000 most tariffs go to zero, there is an extremely high correlation between 1990 tariffs and the 1990 to 2000 *change* in tariffs. Thus, "protection" from Mexican import competition in 1990 is essentially the same as "vulnerability" or "exposure" to NAFTA and we use these expressions interchangeably.

Third, while similar in spirit to the ADH measure, one departure is that we focus on statutory changes in tariff protection instead of changes in actual import penetration. We view this modification as somewhat preferable, as actual imports are potentially endogenous to domestic demand (Autor *et al.*, 2013 themselves note this concern, and thus use Chinese import flows to *other* rich countries as an instrumental variable in many specifications). In principle, tariff reductions could have a direct effect on local employment without an actual rise in Mexican imports in once-protected industries: the announcement of the tariff reductions themselves could deter future investment in those domestic industries and thus reduce employment. But in practice, Mexican imports in once-protected industries indeed did rise after NAFTA. Appendix Figure A.2 shows the value of three different groups of Mexican imports to the US from 1990 to 2000: those with no tariff protection in 1990 and

then two groups of industries who enjoyed some protection in 1990 (split at the median 1990 tariff level). While the first group shows no change upon NAFTA's implementation, the other groups do, with a larger effect for those industries enjoying greater levels of protection in 1990. Thus, higher 1990 tariff levels for a given industry does indeed predict larger increases in Mexican imports post-NAFTA.

2.3 Geographic variation in the NAFTA exposure measure

While Figure 2 shows how tariff protection changed over time, Figure 3 shows how protection in 1990 (and thus vulnerability to NAFTA) varies geographically. The upper South exhibits the highest levels of vulnerability, but there are pockets of high-vulnerability areas within most states.

A natural question is how our measure of NAFTA vulnerability varies with exposure to the China shock in Autor *et al.* (2013). Many of the same industries were affected (textiles and apparel, e.g.). However, the correspondence is hardly one-for-one. At the CZ level, the (1990 population-weighted) correlation is 0.172. As noted, ADH often use an instrumented version of their exposure measure, and the correlation in that case is 0.420. Thus, while positively correlated, they are not identical, though in all of our analysis we show results after flexibly controlling for the China-shock measures.

2.4 Characteristics of counties by NAFTA vulnerability

Table A shows a variety of county-level summary statistics, separately by quartile of NAFTA exposure. In terms of size, the most and least exposed quartiles are the most similar, both having few people, workers and firms than the second and third quartiles.

Individuals in our most exposed quartile begin our sample period the most reliant on manufacturing employment and the least likely to have a college degree, highlighting the importance of flexibly controlling for these attributes in order to isolate the effects of NAFTA from secular changes such as skill-biased technological change or the China shock that could also disproportionately hurt these areas.

As the most vulnerable quartile is disproportionately Southern, it is not surprising that it is less white than the other quartiles, as African-Americans have always disproportionately lived in the South. It also begins the period the least supportive of Republican candidates in House elections. While the South was no longer a Democratic stronghold by 1990, Democrats, in part because of their senior positions in Congress, still faired well in House and Senate elections in the region.[7]

[7]See Kuziemko and Washington (2018) on the decline of Democratic party identification among

3 Empirical strategy for event-study analysis

Event-study analyses provide the bulk of the evidence in this paper (an exception being some of the political results in Sections 6 and 7). Indeed, we view as one of our contributions relative to the existing literature on local employment effects of trade agreements is that we present results in a very simple and transparent manner, which allows readers to easily inspect pre-NAFTA trends and to determine if any changes are coincident with the implementation of the agreement.

We generally begin by showing trends for four groups of counties: the four quartiles as defined by the NAFTA vulnerability measure. These trends are based on raw data, unadjusted except for normalization of each quartile to zero at 1993. While this approach is the most transparent, it is more difficult to summarize and to adjust for covariates in a concise manner. We thus turn to a standard event-study approach for the bulk of our analysis, where instead dividing NAFTA exposure into quartiles we simply use (linearly) the measure in equation (2), interacting it with year fixed effects. In particular, we estimate:

$$Y_{ct} = \alpha_c + \gamma_t + \sum_{\tilde{t} \neq 1993} \beta_t \left(\text{Vulnerability}_{c,1990} \right) \times \mathbb{1} \left(t = \tilde{t} \right) + \lambda X_{ct} + \epsilon_{ct}, \tag{3}$$

where Y_{ct} is a given outcome in county c in year t (employment, population, etc.); α_c are county fixed effects; γ_t are year fixed effects, $\text{Vulnerability}_{c,1990}$ is the vulnerability index in c (measured, as discussed in the previous section, using data from 1990); X_{ct} include controls that vary within community over time (which we vary to probe robustness); and ϵ_{ct} is the error term. The exact sample period depends on the outcome variable and data availability, but in general we begin in the late 1980s and end in the early 2000s. We cluster standard errors at the state level.

Note that this equation does not directly use the schedule of tariff reductions implied by NAFTA (and plotted earlier in Figure 2). Instead, we allow the 1990 level of tariff protection to have an unrestricted effect in each year, captured by the β_t coefficients, and plot those estimated effects each year. We prefer to take a more agnostic approach to how the effects of tariffs play out over time and in particular prefer to allow unrestricted effects of the tariffs before 1994 to test for pre-trends.

Southern whites from the 1950s through the 1980s. See Black *et al.* (2009) on how seniority helped some Southern Democratic legislators survive into the 1990s, because even white constituents felt they would be best served by senior insiders.

4 Employment results

4.1 Main county-level event-study results

We begin by examining how employment in NAFTA-vulnerable counties trends relative to other counties around the time of the agreement's implementation. Figure 4 shows our four groups of counties, with data unadjusted except for each group's (log) employment level being normalized to zero in 1993. While in the event-study analysis we weight by 1990 county population (both to match past work as well as to better match to the political results, where counties are essentially weighted by population of voters) in this raw analysis we do not. The four series are nearly on top of one another in the years leading up to NAFTA. But they begin to diverge thereafter. By 2000, the most-exposed quartile has roughly five to ten log-points less than other counties relative to the 1994 baseline. Note also that the second-most-exposed quartile also shows a slowing of employment growth relative to the least-exposed half of counties, suggesting that the effect is not entirely driven by a few counties in the most-exposed quartile.

While Figure 4 has the virtue of transparency, event-study figures can more succinctly show robustness to various specification choices. The first series (squares) in Figure 5 plots the β_t estimates from a version of equation (3) where we control only for county and year fixed effects (so the X_{ct} vector of controls is empty). The coefficient values in the years before NAFTA are all indistinguishable from zero (note that 1993 is the omitted category and normalized to zero) and more importantly show no negative pre-trend in. But beginning in 1994 there is a steady decline in the coefficient values. The event-study coefficient is roughly -1.0 by 2000. Multiplying this coefficient by 0.08 (the difference in exposure between the most- and least-exposed quartile) implies a relative effect of roughly eight log points.

The 1990s was an active moment for state policy experimentation (e.g., the AFDC welfare waivers preceding the 1996 federal welfare reform act, Medicaid expansions, and state-level EITC introductions and expansions), so in the second series we add state-year fixed effects, to capture these policy reforms or any other unobserved change within states across time. The coefficients do not move appreciably relative to the baseline series. We take this specification as our preferred specification.

As noted, an important alternative explanation is that these effects are in fact picking up early stages of the China shock. In the third series, we add (to the controls already noted in the previous specifications) the ADH measure (a constant at the CZ level) interacted with each year fixed effect. To make the test more demanding, we use the IV version of their measure, as it happens to be more highly correlated with our NAFTA-exposure measure. In fact, controlling flexibly for the China shock makes little difference to our results. While it

is perhaps on face surprising that the NAFTA effect appears independent from the China shock, at least in the medium-run timeframe of our analysis, it is predictable. First, while there is substantial overlap in the areas vulnerable to NAFTA and the China shock, as we discussed in Section 2, there is hardly perfect correlation; and, second, as we saw in Figure 1, the real acceleration in Chinese imports happens in the early 2000s.

As shown in Table A, counties that would be more exposed to NAFTA were already different on important dimensions in 1990: for example, they had higher reliance on manufacturing employment and lower rates of college-degree completion. The fourth series in Figure 5 adds 1990 manufacturing share of county employment interacted with year fixed effects, which barely moved the coefficients. The final series is the same, but instead adds 1990 share of adults with a college degree interacted with year fixed effects. Of all the controls we add, this one has the most appreciable effect. Nonetheless, the effects are large, negative and highly significant.

We relegate to Appendix Figure A.5 parallel analysis that allows 1990 share black and share foreign-born to have their own effects. None of these sets of controls effects the shape or magnitude of the event-study coefficients appreciably. Interestingly, this pattern (where controlling flexibly for pre-period education levels has some effect, but similarly controlling for other pre-period county characteristics) holds for our other outcome variables.

4.2 Robustness to randomization inference

Recent work has suggested that designs such as ours may over-reject the null hypothesis of no effect. We thus subject our main results to randomization inference. We in fact devise a more demanding test than randomly permutating tariff values over all industries. Instead, in each iteration, we retain zero tariffs for all industries that in fact had no tariffs with Mexico pre-NAFTA. We randomly draw tariffs *only* for those industries that did have some tariff protection pre-NAFTA.

As the distribution of non-zero tariffs is highly skewed, we cannot approximate it with a normal or uniform distribution as is often done. We instead approximate it with a XXX-degree polynomial, and we show the approximated and actual distributions in Figure **??**. We then XXXXX.

4.3 Related results and additional robustness checks

Appendix Figure A.4 is identical to Figure 5 but instead of log employment, we use the county employment-to-population ratio. Very similar results emerge—if we take our most conservative specification, we approximate that, relative to the least-exposed quartile, most-

exposed-quartile counties in 2000 have lost about 1.5 percentage-points of employment to population ratio since 1993, or 15 jobs per 1,000 population.

So far, we have shown results at the county level. We prefer the county over the CZ as our unit of analysis because CZs are not political units (and in fact often cross states) whereas counties are, which makes them more useful in the political analyses later in the paper. While CZs have the advantage of better capturing labor markets, counties are in fact decent proxies for labor markets as well: in 1990 and 2000 census tabulations, 73 percent of workers lived and worked in the same county.[8]. The employment results for CZs are very similar to those we find at the county level, as shown in Figure **??**. Again as in the county results, 1990-CZ-level college attainment interacted with year fixed effects is the set of controls that attenuates the results the most, but even so the effect of NAFTA is statistically significant and visually apparent in the event-study graphs (though appear more as a negative break in a positive pre-trend).

A potential confounding event is the sudden devaluation of the Mexican Peso in December of 1994. The devaluation made Mexican goods relatively cheaper in the US and could have caused some of the employment effects that we attribute to NAFTA. Our read of the literature is that a consensus has emerged that the devaluation (and the economic turmoil that followed) was triggered by a number of factors: a large capital account deficit funded via short-term loans; a large share of debt held by foreigners; and "euphoria" related to the future prospects of a liberalizing Mexican economy.[9] NAFTA may have played a role in the final factor ("the 'euphoria' was linked to the country being a 'model reformer', as well as its access to NAFTA and OECD, **?**) and if so then the peso crisis is not a confounder but a mechanism.

If the devaluation caused the local employment effects, then we should observe them in all counties reliant on industries for which Mexico is a strong exporter, regardless of 1990 tariff levels. As we show in Appendix Figure **??**, a substantial share of the total value of Mexican imports to the US either had no tariff or a low tariff, so we should be able to separate the two hypotheses. We replicate our employment results from Figure **??** but include as additional controls a *non-tariff-weighted* measure of vulnerability—that is, the expression in 2 but *excluding* the 1990 tariff industry tariff levels τ_j^{1990}—interacted with each year. Our results barely change, suggesting that the patterns we find in our main Figure 5 are driven by the decline in *tariffs*, not a more universal change in relative price levels between the two

[8]For the 1990 statistics, see `https://www2.census.gov/programs-surveys/commuting/tables/time-series/place-of-work/powstco.txt`. For the 2000 statistic, see Table 5 of the following Census publication: `https://www.census.gov/content/dam/Census/library/working-papers/2007/acs/2007_Jiles_01.xls`.

[9]Cites XXX.

countries.

So far we have only examined *total* county employment. As further corroboration, we break down these employment effects by industry. That is, we ask, in NAFTA-exposed counties (those with employment concentrated in NAFTA-exposed industries), was it indeed manufacturing (the most NAFTA-exposed sector) that drive the employment losses we have documented? Appendix Figure A.6 shows that, at least through 1997, almost all of the employment losses were in the manufacturing sector, with losses in the non-manufacturing center small and not statistically significant. Unfortunately, this analysis cannot be extended seamlessly after 1997, because in 1998 the CBP data change from Standard Industrial Classification (SIC) codes to the North American Industry Classification System (NAICS) codes (ironically, NAFTA itself precipitated this switch, to better integrate data across the three countries).[10] After a discontinuous jump in both series between 1997 and 1998, the downward trend in manufacturing employment in NAFTA-vulnerable counties continues.

4.4 Results at the individual level

Most of the analysis of trade-induced employment effects in the literature are, like our results so far, at the geographic level. Of course, county- or CZ-level results are of interest in their own right as they pick up potential effects on other industries or other types of local spillovers. But interpreting these results as informative of the individual-level effect of working in a NAFTA-vulnerable industry is subject to the ecological fallacy.

To more credibly estimate individual-level effects, we turn to the Panel Study of Income Dynamics (PSID). We define an *individual worker i's vulnerability* to NAFTA based on the industry j of their main job in 1990. That is:

$$\textit{Vulnerability}_{j(i)} = \text{RCA}^{j}\tau^{j}_{1990}. \tag{4}$$

Note that the large majority of workers have a zero for their vulnerability (services and non-tradeables would all have a value for zero). We show results both as a function of the *Vulnerability* term as well as dummy for being having any vulnerability at all, as the latter is easier to interpret.

In sum, our evidence on employment levels show a decline employment in exposed versus unexposed counties that begins in 1994. Almost all of this decline is driven by within-state variation in NAFTA exposure, as including state-year fixed effects makes little difference to the event-study coefficients.

[10] See `https://www.census.gov/eos/www/naics/`.

5 Migration and transfer-program response in NAFTA-vulnerable areas

Our results so far show a large and robust loss of jobs in the counties whose 1990 employment was most reliant on NAFTA-affected industries. A natural question is how individuals and households respond to this negative local employment shock. The two margins we focus on in this section are migration and applications to transfer programs, namely Social Security Disability Insurance.

5.1 Population estimates

Economists have long studied how migration responds to local economic shocks. Blanchard *et al.* (1992) found significant migration responses using data from the 1970s and 1980s. While *employment levels* often never recovered from economic shocks during this period, via the migration channel, *unemployment rates* generally did. But researchers using more modern data have found much smaller migration in responses to local employment shocks. The large employment effects of the China shock produced no (Autor *et al.*, 2013) or small and delayed (Greenland *et al.*, 2019) population effects. Beyond import competition as the source of the local employment shock, Yagan (2019) finds no statistically significant effect of the local severity of the Great Recession and out-migration from one's CZ. To the best of our knowledge, no one has examined the migration impact of NAFTA, which falls after the period studied by Blanchard and Katz but before the China Shock and Great Recession.

We use intercensal county population estimates from the Census. The Census produces these estimates by adjusting the decennial count interpolations for each county using annual vital statistics data on births and deaths as well as annual data from the IRS the migration of tax-filers, so they are not merely interpolations between decennial Census counts.

Figure A.18 is the exact analogue to Figure 5 except that log county population is the variable of interest. In contrast to the log-employment results, which showed a downward trend break in 1994 for all of our specifications, we find a series of null-results. None of the specifications shows any break in 1994 or even any real change from 1990 to 2000—the confidence intervals of *all* post-period coefficients from all five specifications include zero. While we let the y-axis naturally adjust (ranging from -.5 to 1), note that the range is much smaller than for the employment results, masking in fact how small the coefficients are relative to the log employment results. In our preferred specification (the second series, with state-year fixed effects), the bottom of the confidence interval for the coefficient in 2000 is roughly at -0.2. We can thus reject with 95% confidence population declines between 1993 and 2000 in the most- versus least-exposed counties greater than $.08 * .02 \approx 1.6$ log points.

Recall that the same calculation (using the point-estimate, not the edge of the confidence interval) suggested a roughly eight log point relative employment decline.

We conclude that despite the large employment effects in NAFTA-vulnerable counties after 1993, their population growth tracks the rest of the country. This result echos historians' description of 1990s Southern mill towns after a major textile employer closed. "Workers' attachments to their jobs and communities—which had been so important as they endured the hardships of mill life—now made it harder for them to find opportunities. These workers failed to fulfill economists' predictions of a new, mobile workforce who would rationally relocate to find new jobs" Minchin (2012b). This finding deepens the puzzling results in past work suggesting that despite large, negative local employment shocks, counties most vulnerable to NAFTA grow at the same rate as other counties.

5.2 Trade-adjustment Assistance

Of course, policy-makers are not completely naive to the possibility of local job losses due to import competition, from NAFTA or other sources. Legislation originating in the 1960s and further defined in the 1970s created a series of measures collectively known as Trade-Adjustment Assistance (TAA). Beyond income support, TAA provides opportunities for training, job search and relocation payments.

To receive TAA benefits, a group of three or more workers must first file a petition with the U.S. Department of Labor's TAA Program within a year of separation from the firm. If the group of workers meets the eligibility criteria, they will be issued a group eligibility certification. Each worker in the group then must make an individual application for TAA benefits through their local American Job Center. Hyman (2018) is one of the few economics papers that studies its efficacy. He uses assignment to investigators with varying leniency and finds that certification leads to short-run benefits that appear to fade within ten years.

We acquire the universe of TAA petition data from 1975 to 2020 from the U.S. Department of Labor. For each petition, the dataset contains information on the name, address, zipcode and the industry code of the firm, the product or service that the worker group is engaged with, and the date the investigation starts.[11] We calculate the total number of certificated workers and denied workers in a county from 1975 to 2020, based on petitions' institution date.[12] For counties with no petitions filled at a given year, we assign a zero

[11]These data also include the date of the petition, which would appear to be a better variable to use to "date" each observation, but it only begins in 1994. However, the gap between petition and investigation is less than a month in the post-1994 data.

[12]We assign all the petition cases to three categories: certification, denial and termination. Termination is not an actual decision but an administrative closing of the case due to petition

number of affected workers.

TAA application and certification data by county-year is extremely skewed: the majority of observations are zero and a few outliers pull up the mean substantially. Log applications are thus not feasible and we instead begin by estimating per capita applications (dividing by 1990 county population) as the outcome in our usual event-study set-up. Figure 7 provide the results. We find no pre-trends in per capita certifications. From 1994 until the early 2000s, the coefficient on vulnerability averages about 0.005 (increasing from the zero baseline of 1993). Though noisier than our previous results, it does appear that TAA certification respond positively to the job losses we documented in the previous section. Translating this effect in our usual comparison of highest- and lowest-exposed quartile, we estimate that in the ten years or so often NAFTA, most-exposed counties saw an increase of 0.4 TAA workers certified per 1,000 population.

Recall that we estimated a loss of about 15 jobs per 1,000 population, suggesting that TAA certification covered less than three percent of NAFTA-related job loss, similar to Autor *et al.* (2013) who found only a small response to the China shock. Of course, our definition of "NAFTA related" is an econometric one—county job loss correlated to 1990 county NAFTA vulnerability occurring from 1994 onward, conditional on a large set of controls—whereas the definition used by TAA investigators will be different. But these small effects motivate us to ask whether individuals in NAFTA-affected counties turned to other transfer programs.

5.3 Disability Insurance

At least since Autor and Duggan (2003), economists have studied whether individuals exposed to negative local economic shocks turn to the federal Disability Insurance (DI) program. Several mechanisms might operate. On the one hand, those with health issues but still capable of some gainful employment might turn to DI for income support if work opportunities dry up. So, holding health status constant, lack of jobs could push marginal candidates to apply to DI (what public finance economists would typically view as moral hazard). On the other hand, lack of employment could exacerbate health issues—mental health issues given the link between job search and depression (Krueger *et al.*, 2011); and physical health issues, given loss of employer health insurance. Minchin (2012b) describes loss of employer insurance as one of the biggest concerns of those who lost textile jobs in the 1990s.

withdrawal or because the case is covered by another petition. We therefore only look at the cases that are either certificated or are denied. Each petition also includes the number of estimated affected workers. See Appendix B for more detail.

To test whether NAFTA led residents of exposed areas to apply to DI, we obtain office-year DI application counts, from 1989 to 2008, from the SSA.[13] We use contemporary district office locations to assign zip codes to district offices.[14] We then match those zip codes to counties based on 1990 geography to create a balanced panel of 778 counties, home to over three-quarters of the U.S. population in 1990.

Appendix Table **??** provides summary statistics for these counties, dividing them into four groups based on NAFTA vulnerability. Appendix Figure **??** shows that our log-employment effects look similar when restricted to these counties as they do in Figure 5 for all counties—so it is reasonable to ask if DI applications respond to employment loss in this subset of counties.

Figure 8 shows the average log DI applications by vulnerability quartile. While we typically relegate this raw-trend analysis to the appendix, we highlight it here since given we have a non-standard subsample of counties in this analysis. Importantly, the distinctive shape of the time-series for all four groups (double-humped, with local maxima in 1994 and 2003) matches that of the entire country (see Appendix Figure **??**), providing some basic validation of our matching procedure. Consistent with a NAFTA-related effect, Figure 8 shows that shortly after 1994, DI applications in the most exposed counties begin to grow more quickly than the other three groups.

Figure 10 shows our standard event-study figure, with log county DI applications as the outcome. There are no pre-trends suggesting an increase in DI applications (if anything, some evidence to the contrary). Depending on the exact specification, applications begin to tick upward in NAFTA-vulnerable counties in 1994 or 1995. By 2000, our state-year specification suggests a roughly ten log-point increase in DI Applications. We estimate that between 1993 and 2000, the most-exposed quartile saw an increase of 0.9 applications per 1,000 residents relative to the least exposed.

5.4 Other outcomes

The increase in DI applications might reflect a deterioration of health, so it is natural to examine health outcomes, and mortality is the most widely available. We do not find clear

[13]We are deeply indebted to Manasi Deshpande for facilitating our access to these data and answering our many questions and to Melissa Kearney for sharing her extract.

[14]While the data do include zip code information for many district offices in *later* years (and thus in principle we do not need to match by office location for these years), to have a consistent matching methodolgy in all years, we match only by the zip code information we find using the contemporary district office locations. Using this methodology, we are unable to match to counties those district offices that closed before 2009, the earliest year to our knowledge that district office locations are available publicly.

results on overall mortality, which will be dominated by the elderly (results available upon request).

An increase in DI applications would in any case reflect the health of the *working-age* population, since a sufficient work history is required for eligibility and the traditional Social Security program, not its DI component, would cover those over age 65. We thus focus on this population, in Appendix Figure **??** regress log of total deaths between ages XX and XX by county and year in our usual event-study specification. While we see an increase beginning in 1996, it is sensitive to including flexibly controls for pre-period college share. We believe these results are suggestive, but do not push them further.[15]

The evidence in this and the previous section suggest deterioration of a number of important socio-economic indicators in NAFTA-vulnerable counties after 1994. Employment declines significantly. Transfer payments rise, but not in the same numbers as our estimated NAFTA-induced job losses. While the data are only suggestive, working-age mortality may also have increased.

6 The political response in areas vulnerable to NAFTA

As noted in the introduction, the debate over NAFTA was a major political topic in the 1992 and 1994 national elections. While Bill Clinton avoided taking a clear stand on NAFTA during the 1992 campaign, he made passing NAFTA in Congress a major goal of the first year of his administration. Perhaps the most memorable example of the administration's push was Vice President Al Gore defending NAFTA in a nationally televised debate against Ross Perot, who emphasized throughout the potential job losses that would arise from the agreement. The debate set a viewership record for CNN that would stand for two decades (Kornacki, 2018). Over 38 percent of registered voters reported having watched all or part of the debate, with an additional thirty percent saying they watched at least a "little" or had since heard or read about it.[16] NAFTA was the subject of at least two Saturday Night Live sketches in 1993, both highlighting the potential job losses for Americans claimed by detractors of the agreement.[17]

Interestingly, even though the easing of trade relations with China had a greater impact

[15]We find similarly suggestive but not robust results when we examine "deaths of despair" (**?**). One complication is this analysis is that we have many zeros at the county-year level, so cannot use a log specification with further aggregation.

[16]The numbers on viewership and awareness of the debate are from the authors' calculations using November 1993 WSJ/NBC survey data.

[17]See `https://www.nbc.com/saturday-night-live/video/mexican-stereotype/n10486` and `https://www.nbc.com/saturday-night-live/video/united-we-stand-america/n10497` for the videos.

in terms of total import value, the topic did not garner much coverage on network news. In Figure **??** we plot, by year, the share of minutes that the three network nightly news programs devotes to stories with the words "trade" and "imports" and "jobs." From the 1980s until 2005, the only period where all three networks show a substantial increase in 1992-1993. In summary, both news programs and American popular culture focused on the issue of globalization, trade and jobs during the debate over NAFTA much more than in the ten years before or after. One possibility we find plausible is that the events of September 11th, 2001 and the resulting U.S. military campaigns in Afghanistan and Iraq crowded out media coverage of trade with China.

By no means are we the first to argue (as we do in this and the next section) that NAFTA led to lasting, negative effects on Democratic identification among regions and demographic groups that were once loyal to the party. Many historians and political scientists have made this argument, though more in narrative than quantitative terms. In general, a theme of *betrayal* emerges. Key groups that had once formed the base of the Democratic party—e.g., union members and other working-class voters—bitterly opposed NAFTA and the Democratic president pushing for it, in what became a highly emotional fight (e.g., anti-NAFTA groups organized candle-light vigils on the White House lawn as the vote in Congress approached). In his book on the 1994 midterm elections, Klinkner (2019) writes: "In a hotly contested and emotional vote, the critics of globalization, led by organized labor and environmental groups, were overcome by NAFTA's supporters, principally corporate lobbyists *and the Clinton administration* [emph. added]." Similarly, Stein (2010) writes about the more market-based shift in the Democratic Party's economic policy: "When it came to measures that the base of his party wanted, Clinton faltered... Clinton had made the NAFTA a priority....and this allowed the Republican opposition to mushroom."

A point emphasized in this literature is that many of the Democratic voters opposing NAFTA may have already felt at home in the GOP in terms of social issues. Minchin (2012b) argues that many textile workers in the 1980s agreed with the GOP on topics such as abortion and gun rights, but continued to vote Democratic because of economic issues such as protection from import competition. With NAFTA, a key reason to vote Democratic and thus against their own positions on social issues disappeared (we more formally test this idea in the next section). It is also important to note that NAFTA was not a one-time deviation from Democrats' traditional position on protecting workers from import competition but the beginning of a more lasting shift. At the time of its 1993 passage, "Clinton told the national press that NAFTA was a 'job winner.' Staking a lot on passage of the agreement, Clinton even termed it 'the symbol of where we want to go in the world' (Minchin, 2017, p. 202)." In the 1996 presidential campaign, Clinton repeatedly cited his opening up the country to

free trade as a major accomplishment of his first term.[18]

6.1 County-level event-study results

Our first set of political results takes the same county-level event-study approach we have used for our local-economic analysis, except that our dependent variable occurs every other year, as we focus on House election outcomes.

Because of the important role of NAFTA in the 2016 election, we extend our post-period to 2016, though readers are free to discard evidence this far from the original 1994 event. Except for the extension of the sample period and our observing the dependent variable biennially instead of annually, the analysis remains identical to those in the previous sections.

Figure 12 shows the House election outcomes using our standard event-study specifications. Unlike the employment and other economic outcomes, which had a clear break beginning in 1994 (the year of NAFTA implementation), our baseline specification shows a break beginning in the 1992 election. Given the large role that the debate over whether to ratify NAFTA played in the 1992 election, it is not clear that 1994 as opposed to 1992 is the most legitimate start of the "post-period" for the *political* analysis.

Adding state-year fixed effects generally does not change the event-study coefficients, though now 1994 appears more like the break in trend than does 1992. It appears that *within states*, NAFTA-exposed counties break from their pre-period trend in 1994, even if the break occurs in 1992 when both within- and between-state variation in NAFTA exposure is considered. As we have found throughout the previous analysis, adding the ADH CZ-level measure interactions with year fixed effects (the second series in Figure 12) makes no appreciable difference to the event-study coefficients. Nor does 1990 county-level manufacturing interacted with each year.

Again, as with previous outcomes, the set of covariates that most attenuates the implied effects of NAFTA are the 1990 college share interacted with year fixed effects. But even with this specification, we find a visually compelling shift in the two-party Democratic share

[18] In the first 1996 presidential debate, he emphasized that free trade was the right thing to do, even though it was controversial. "I've done a lot of things that were controversial. My economic plan, my trade position...Sometimes you just have to do that because you know it's right for the country over the long run." In the second debate, he emphasized that he had opened up the country to trade more than any of his predecessors. "[W]e've had over 200 separate trade agreements in the last four years. By far, the largest number in American history—not just the big ones you read about, but a lot of smaller ones." See and `https://www.debates.org/voter-education/debate-transcripts/october-6-1996-debate-transcript/` and `https://www.debates.org/voter-education/debate-transcripts/october-16-1996-debate-transcript/` for transcripts from these debates.

of vote in House races. In this specification, there is a flat pre-trend with no coefficient's confidence interval exclude zero, but in the post-period an average coefficient value of roughly -0.75 (compared to the other specifications, where the post-period coefficient values are more like -1.5).

What do these magnitudes suggest in terms of actual political outcomes? Taking our preferred specification (the second series, with *state*×*year* fixed effects) the average of the coefficients in the late 1990s and early 2000s is roughly 0.60, suggesting that the most-exposed quartile increase its share of GOP House votes by roughly 4.8 percentage points relative to the least exposed. As Table **??** shows, the baseline for this group was only 0.38, so the 4.8 percentage point swing is very large. Appendix Figure A.12, which presents the data in completely raw form, shows that by 1998, these once-solidly Democratic counties voted as or more Republican in House elections as did any other county quartile.

This by-county analysis will by design miss any institutional shifts precipitated by NAFTA that have cross-county spillovers, such as union organizing. Given the importance of unions to Democratic get-out-the-vote efforts (Feigenbaum *et al.*, 2018), scholars argue the NAFTA fight may have caused lasting damage to the Democrat's ability to organize. "In aggressively pursuing passage of the agreement, the Clinton administration put itself in conflict with organized labor. By attacking one of the Democratic party's most important constituencies, the administration succeeded in further weakening the Democratic coalition and exacerbating the party's organizational decline" (Klinkner, 2019, p. 70).[19]

6.2 Opinions of respondents in NAFTA-vulnerable states

Figure 12 makes clear that, throughout the 1980s, NAFTA-vulnerable counties exhibited a steady Democratic lean in House elections, but beginning in 1994 shift in the Republican direction. While consistent with NAFTA driving this shift, the early 1990s were a politically eventful period which witnessed a Democrat winning a presidential election for the first time in twelve years, the rise of ambitious Republican Congressional leaders such as Newt Gingrich and his 1994 Contract with America campaign, the continued decline of unions (key allies in Democratic get-out-the-vote efforts), and, slightly later in the decade, the growth of political media cable outlets such as C-Span and Fox News.

[19] As Minchin (2017) writes, NAFTA left a huge a lasting rift between the Democratic party and the labor movement: "For many in the labor movement, the resentment left by the administration's support of NAFTA was long-lasting. Even many years later, some staffers felt that Clinton had betrayed them...'We had just managed to elect a Democratic president, Bill Clinton,' recalled [AFL-CIO economist] Mark Anderson. 'The lousy son of a bitch.' Anderson felt 'terrible' after the NAFTA vote, which he viewed as 'hugely personal' (pp. 203-204)."

The first piece of evidence we provide to further our hypothesis that NAFTA played a significant role in this shift is to show that in NAFTA-vulnerable areas, NAFTA was and indeed remains unpopular. While not a demanding test, it would certainly undermine our story if individuals in these areas did not view NAFTA negatively.

We gather all surveys that (*a*) ask a generic sentiment question regarding NAFTA and (*b*) include state identifiers.[20] Very few surveys include county identifiers and none that we know of are representative at the county level, so in this subsection we examine how *state*-level vulnerability to NAFTA predicts residents' views toward the trade agreement. Appendix **??** provides details on the surveys included in this sample. About half are from Pew, though we also include CNN/Gallup, CBS/NYT and Newsweek. Many other surveys (ABC and NBC for example) do not consistently include state identifiers, limiting their usefulness for this exercise.

Table **??** shows how state-level NAFTA vulnerability predicts support for NAFTA. Col. (1) regresses a dummy coded as one if the respondent supports NAFTA on the state-year vulnerability measure, survey fixed effect and no other controls. For now, we include and code as "zero" those who answer that they don't know or don't have an opinion. The coefficient on state-level vulnerability is negative and highly significant. For our state-level measure, the most vulnerable quartile of states have an average vulnerability of 0.04 (compared to essentially zero for the least vulnerable quartile), so the coefficient suggests support is over five percentage points lower in the most versus least vulnerable quartile. Given that only 38 percent of our respondents voice an affirmatively positive view of NAFTA, our estimate suggests support is 14 percent lower in the top versus bottom quartile.

As some of our observations are missing standard covariates, we sacrifice sample size to include them, and in col. (2) we merely re-estimate the col. (1) specification on the sample with non-missing covariates, finding a slightly larger effect on this sub-sample. In col. (3) we show that this estimate barely moves when we add controls for race, sex, education, income, age and union status. These controls themselves have highly significant effects (in the expected directions—with education and income predicting support for NAFTA and union membership prediction opposition) and serve to absorb some variation and thus in fact shrink the standard error on the coefficient of interest. Interestingly, there are only small racial differences. Whites and blacks are both less likely to support NAFTA than the omitted "other" category, whites significantly so. But the coefficients are small and the black-white differences are insignificant. In col. (4) we the nine Census-division fixed effects, which in fact increases the magnitude of our coefficient of interest. While not as granular as our county-level analysis, the result in col. (4) suggests that individual-level

[20]We found almost all of these surveys via iPoll and ICPSR.

opposition to NAFTA reflects the vulnerability of state of residence, not simply broader regional differences.

We view having an opinion at all as endogenous to any number of factors (the political environment, the importance of the issue, etc.) and thus generally include those without an opinion so as to avoid sample selection. But for completeness in col. (5) we replicate the col. (4) specification after dropping those who do not have an opinion. Note that among this group, views on NAFTA are split roughly half-and-half between support and opposition. Our coefficient of interest nearly doubles in magnitude, suggesting that among informed respondents, state-level vulnerability is an even more important predictor of opposition. Comparing again the most versus the least-exposed quartile of states, our estimates predicts about twelve percentage points (22 percent) lower support in the former versus the latter.

In this section we have shown that around the time of the debate over and passage of NAFTA, voters in the most NAFTA-vulnerable counties began their switch from being solidly Democratic in House races toward becoming as or not more Republican than the rest of the country. Consistent with NAFTA driving this effect, voters in the states more vulnerable to NAFTA oppose it more than do residents of other states. The next section provides more support to the idea that changes in the Democratic Party's position on trade was central to this political realignment, though it focuses on views toward trade instead of geography.

7 The political response among individuals averse to free trade

In this final section of empirical analysis, we test the hypothesis that at the time of NAFTA, a significant share of voters with protectionist views shift from the Democrats toward the GOP. We begin with repeated cross-sectional data and then analyze a small panel dataset.

7.1 Evidence from repeated cross-sectional data

7.1.1 Data and empirical approach

In this section, we make heavy use of the ANES. Since 1986 it has asked in most of its surveys a question capturing general protectionist sentiment. In almost all years, the question reads as follows: "Some people have suggested placing new limits on foreign imports in order to protect American jobs. Others say that such limits would raise consumer prices and hurt American exports. Do you favor or oppose placing new limits on imports, or haven't you thought much about this?" We create a *Favor import limits* dummy variable, coded as one if you agree with placing new limits on imports and zero for all others. We will sometimes

describe individuals coded as "one" for this dummy variable as having "protectionist views" or being "protectionist."[21] In all years, the ANES asks partisan ID, a scale variable from 1-7, increasing in support for the GOP, which we use to measure partisan identity. We provide information on the ANES repeated cross-sectional data in the Data Appendix.

We take two approaches in this section. We begin by estimating the following equation, separately by each year t in our sample period:

$$\textit{Partisan scale}_i = \beta_t \textit{Favor import limits}_i + \gamma \mathbb{X}_i + e_i. \tag{5}$$

We then plot the resulting β_t coefficients over time. Note that by estimating this equation separately for each year t in our sample period, we allow the coefficients on the control variables to be unrestricted across years.

We then collapse our sample period into a pre- and post-period, in a differences-in-differences (DD) analysis:

$$\begin{aligned} \textit{Partisan scale}_{it} = & \beta^{DD} \textit{Favor import limits}_i \times \textit{After 1992} + & (6) \\ & \beta^{main} \textit{Favor import limits}_i + \gamma \mathbb{X}_{it} + \mu_t + e_{it}, & (7) \end{aligned}$$

where the β^{DD} is the coefficient on the variable of interest, *Favor import limits*$_i \times$*After 1992*, β^{main} captures how protectionist views predicted party identify *before* NAFTA, and the μ_t term is a vector of fixed effects. This more parametric equation helps facilitate sub-sample analysis in a more succinct manner.

7.1.2 Main results

We show the results of estimating the event-study equation (5) in Figure 13. The first series shows the coefficient estimates from an equation with no controls (so the vector $\mathbb{X}_i$ is omitted), so the plotted points are just raw differences. We see that pre-NAFTA, those with protectionist views were *less* supportive of the GOP. Sometime between 1992 and 1996 (the protectionist question is not asked in 1994) a significant number of protectionist voters moved toward the GOP, so that the raw difference disappears. In Appendix Figure **??** we show this result as two separate series instead of as a difference, and we also include 2016, which shows that in that year there was yet again another movement of protectionist voters toward the GOP, consistent with Trump's anti-trade message.

[21] Note that the ANES cumulative file codes as missing anyone who says they do not know enough about NAFTA or otherwise do not have an opinion. We thus use the individual survey files, which preserve this detail.

In the second series, we add standard demographic and socioeconomic controls: race, sex, age, education, and income. The same 1992-1996 shift toward the GOP among protectionist voters remains, even after allowing these characteristics to have their own effect each year. In the final series, we add controls for trust in the federal government, views (a "thermometer" going from cold to warm) toward African Americans (given the importance of race in U.S. politics), views on abortion, and weekly religious attendance. We are limited somewhat by wanting to use questions that are asked each or most years in our sample. For example, questions on gay rights and regulations on firearms purchases are missing in our pre-period (we are able to add a richer set of controls in our panel-data analysis in the next subsection). As the final series of the figure shows, the large shift between 1992 and 1996 remains even after flexibly controlling for views toward the other salient issues available over our sample period.

Table **??** shows estimates of the differences-in-differences equation. Col. (1) has no additional controls beyond year fixed effects. Consistent with Figure **??**, the coefficient on the main effect of *Favors import limits* suggests that from 1986 to 1992, protectionist views pushed against identifying as a Republican. This tendency is almost completely erased in the post-period. The coefficient on the interaction term is positive and statistically significant. To give a sense of its practical significance, it is over one-half the size of the partisan gender gap (as estimated in our sample), a key divide in U.S. politics.

Col. (2) adds state fixed effects, which we add with the caveat that the ANES warns users it is not representative at the state level. Col. (3) drops state fixed effects and adds instead the same demographic controls in the second series of Figure 13. We do not report the coefficients to save space, but they are of the expected sign (e.g., large positive coefficients on male and white). Note that they indeed add significant explanatory power to the estimation (the R-squared values jumps up by ten percentage points), but if anything they only increase the magnitude on the coefficient of interest. A similar dynamic occurs in col. (4), when we add to the col. (3) specification the controls for other political and social issues.

In the final column, we add *After 1992* interactions with all the controls in cols. (3) and (4), so that these variables, like our protectionist dummy, can have different effects before and after NAFTA. Adding these controls in cols. (3) and (4) significantly increased the $R-squared$ value, consistent with their having large explanatory power *in the cross-section*, but they add only minimal explanatory power in col. (5), suggesting they have limited explanatory power *over changes*.

7.1.3 Heterogeneity

As noted earlier, Minchin (2012b) and others have argued that for many white Democrats in the 1980s, economic issues such as trade policy were key to their loyalty because on social issues such as guns, affirmative action and abortion they sided with the GOP. We thus hypothesize that for these voters, the response to NAFTA will be stronger. For, say, a black voter opposed to NAFTA but who is also strongly pro-choice and suspicious of Republican commitment to Civil Rights, the Democrat's position on free trade would be one of many issues that binds them to the party.

To test this idea, we examine our results in a series of splits that create mutually exclusive and exhaustive subsamples. For each subsample, we estimate the specification in col. (4) of Table **??**. While we cannot examine each of the issues highlighted by past work, we try to proxy many of them with questions in the ANES.

First, we examine our results by race, estimating the col. (4) specification separately for whites and all others, and plotting the results coefficients and standard errors in Figure **??**. As the large majority group, the center of the confidence interval for whites is close to the population average, depicted by the vertical line in the graph. But that for non-whites is much smaller in magnitude, with a (wide) confidence interval that includes zero.

We have already noted the large gender gap in modern U.S. politics, and beginning with the women's liberation movement in the 1960s and 1960s, the Democratic party has highlighted more than Republicans issues of gender equality. We thus hypothesize that white *men* might feel especially at home with the GOP on cultural issues. Indeed, when we split the sample into white men versus all others, the former group exhibits a substantially larger shift toward the GOP among protectionist voters. The same holds for white men without a college degree.

Splitting the sample geographically—South versus the other three Census regions—is interesting for a number of reasons. Southern voters share many of the cultural positions supported by the GOP, though at the same time it is the most heavily African-American region. And, of course, as Figure **??** shows, the South was most vulnerable to NAFTA. We find that the protectionist response is substantially larger in the South. While splitting further by race results in very small samples, we do indeed find (though do not report) that the effect is driven among whites in the South, even though whites and non-whites in our sample have similar views on free trade, in the South and elsewhere. But non-white voters in the South are less responsive, presumably because many other issues bind them to the Democrats.

The final cuts we examine are along two key cultural markers: opposition to abortion and weekly church attendance. Both of these splits of the data reveal large differences

in the responsiveness of protectionist voters after 1992. Among respondents who do not oppose abortion or do not attend church weekly, the "protectionist response" that we propose still exists and pushes in the hypothesized direction, but is much smaller and not always distinguishable from zero.

We conclude from the analysis of repeated cross-sectional data that between 1992 and 1996, voters with protectionist views exhibited a significant shift rightward. As hypothesized by historians, this shift was especially pronounced among individuals who already shared cultural positions with the GOP (at least to the extent we can measure them in our data, namely abortion and religious attendance) and in the South.

7.2 Evidence from panel data

There are at least two limitations to the repeated cross-sectional analysis that we seek to address by using panel data. First, views on trade could be endogenous to party identification, whereas our analysis in Figure **??** and Table **??** implicitly assume the causal arrow operates in the opposite direction. NAFTA signaled that key Democratic leaders were taking a new position on trade, and it is possible that some Democratic voters may change their views on trade to limit cognitive dissonance, thus complicating interpretation of the analysis of repeated cross-sectional data. Second, while the analysis in the previous subsection controls for respondents' views on some key issues besides free trade, we are limited in that we need those issues to be asked in most surveys in our sample period.

7.2.1 Data and empirical approach

The ANES generally fields repeated cross-sectional surveys, but on occasion they run panel studies as well. We are fortunate that once such time is from 1992 to 1994. In 1992 they designate roughly 1,000 respondents for a follow-up survey two years later, of which about 750 in fact take the 1994 survey. Appendix Table XX compares summary statistics between those 1992 respondents who remain in the follow-up sample and those who attrit. We use the weights provided by the ANES to correct for attrition.

We use the same "do you favor imports question" in 1992 that we use in the repeated-crossection analysis. The question is not asked in 1994 (neither in the panel study or in the 1994 cross-section). Instead, we model how any change in partisan identification depends on 1992 views toward trade. In particular, our estimating question is:

$$Moved\,Right_{i,94\text{-}92} = \beta Favor\,Import\,Limits_{i,92} + \gamma \mathbb{X}_{i,92} + e_i, \tag{8}$$

where $Moved\,Right_{i,94\text{-}92}$ is a dummy for having moved toward the GOP on the seven-point scale, and all other definition are as before.

As noted, a key advantage to this analysis is that we only need to observe control variables in 1992, not in all sample years, as we are zooming in on 1992-1994. We can thus control for a richer set of control variables, including the "hot button" issues of the early- and mid-1990s (e.g., gays in the military, the "small-government" initiatives of the Contract with America, and health reform). Note also that views toward free trade are captured in 1992, *before* the emotional battle within the Democratic party over NAFTA. Thus, we can much better address the concern that views toward trade are in part endogenous to party identification.

7.2.2 Main results

Table **??** shows the results from estimating variants of equation (8). Note that we multiply the outcome variable by 100, so the reported mean of the dependent variable indicates that about 26 percent of individuals moved in the GOP direction on the seven-point partisan scale (consistent with the poor showing of Democrats in the 1994 midterm election). Col. (1) shows the results with no controls, and suggests that those with protectionist views had an eight percentage-point higher likelihood of shifting rightward. This effect increases in magnitude when we drop those without an option (col. 2).

Col. (3) returns adds to col. (1) standard demographic controls, which has an negligible effect on the coefficient of interest. Recall, these controls had important predictive power *in the cross-section* in Table 3 but not in explaining changes between 1992 and 1996, and indeed adding these variables increases the R-squared only modestly. In col. (4) we add some standard political control variables. The coefficients on views toward the government helping blacks, demand for a generally active government and abortion rights are all close to zero. Again, these views have strong predictive power in any given year, but by 1992, most people who are, say, opposed to affirmative action, a large public sector and abortion are already Republican, so these controls will have little ability to explain *changes* from 1992 to 1994.

And important and interesting exception is weekly religious attendance, which has a coefficient nearly equal to that on protectionist views. The inclusion of this variable has little effect on our coefficient of interest because the two are nearly perfectly uncorrelated ($\rho = -0.0099$). Thus, the religious represent a distinct group moving toward the GOP around the same time, an important reminder that NAFTA is not the only issue triggering potential political realignment during this moment and an interesting topic for future work.

A nice feature of the panel analysis is that we can control for "issues of the day" in 1992, which may not have stood the test of time in order to be asked repeatedly in the

ANES but which could correlate with views on trade. In the final column, we control for views about gays in the military and health reform (two controversial policies that President Clinton proposed his first year in office but, unlike NAFTA, did not get through Congress) and Congressional term limits (a key item on the Contract with America developed in 1993 by Newt Gingrich, the soon-to-be Speaker of the House after the historic GOP victory in the 1994 midterms). Interestingly, none of these issues have a significant effect, despite their attention in the media.

In the final column, we add state fixed effects (although the ANES warns that its samples are not representative at the state level). Results are unchanged.

We can replicate this analysis using a 1993 question on support for NAFTA *per se*, instead of our 1992 question on protectionist sentiment. Two issues arise. First, the sample becomes smaller. Second, as the question is asked in the fall of 1993 (the peak of the debate over NAFTA as the vote in Congress neared) it is also much more likely to be endogenous to party identity than our 1992 measure. Nonetheless, in Appendix Table **??** we find very similar results in terms of magnitude, those less precisely estimated.

7.2.3 Heterogeneity

Our final empirical exercise of the paper examines heterogeneity in the 1992-1994 response documented in Table 4. As we did in the repeated-cross-sectional analysis, we split the sample into distinct and mutually exhaustive groups and compare the coefficients from estimating the col. (5) specification separately on the two groups.

Figure 15 displays these results. We again find confirmation that protectionist voters who also have socially conservative views on abortion, affirmative action and gay rights are more likely than other protectionist voters to move toward the GOP between 1992 and 1994.

The election of Donald Trump in the US, the successful Brexit campaign in the UK and the rise of right-wing populist parties in Europe have prompted a recent debate about whether these events are best explained by "economic dislocation" or "ethnocentrism" or other social views that modern liberals view as intolerant (or "deplorable," as Hillary Clinton memorably put it during the 2016 presidential campaign). Our results suggest that at least during NAFTA, there is an important interactive effect. As we showed

These results along with those in Figure **??** suggest that there is an important interactive effect between views that liberals view as into

8 Conclusion

In this paper, we make two related arguments. The first is that the counties most exposed to NAFTA experienced significant declines in employment relative to less exposed counties. Transfer programs respond as predicted, though consistent with past work on the China shock, Disability Insurance plays a larger role than Trade-Adjustment Assistance programs. Again consistent with results from the China shock, we find no detectable decline in population and can reject small changes.

We then argue that these regions respond politically by turning away from the Democratic Party. We buttress this argument with micro-data showing that voters with protectionist views—regardless of where they live—move toward the Republican party after 1992. This movement is especially pronounced among white men and groups with conservative views on cultural issues.

The movement of working-class whites away from the Democratic party is one of the most debated topics in U.S. politics. As Piketty (2020) documents, it is part of a larger trend in the rich democracies, as many less-educated voters have left the traditional center-left parties in Europe. In the U.S. context, NAFTA appears to have played an important role in facilitating at least part of this major political realignment.

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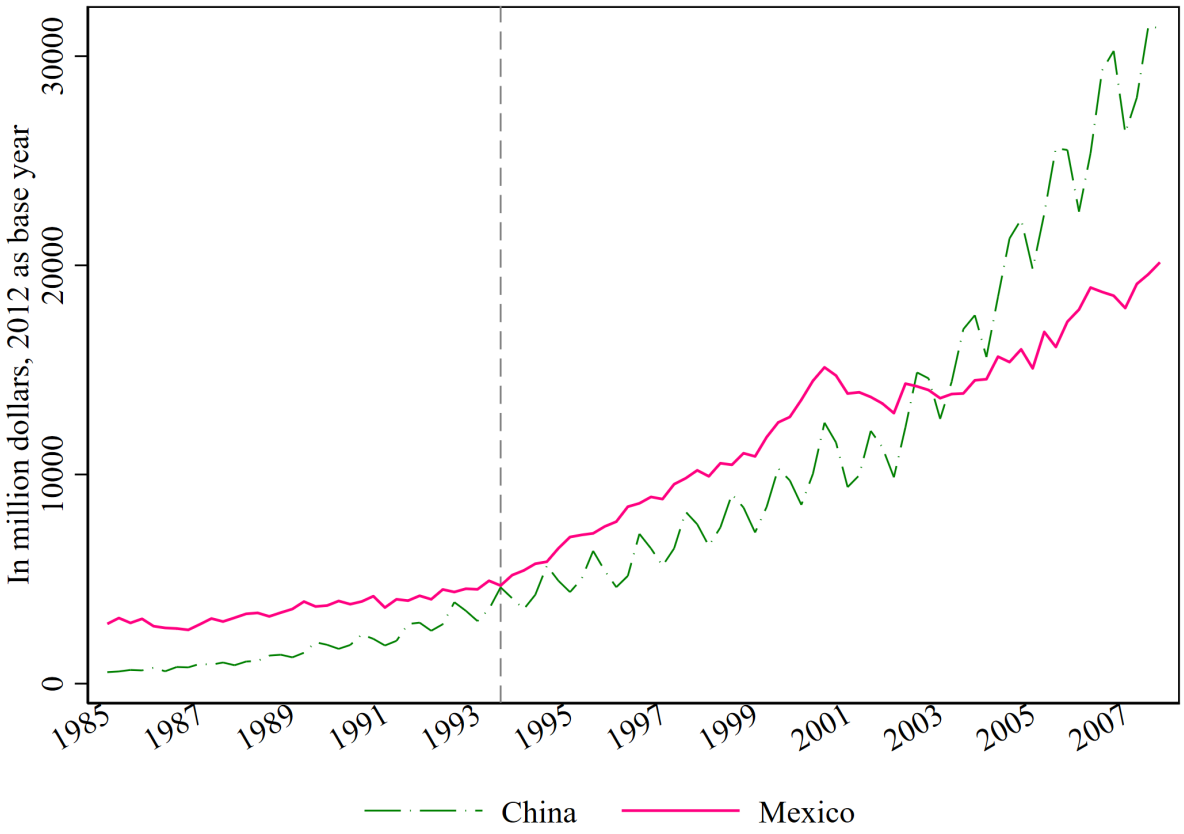
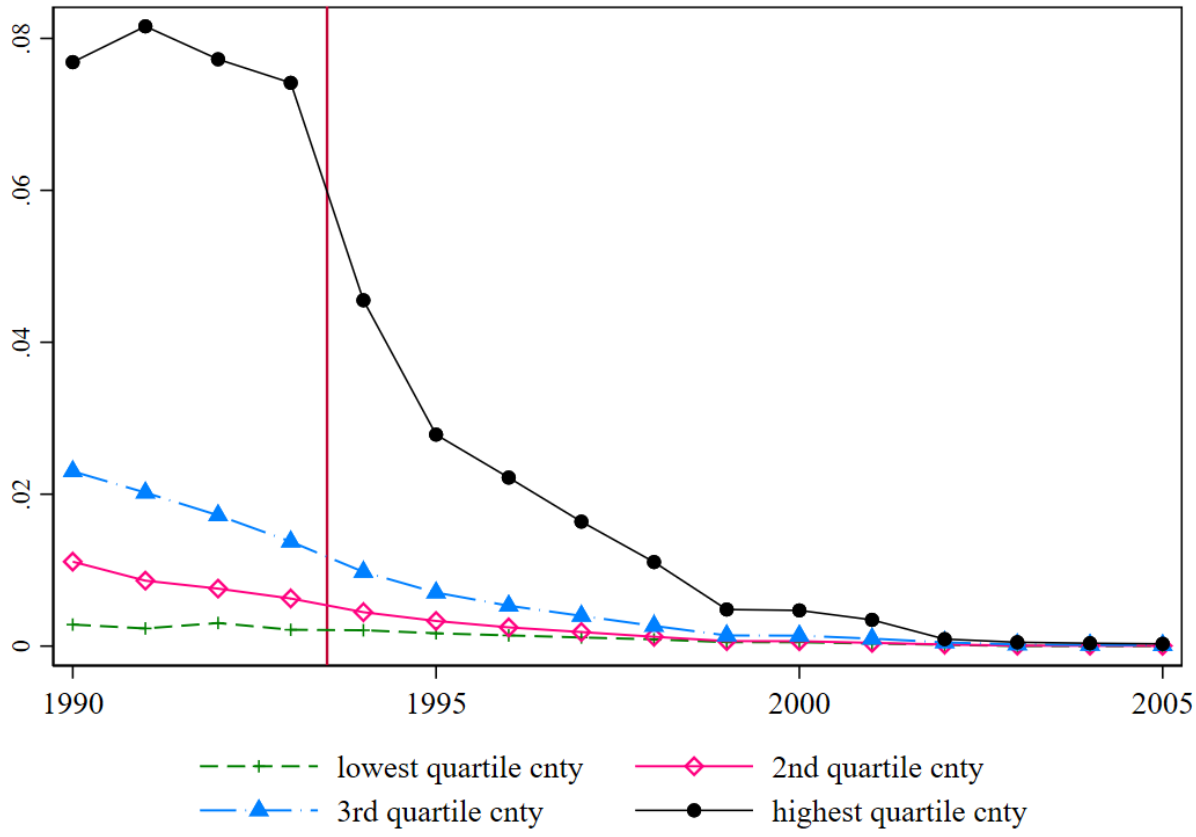
Figure 1: U.S. imports from China, and Mexico



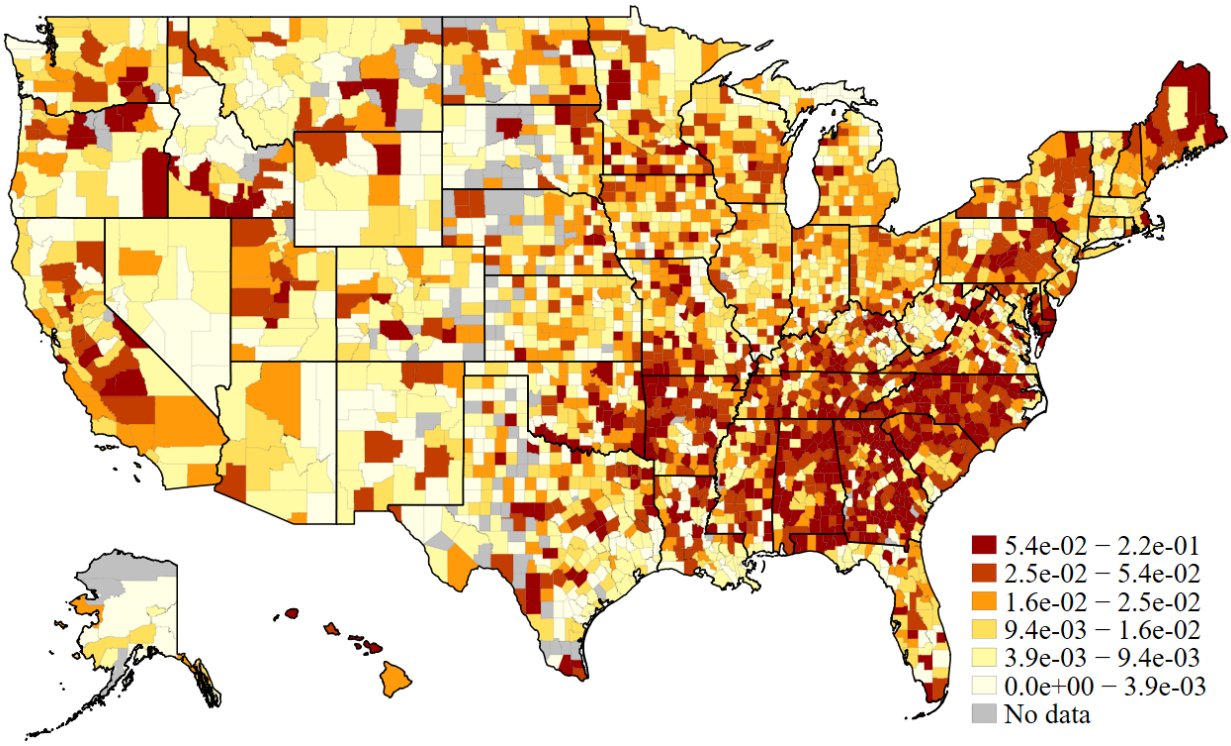
Notes: The figure contains the time series of the value of goods imported by the US, based on the custom basis from China and Mexico (taken from the Federal Reserve Economic Data Series). The import values are inflation-adjusted using the quarterly-level personal consumption expenditures available from the FRED.

Figure 2: Protection across time, by 1990 NAFTA vulnerability quartiles



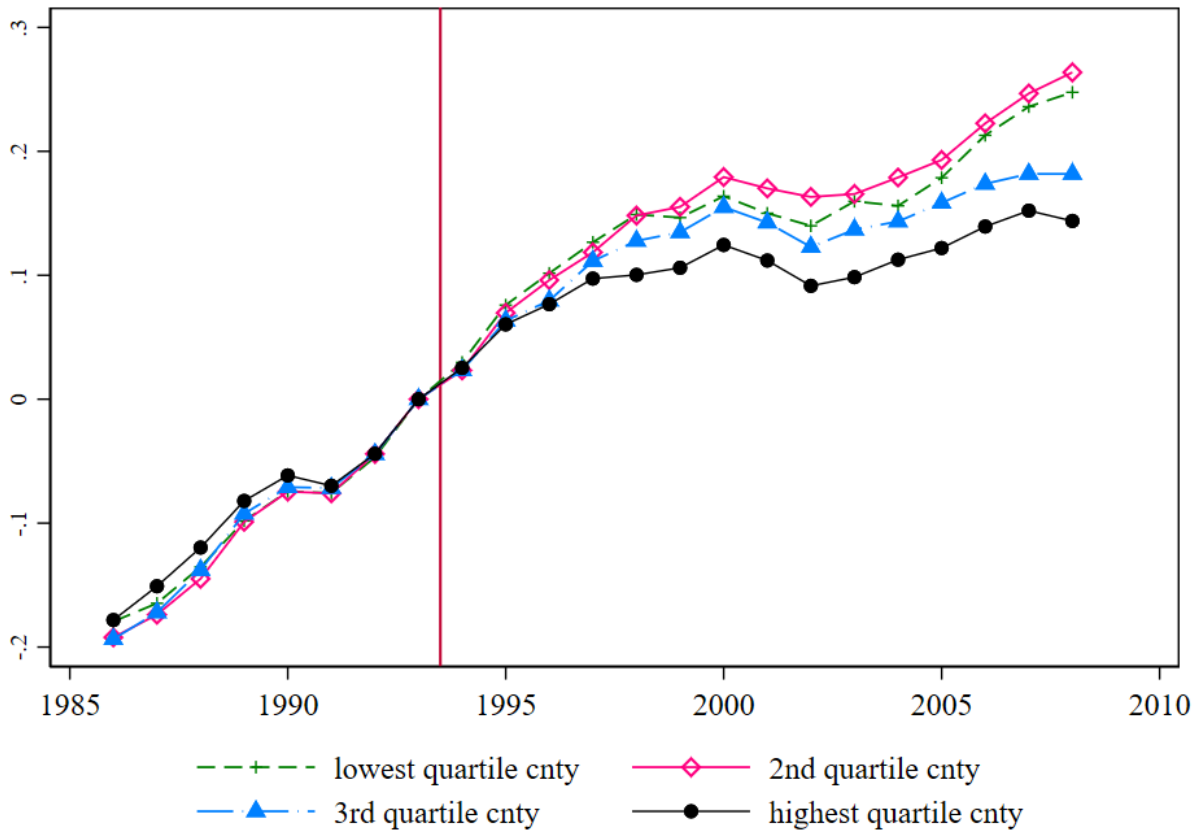
Notes: The figure shows the weighted average tariff protection across time by each quartile of 1990 county-level vulnerability. Note that the values of the series in 1990 are in fact the 1990-based county-level vulnerability we use in much of the paper, as they use 1990-level tariffs τ^{1990} and 1900-level county employment shares across industry. The values in years subsequent to 1990 use 1990-level employment shares but the actual τ^t from that year. We do not use them much in the paper, but plot them here to show the evolution of protection across time.

Figure 3: NAFTA vulnerability across counties



Notes : The map graphs the geographic variation in 1990 county vulnerability. The 1990 county vulnerability is an average of industry-level tariff rate of industries, weighted by industry-composition of the county and industry-level RCA in and 1990.

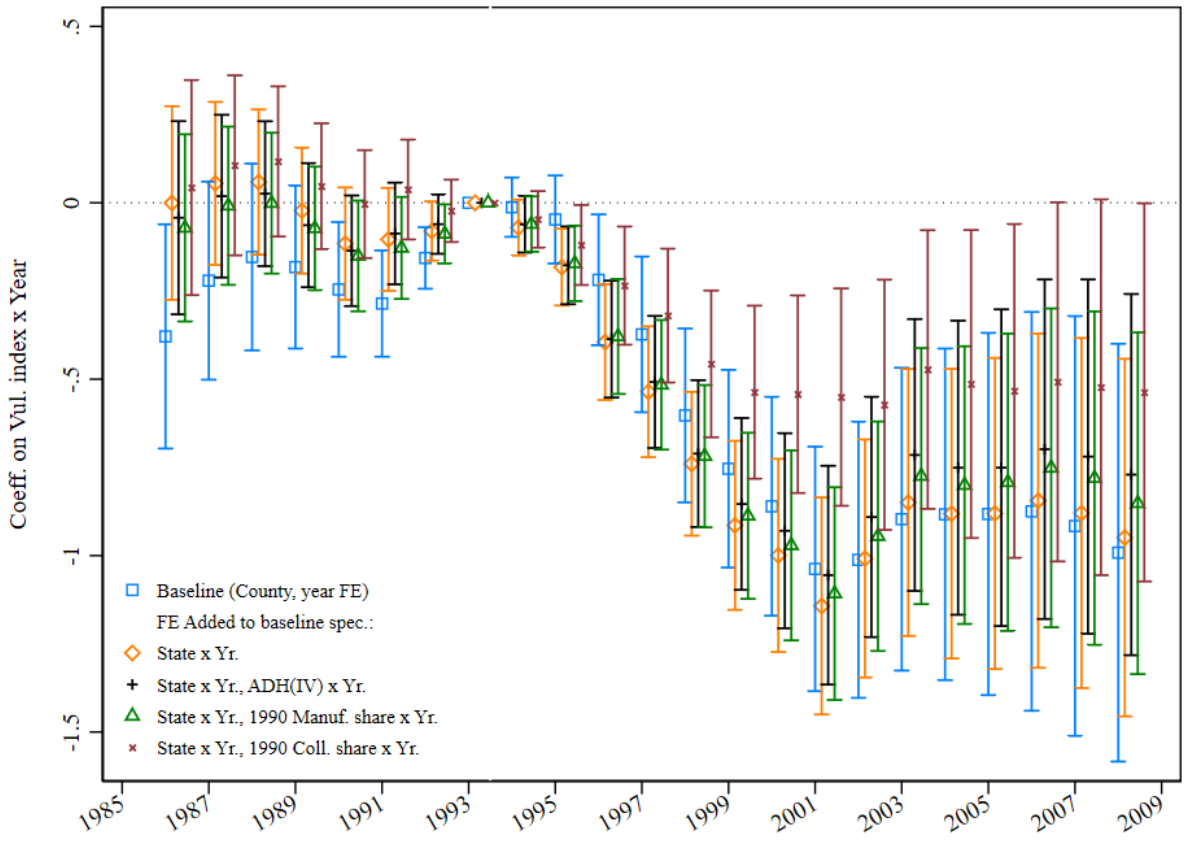
Figure 4: Average log employment for four vulnerability quartiles over time (normalized to zero in 1993)



Sources: XXX. See Appendices B.1 and B.2 for more detail.

Notes : The figure shows log of total employment trends from 1986 to 2008, separately by 1990 county vulnerability quartiles. Log of total employment is computed using the CBPD. We do not weight and other than normalizing to zero in 1993, the data plotted are simply raw annual means within the quartiles.

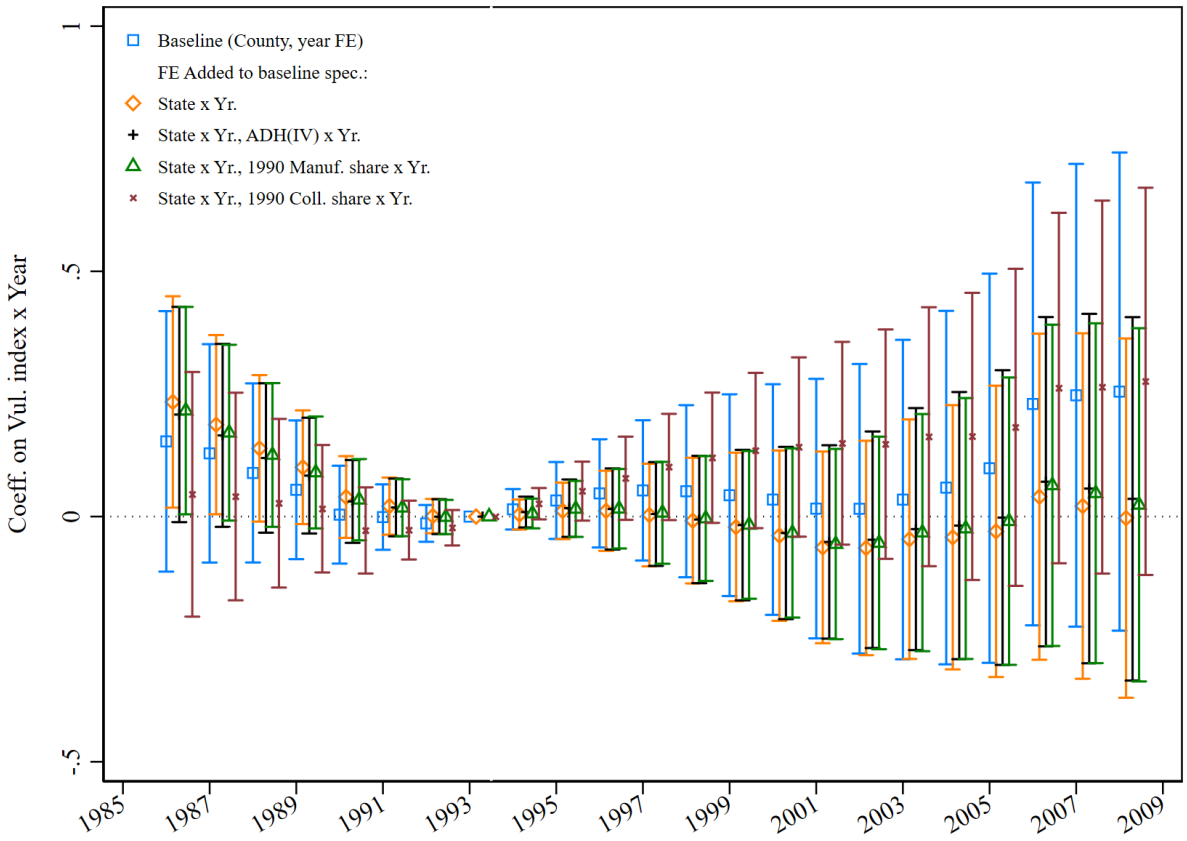
Figure 5: Log employment as a function of county vulnerability



Sources: XXX. See Appendices B.1 and B.2 for more detail.

Notes: The figure shows the event-study coefficient estimates from different specifications of equation (3), where log of total employment is the dependent variable. All specifications are weighted by 1990 county population. The first series shows the coefficient estimates from a specification where we control for only county and year fixed effects. The specification for the second series includes add to this baseline specification $state \times year$ fixed effects. The third specification adds to the second specification CZ-level measure of Chinese import exposure from Autor, Dorn and Hanson (2013) interacted with year fixed effects. The fourth specification adds to the second specification 1990 county manufacturing share of employment interacted with year fixed effects. The final specification adds to to the second specification 1990 county share college graduates interacted with year fixed effects.

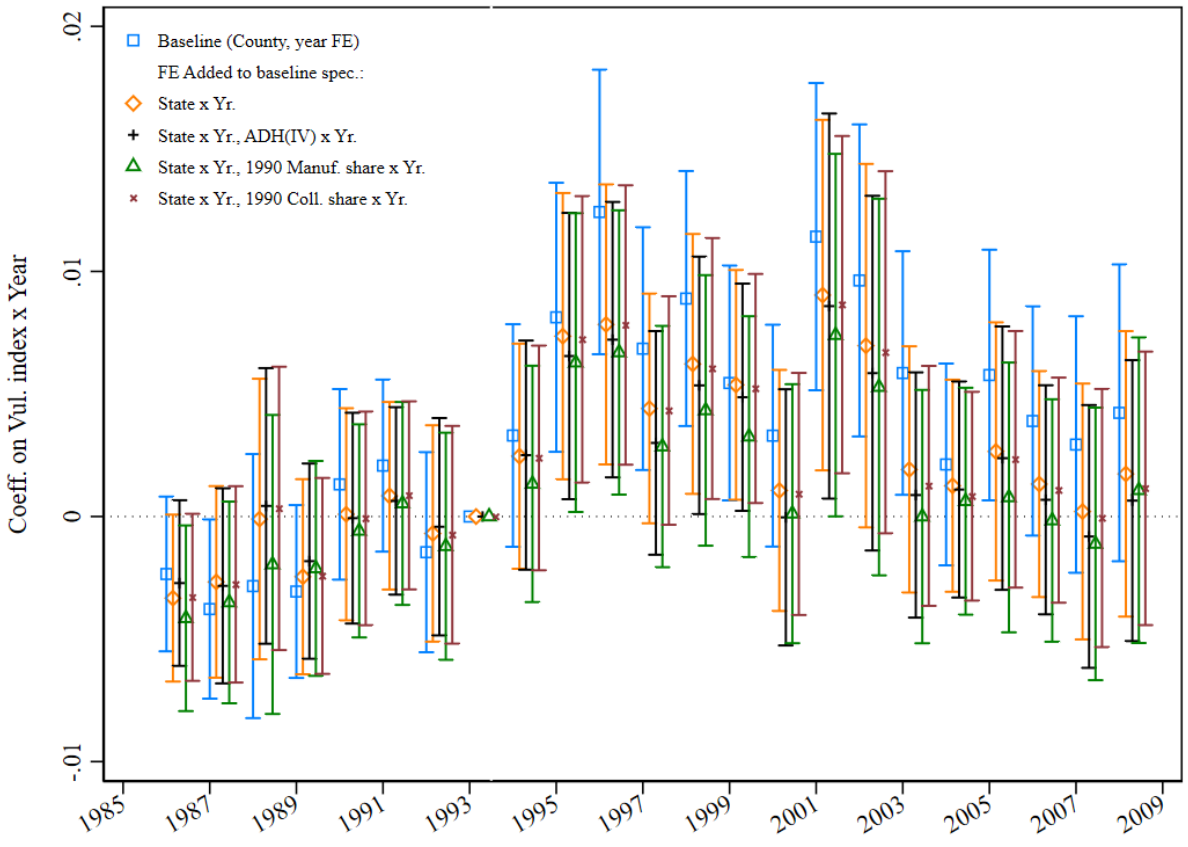
Figure 6: Log population as a function of county vulnerability



Sources: The dependent variable is taken from XXX. See Appendix B.3 for more detail.

Notes : The figure shows the event-study coefficient estimates from different specifications of equation (3), where log of total county population is the dependent variable. All specifications are weighted by 1990 county population. The first series shows the coefficient estimates from a specification where we control for only county and year fixed effects. The specification for the second series includes add to this baseline specification *state*×*year* fixed effects. The third specification adds to the second specification CZ-level measure of Chinese import exposure from Autor, Dorn and Hanson (2013) interacted with year fixed effects. The fourth specification adds to the second specification 1990 county manufacturing share of employment interacted with year fixed effects. The final specification adds to to the second specification 1990 county share college graduates interacted with year fixed effects.

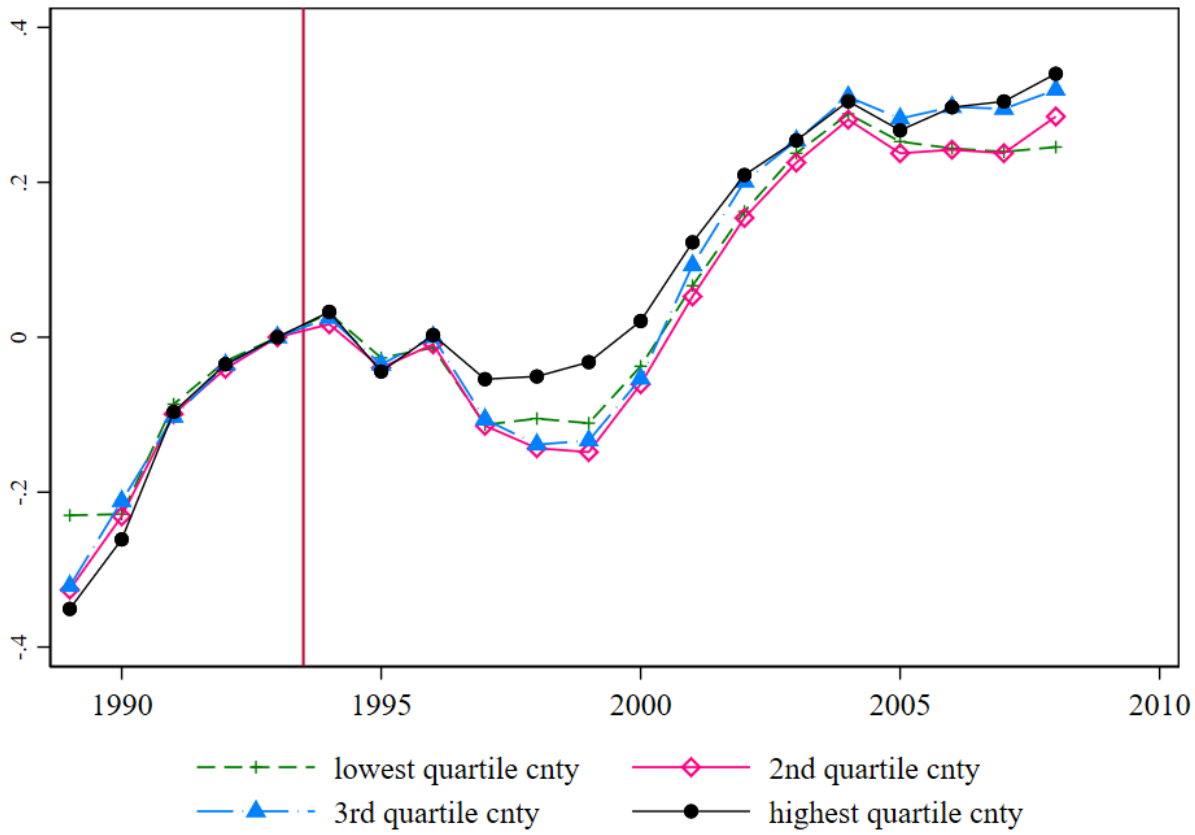
Figure 7: Trade-Adjustment Assistance certifications per capita as a function of county vulnerability



Sources: The dependent variable is taken from XXX. See Appendix B.4 for more detail.

Notes :

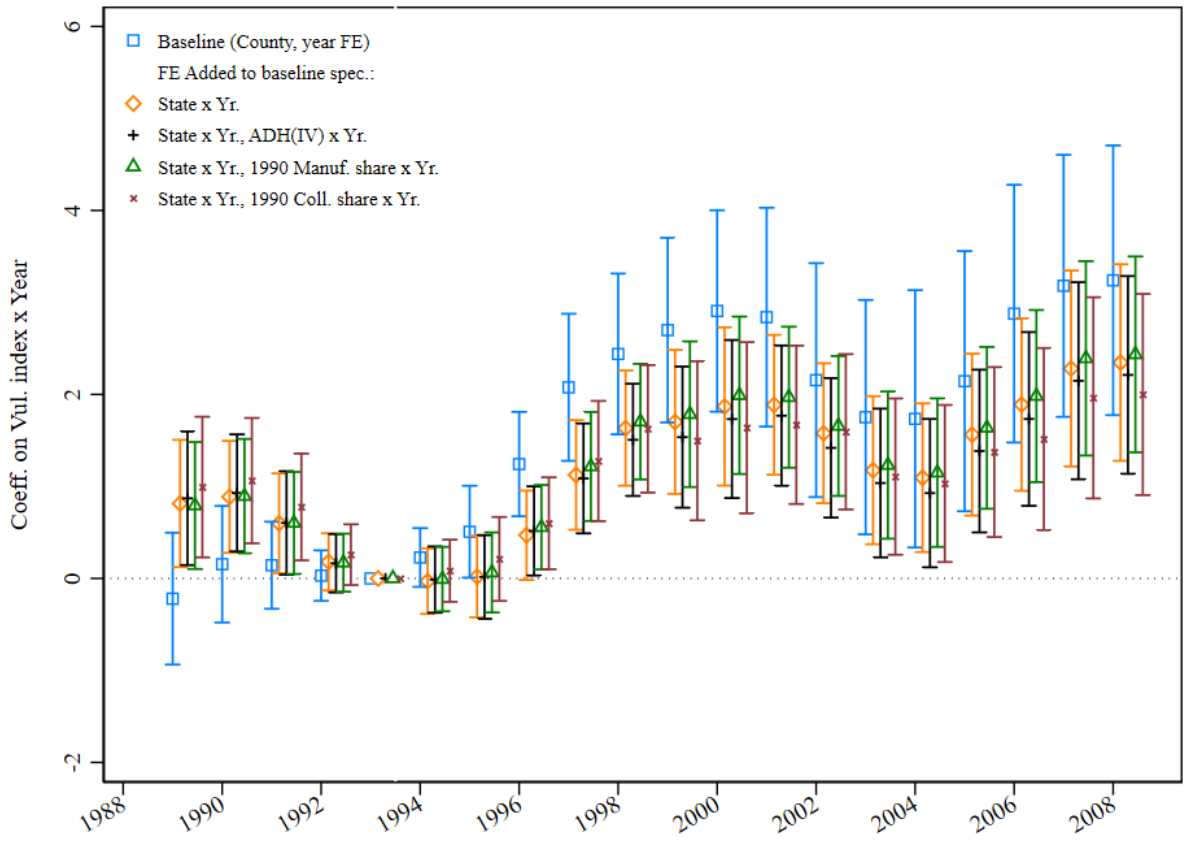
Figure 8: Log DI applications, raw trends by four vulnerability quartiles (1993 normalized to zero)



Sources: The dependent variable is taken from XXX. See Appendix B.5 for more detail.

Notes : The figure shows average log county population trends from 1990 to 2001 by 1990 county vulnerability quartiles. Note that we can only perform this analysis for a subset of counties (see Section 5.3).

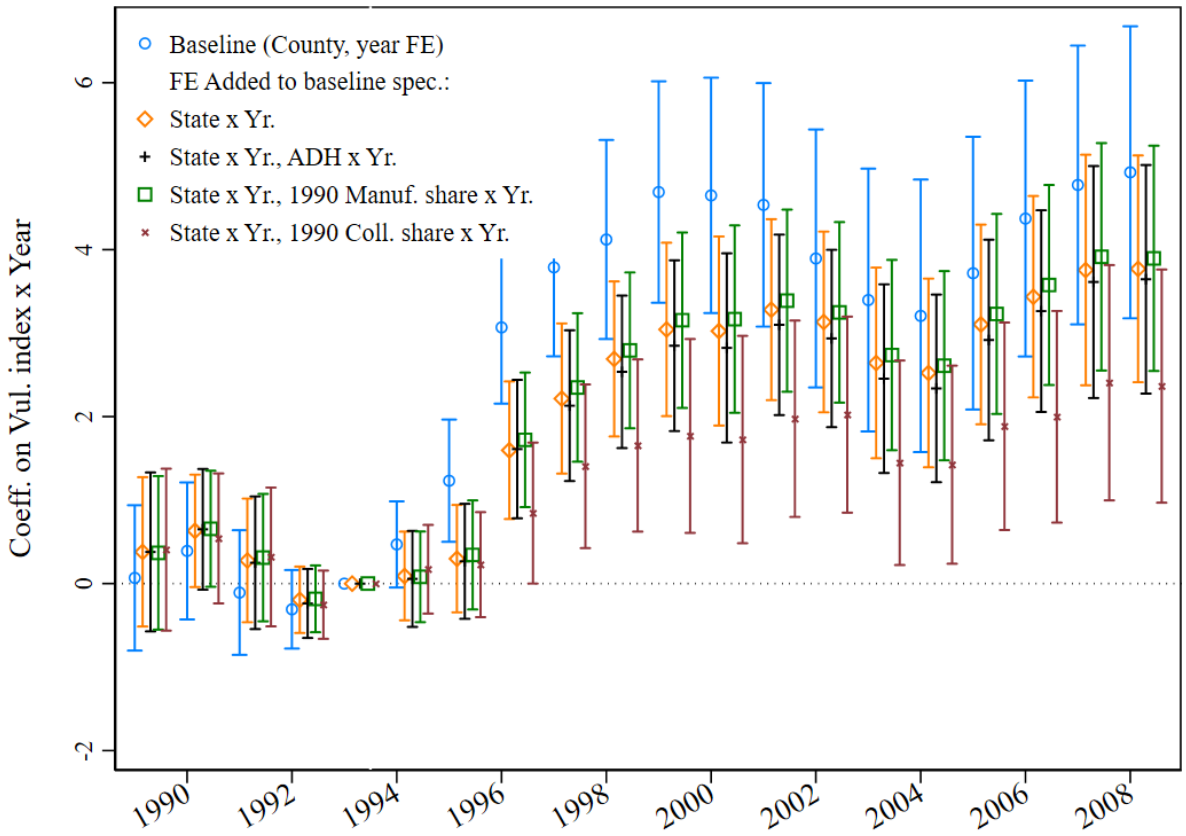
Figure 9: Evolution of Log DI applications as a function of county vulnerability



Sources: The dependent variable is taken from XXX. See Appendix B.5 for more detail.

Notes : The figure shows the event-study coefficient estimates from different specifications of equation (3), where log of tot Disability Insurance applications is the dependent variable. As discussed in Section XX, we do not have all counties in this analysis. See Appendix Table **??** for summary statistics for the subset of counties included in this analysis. All specifications are weighted by 1990 county population. The first series shows the coefficient estimates from a specification where we control for only county and year fixed effects. The specification for the second series includes county and year fixed effects and state-year fixed effects. The third specification includes county and year fixed effects, state-year fixed effects, and CZ-level measure of Chinese import exposure from Autor, Dorn and Hanson (2013) interacted with year fixed effects. The fourth specification includes everything from the third specification, with share of college graduates in 1990 interacted with year fixed effects.

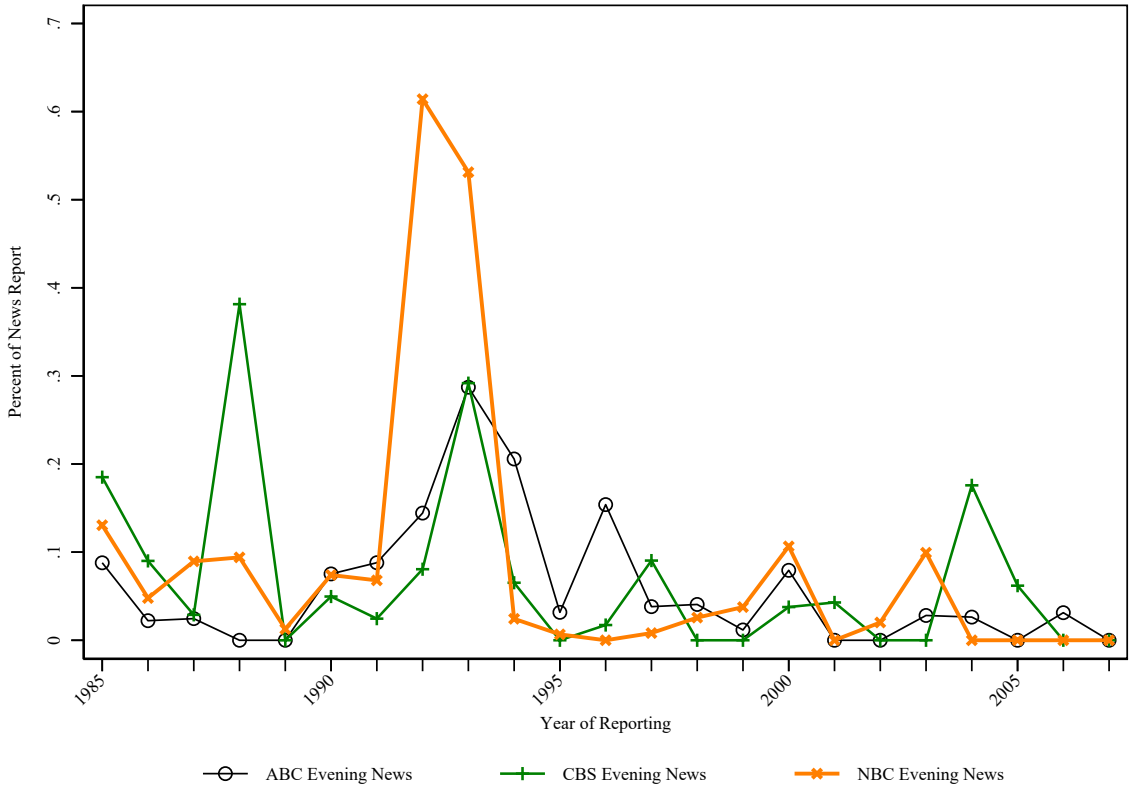
Figure 10: Evolution of Log DI applications as a function of county vulnerability



Sources: The dependent variable is taken from XXX. See Appendix B.5 for more detail.

Notes : The figure shows the event-study coefficient estimates from different specifications of equation (3), where log of tot Disability Insurance applications is the dependent variable. As discussed in Section XX, we do not have all counties in this analysis. See Appendix Table **??** for summary statistics for the subset of counties included in this analysis. All specifications are weighted by 1990 county population. The first series shows the coefficient estimates from a specification where we control for only county and year fixed effects. The specification for the second series includes county and year fixed effects and state-year fixed effects. The third specification includes county and year fixed effects, state-year fixed effects, and CZ-level measure of Chinese import exposure from Autor, Dorn and Hanson (2013) interacted with year fixed effects. The fourth specification includes everything from the third specification, with share of college graduates in 1990 interacted with year fixed effects.

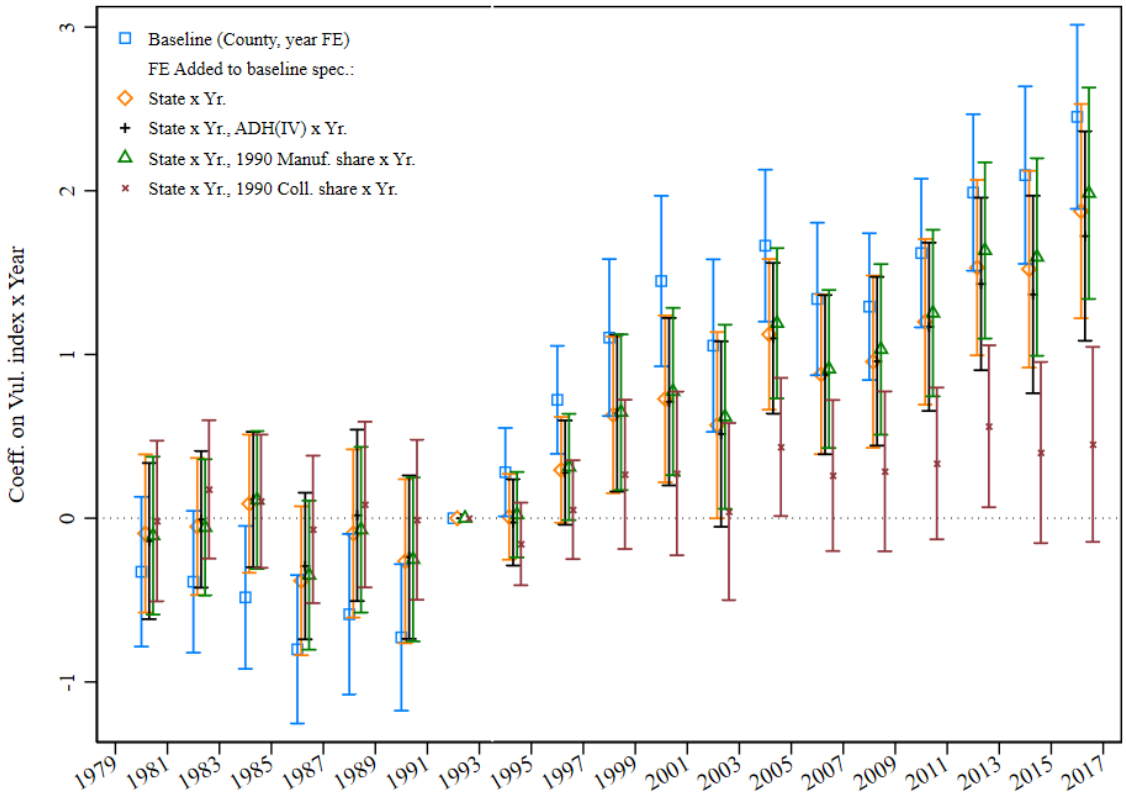
Figure 11: Coverage of trade-and-jobs related stories by network nightly news programs



Sources: Data come from searching The Vanderbilt Television News Archive: `https://tvnews.vanderbilt.edu/search`. See Appendix B.7 for more detail.

Notes: For each year and network, we calculate the share of minutes on the nightly news dedicated to stories that include variants (plurals, capitalizations) the following words: "trade" and "imports" and "jobs" *or* "employment." We exclude any stories (in all years) that include the phrase "trade center" so as not to pick up false-positive hits from stories related to the collapse of the World Trade Center buildings on September 11, 2001.

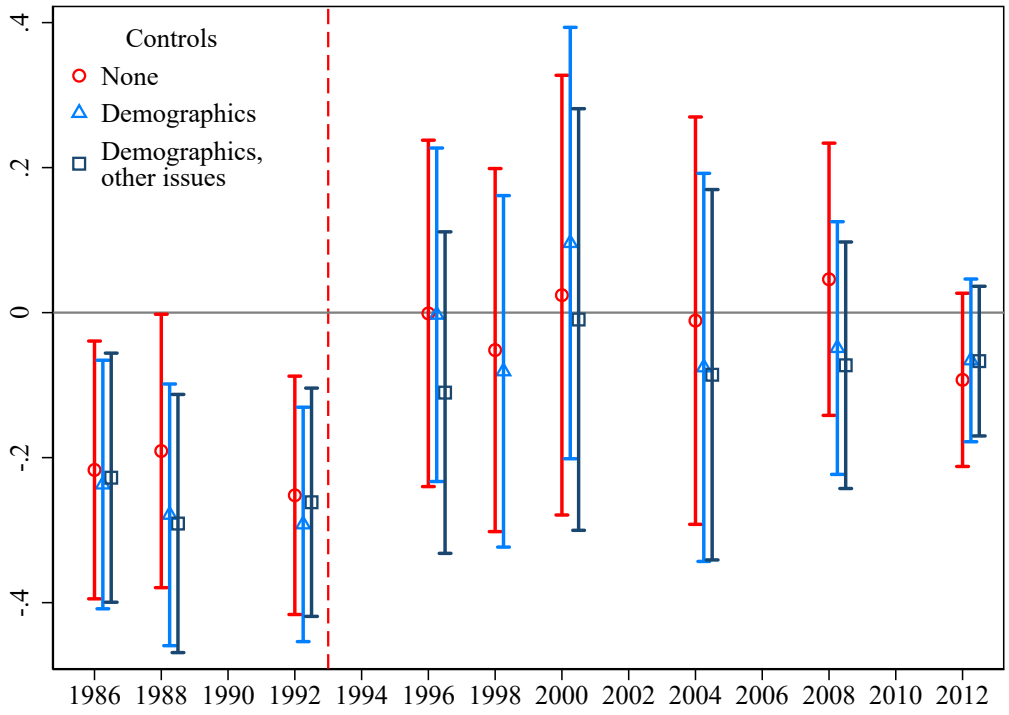
Figure 12: Event-study analysis of the two-party Republican House vote share



Sources: XXXXX. *Sources:* XXXXX. See Appendix B.8 for more detail.

Notes : The figure shows the event-study coefficient estimates from different specifications of equation (3), where the two-party Republican vote share in House elections is the dependent variable. All specifications are weighted by 1990 county population. All specifications are weighted by 1990 county population. The first series shows the coefficient estimates from a specification where we control for only county and year fixed effects. The specification for the second series includes county and year fixed effects and state-year fixed effects. The third specification includes county and year fixed effects, state-year fixed effects, and CZ-level measure of Chinese import exposure from Autor, Dorn and Hanson (2013) interacted with year fixed effects. The fourth specification includes everything from the third specification, with share of college graduates in 1990 interacted with year fixed effects.

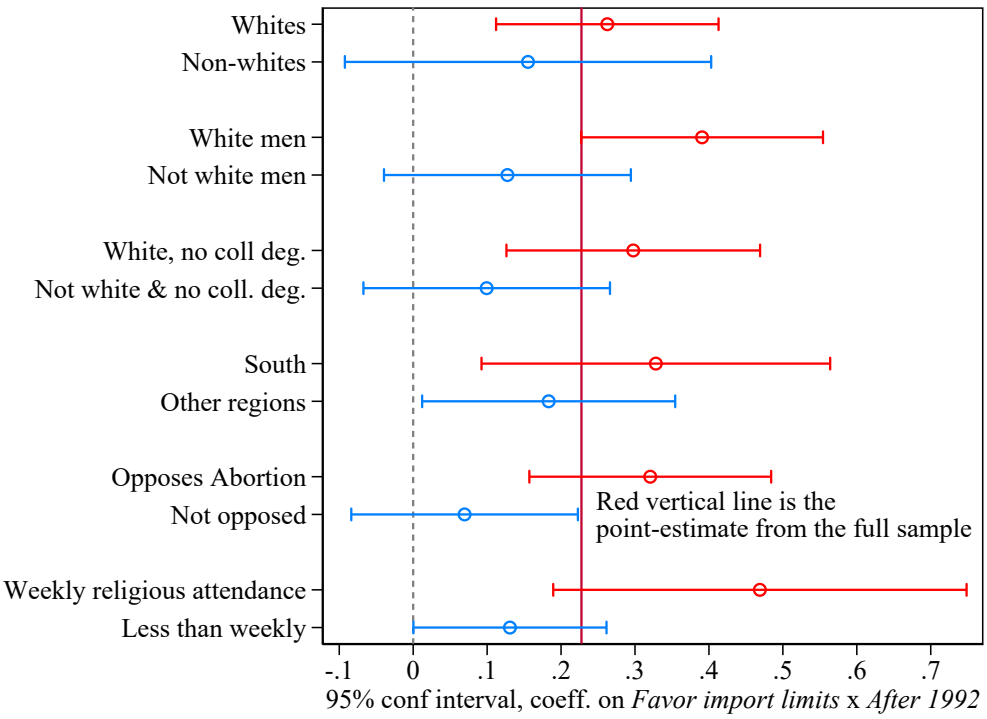
Figure 13: Party identification by free-trade views, regression adjusted



Sources: ANES repeated cross-sectional data. See Appendix See Appendix B.10 for more detail.

Notes: Separately for each year in our sample period, we regress the party-ID scale on the $Protectionist_i$ dummy variable. The first series includes no other controls, so is equivalent to raw differences between protectionist respondents and others. In the second series, we control for gender, age, race, education, and family income. In the third series, we add controls for views on other political and social issues, namely: abortion, trust in government, views toward blacks and views toward welfare recipients (note that not all of these variables are available in 1998, so the third series is missing that year). Note that the analysis underlying the second and third series always estimates regressions separately by year, so the coefficients on the controls are unrestricted across years.

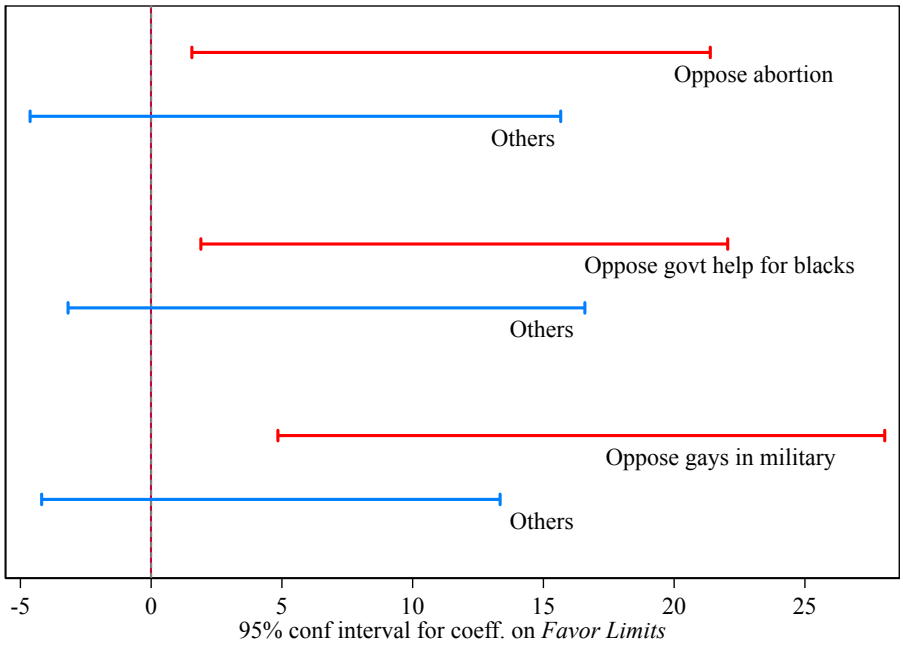
Figure 14: Shifts toward GOP after 1992 among protectionist respondents, results by subgroup



Sources: ANES repeated cross-sectional data. See Appendix B.10 for more detail.

Notes: This figure estimates the regression in col. (4) of Table 3, but separately by subgroups.

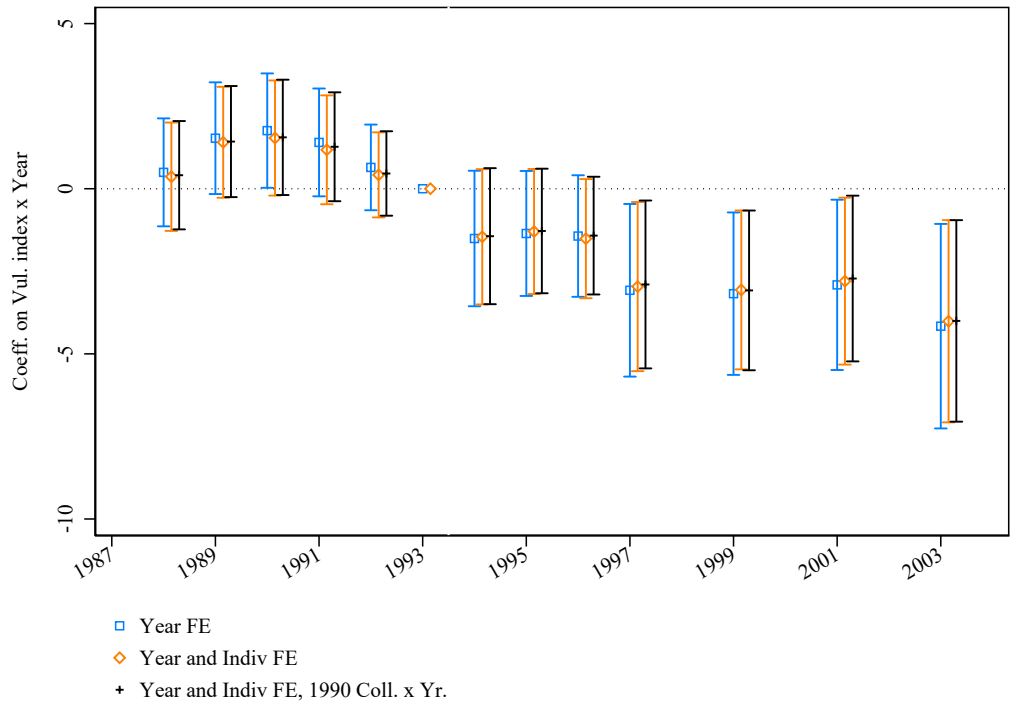
Figure 15: Shifts toward GOP between 1992 and 1994 among protectionist respondents, results by subgroup



Sources: ANES panel data. See Appendix B.11 for more detail.

Notes: This figure estimates the regression in col. (4) of Table 4, but separately by subgroups.

Figure 16: Employment as a function of county vulnerability, PSID sample



Sources: PSID panel data. See Appendix **??** for more detail.

Notes:

Table 1: Pre-NAFTA characteristics of counties, by vulnerability

Quartile (lower quartile : less vulnerable)	1	2	3	4
Demographics				
Population (in thousands)	35.388	139.239	103.993	48.041
Household income (in thousands)	23.439	26.262	24.591	22.121
Emp-to-Pop ratio	.353	.434	.428	.403
Share of white	.907	.905	.904	.845
Share of manufac. employment	.085	.132	.135	.175
Share of college grad.	.132	.158	.139	.113
pre-NAFTA political preference				
Republican house vote share (1980-1988)	.464	.478	.481	.383
Exposure to Chinese imports				
ADH (2013) China shock measure (IV)	.756	.912	1.064	1.596
Number of counties	757	756	755	755

Notes: The table contains average county characteristics by county vulnerability quartiles. The first quartile contains counties with 1990 vulnerability in the bottom 25th percentile, the second quartile between the 25th and the 50th percentile, the third quartile between the 50th and the 75th percentile, and the fourth in the top 25th percentile.tex

Table 2: Approval of NAFTA as a function of state-level NAFTA vulnerability

	Dept. var: Supports NAFTA				
	(1)	(2)	(3)	(4)	(5)
State-level vulnerability	-1.368**	-1.532**	-1.510***	-1.703***	-2.910***
	[0.583]	[0.620]	[0.499]	[0.490]	[0.619]
White			-0.0290**	-0.0206*	-0.0201
			[0.0111]	[0.0111]	[0.0157]
Black			-0.0130	-0.00507	0.0121
			[0.0144]	[0.0140]	[0.0165]
Male			0.0138*	0.0138*	-0.0587***
			[0.00785]	[0.00799]	[0.00857]
No college degree			-0.0696***	-0.0682***	-0.0619***
			[0.00831]	[0.00811]	[0.0114]
Log family income			0.0322***	0.0307***	0.0149*
			[0.00727]	[0.00706]	[0.00753]
Union household			-0.0817***	-0.0758***	-0.104***
			[0.0126]	[0.0120]	[0.0129]
Age / 100			-0.374***	-0.375***	-0.429***
			[0.0255]	[0.0250]	[0.0292]
Dept. var. mean	0.381	0.415	0.415	0.415	0.538
Drop if missing covars	No	Yes	Yes	Yes	Yes
Division FE	No	No	No	Yes	Yes
Drop DK / no opinion	No	No	No	No	Yes
Observations	23297	16143	16143	16143	12431

Sources: Opinion polls from 1993-2015, many of which are from Pew. We include all polls we can identify that (*a*) ask a generic question about NAFTA (e.g., support or oppose; has it been good or bad for the US, etc.) and (*b*) include state identifiers. See Appendix B.9 for survey dates, exact question wording, and other details.

Notes: Survey (which subsume year) fixed effects in all regressions. Col. (1) includes no other controls. Col. (2) replicates the col. (1) specification but on the subsample that has no missing values for the covariates used in subsequent columns. Col. (3) adds the covariates reported in the table. Col. (4) adds Census-division fixed effects. Col. (5) drops respondents who say they do not know enough about NAFTA or do not have an opinion. Standard errors clustered by state.
$^{*}p = 0.1$,$^{**}p = 0.05$,$^{***}p = 0.01$.

Table 3: Partisan identity and views toward free trade, 1986-2012 repeated cross-sections

	Dep't var.: Party ID (1-7, increasing in Republican dir)					
	(1)	(2)	(3)	(4)	(5)	(6)
Favor import limits x	0.182**	0.190**	0.216***	0.228***	0.155**	0.209***
After 1992	[0.0719]	[0.0718]	[0.0699]	[0.0648]	[0.0771]	[0.0653]
Favor import limits	-0.222***	-0.227***	-0.265***	-0.278***	-0.385***	-0.269***
	[0.0706]	[0.0709]	[0.0713]	[0.0708]	[0.0837]	[0.0695]
Dep't var. mean	3.619	3.619	3.620	3.620	3.737	3.620
Controls						
–Demographic	No	No	Yes	Yes	Yes	Yes
–State FE	No	Yes	No	No	No	No
–Issues	No	No	No	Yes	Yes	Yes
–Demogr. x Aft	No	No	No	No	No	Yes
–Issues x Aft	No	No	No	No	No	Yes
Excl. DK	No	No	No	No	Yes	No
R-sq. x 100	0.680	2.787	11.988	16.271	15.462	17.176
Observations	18770	18770	18497	18497	11031	18497

Sources: ANES time-series files (repeated cross-sections), 1986–2012. We include all surveys in this interval that ask the *Protectionist* question (see Section **??**).

Notes: Year fixed effects are in all regressions. Col. (1) includes no other controls. Col. (2) replicates the col. (1) specification but adds state fixed effects. Col. (3) adds to the col. (1) specification basic demographic and other controls: race, gender, education, age, and log of family income. Col. (4) adds to the col. (3) specification views toward abortion, trust in government and feelings towards African-Americans. Col. (5) replicates col. (4) but drops any respondent who says "don't know" in response to the $Protectionist_i$ question (they are otherwise coded as zero). Col. (6) adds to col. (4) interactions between *After 1992* and each of the controls in col. (3) and col (4). Standard errors clustered by state. $^{*}p = 0.1,^{**}p = 0.05,^{***}p = 0.01$.

Table 4: Partisan identity and views toward free trade, 1992-1994 panel data

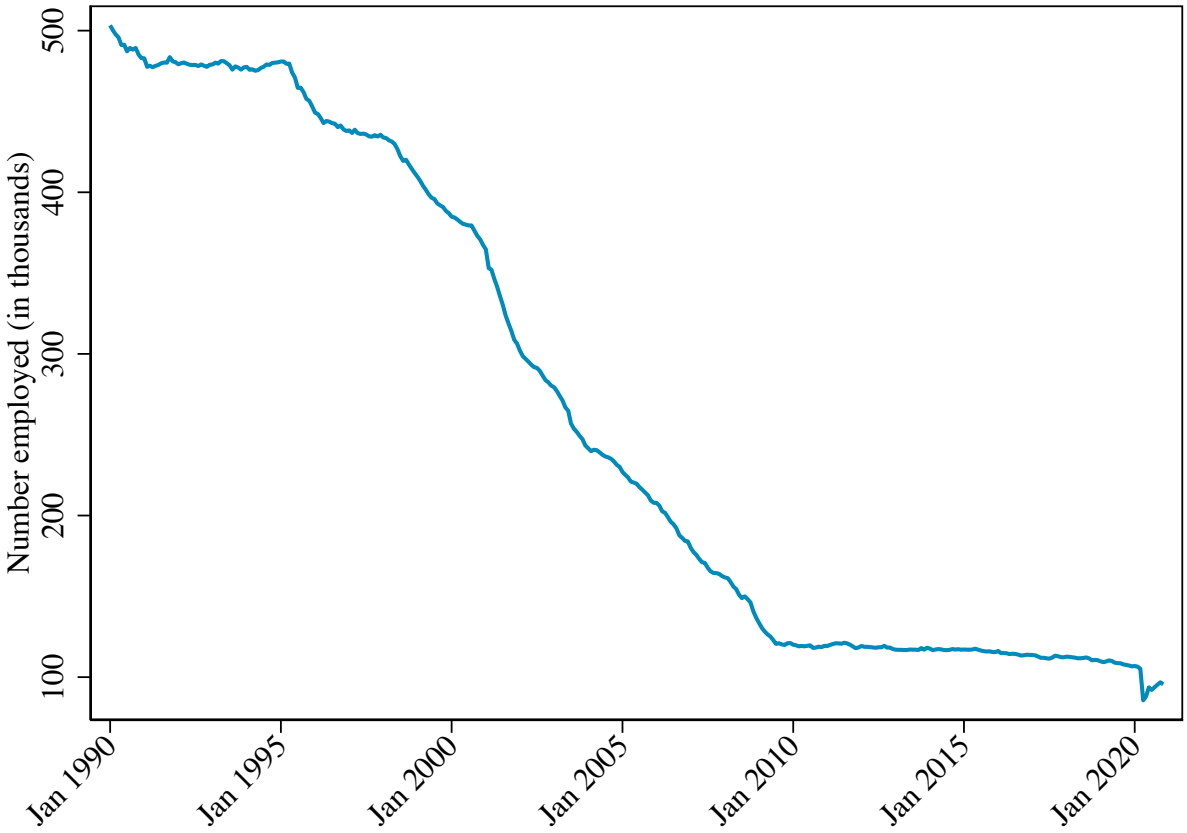
	Move in Repub direction dummy x 100					
	(1)	(2)	(3)	(4)	(5)	(6)
Favor import limits	8.304**	9.530**	8.301**	8.066**	8.805**	8.438**
	[3.325]	[4.108]	[3.443]	[3.576]	[3.727]	[4.060]
Minorities sd help self				1.387	1.484	1.603
				[1.058]	[1.035]	[1.037]
Wants active gov't				-0.922	-0.914	-1.809
				[1.127]	[1.272]	[1.419]
Support abortion				-1.771	-1.098	-1.256
				[1.878]	[2.152]	[2.282]
Attend church weekly				7.757**	8.376**	7.196*
				[3.719]	[3.897]	[4.037]
Oppose gays in military					3.356	2.666
					[7.250]	[7.862]
Oppose gov't health care					-0.515	-0.882
					[0.772]	[0.828]
Favor term limits					-5.913	-5.166
					[3.607]	[4.111]
Dept. var. mean	26.52	26.76	26.49	26.49	26.54	26.54
Ex. DK	No	Yes	No	No	No	No
Demog. covars	No	No	Yes	Yes	Yes	Yes
State FE	No	No	No	No	No	Yes
R-squared	0.00887	0.0104	0.0388	0.0607	0.0657	0.103
Observations	739	553	736	736	731	731

Sources: ANES panel data, 1992-1994.

Notes: The dependent variable is a dummy (multiplied by 100) for whether the respondent moved in the GOP direction in the 1-7 partisan identity scale. All explanatory variables were asked in 1992. "Excl. DK" means that respondents who did not have an opinion are dropped (they are otherwise coded as zero). Demographic controls include race, gender, education, age, log family income, and urbanicity. Standard errors clustered by state. $^{*}p = 0.1,^{**}p = 0.05,^{***}p = 0.01$.

Appendix A. Supplementary Figures and Tables Noted in theText

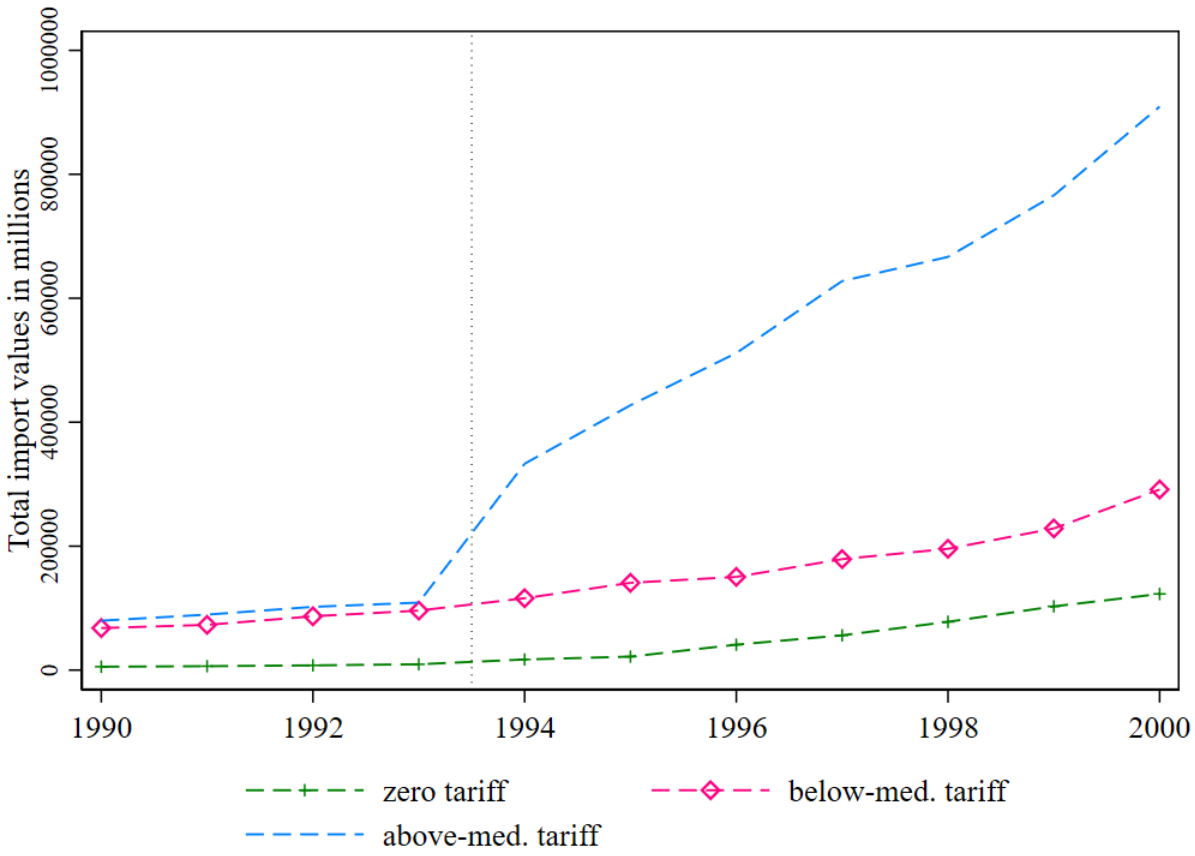
Appendix Figure A.1: Employment in textile mills, 1990-2020



Sources: U.S. Bureau of Labor Statistics, All Employees, Textile Mills [CES3231300001], retrieved from FRED, Federal Reserve Bank of St. Louis;
`https://fred.stlouisfed.org/series/CES3231300001`, December 7, 2020.

Notes: The data series provided by FRED begins only in 1990, so we cannot look earlier in time with the same data series.

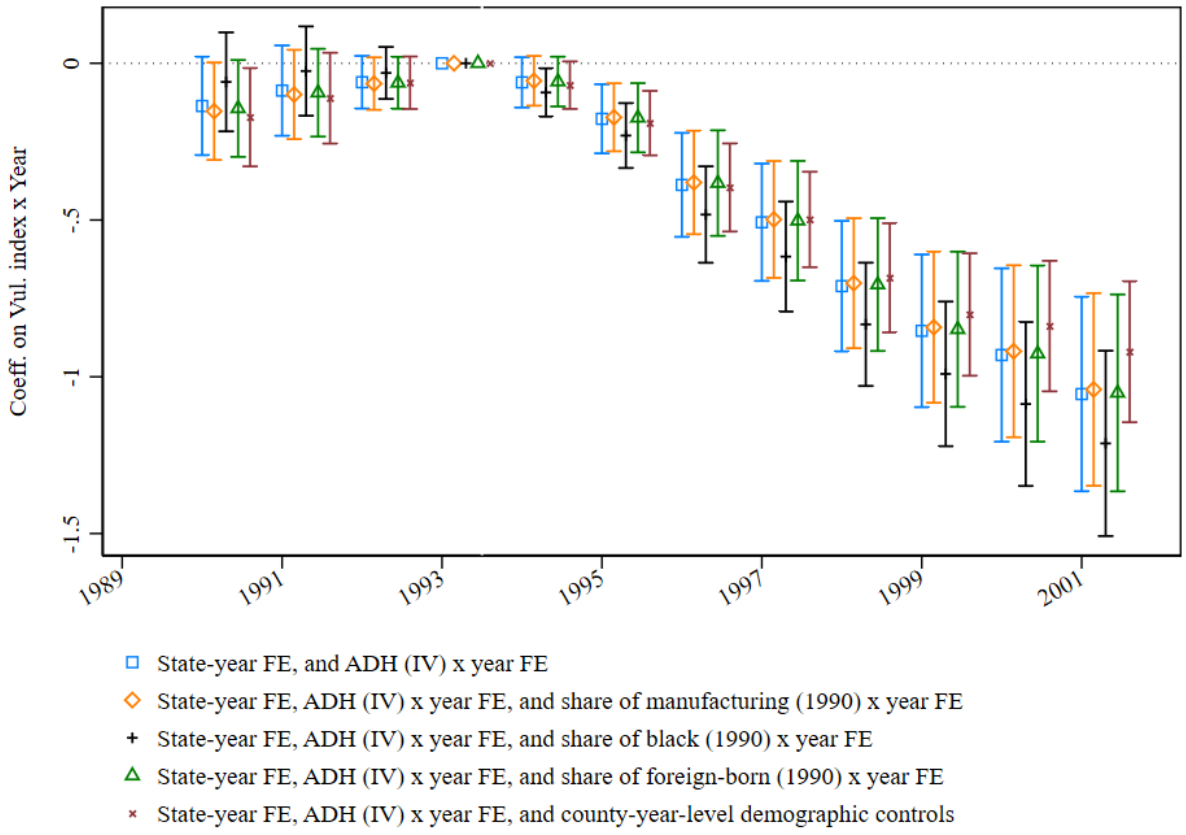
Appendix Figure A.2: Import values from Mexico by 1990 tariff level



Sources: U.S. International Trade Commission (USITC).

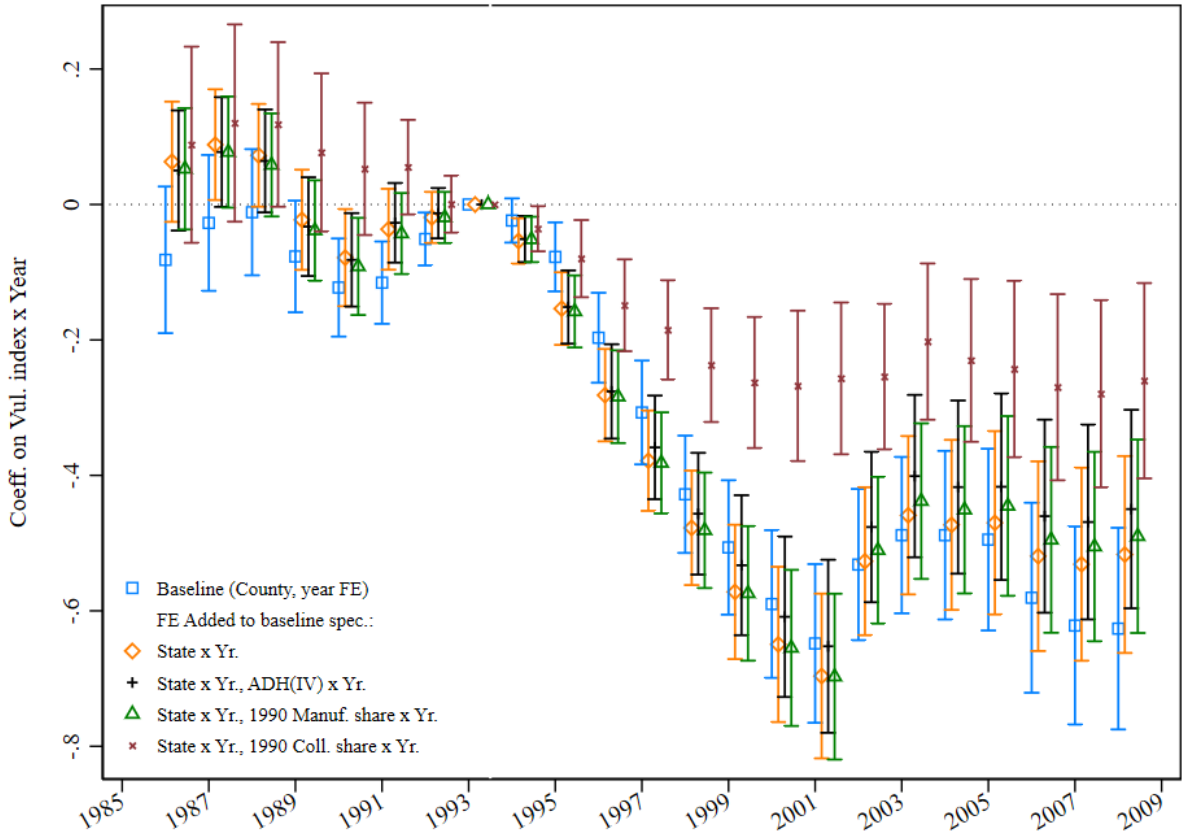
Notes: The figure shows the time series of average import values from Mexico by industries with zero tariff, industries with below-median tariff, and industries with above-median tariff based on 1990 industry-level tariff.

Appendix Figure A.3: Event-study employment graphs, adding additional controls



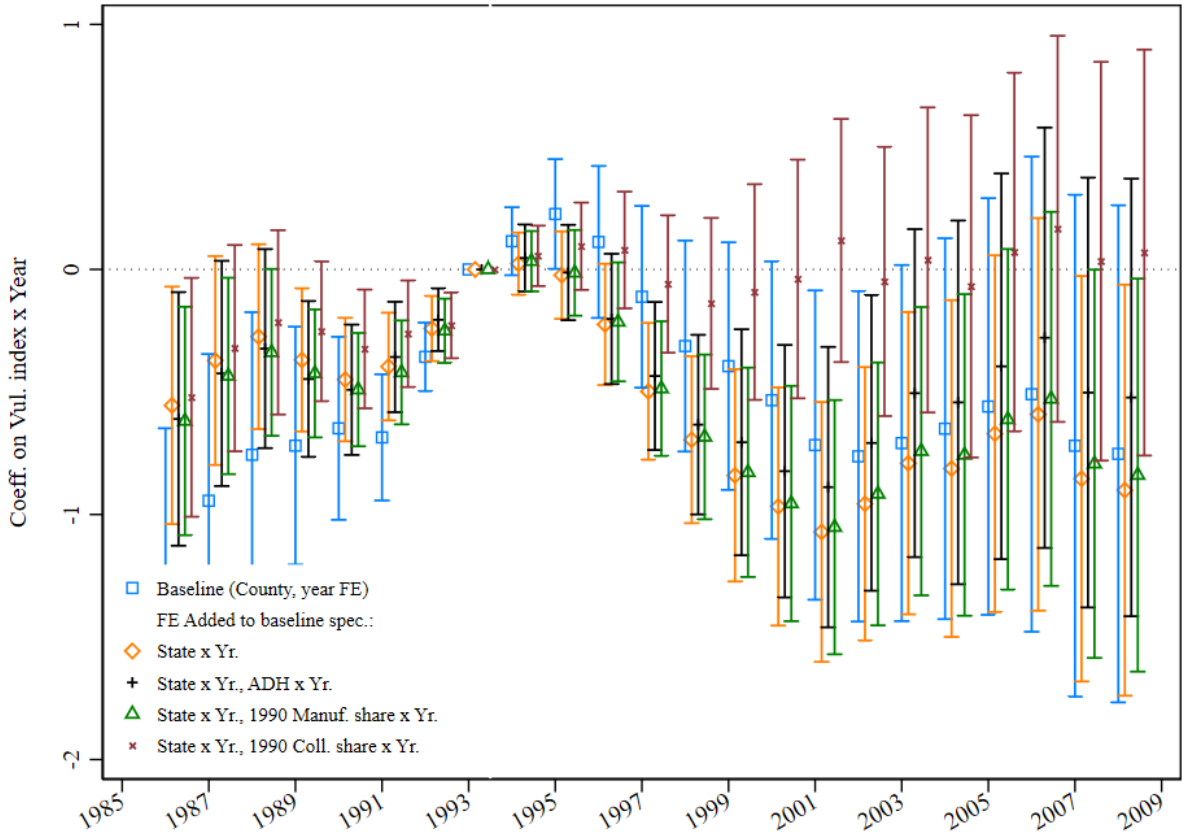
Notes : The figure shows the event-study coefficient estimates from different specifications of equation (3), where log of total county employment is the dependent variable. All specifications are weighted by 1990 county population. The first series shows the coefficient estimates from a specification where we control for county and year fixed effects, state-year fixed effects, ADH China shock measure interacted with year fixed effects. The specification for the second series includes county and year fixed effects, state-year fixed effects, CZ-level measure of Chinese import exposure from Autor, Dorn and Hanson (2013) interacted with year fixed effects, and share of manufacturing in 1990 interacted with year fixed effects. The third specification includes county and year fixed effects, state-year fixed effects, the ADH measure interacted with year fixed effects, and share of black population in 1990 interacted with year FE. The fourth specification includes county and year fixed effects, state-year fixed effects, the ADH measure interacted with year fixed effects, and share of foreign-born population in 1990 interacted with year FE. The fifth specification includes county and year fixed effects, state-year fixed effects, the ADH measure interacted with year fixed effects, and share of college graduates in 1990 interacted with year fixed effects.

Appendix Figure A.4: Evolution of employment-to-population ratio, as a function of NAFTA vulnerability



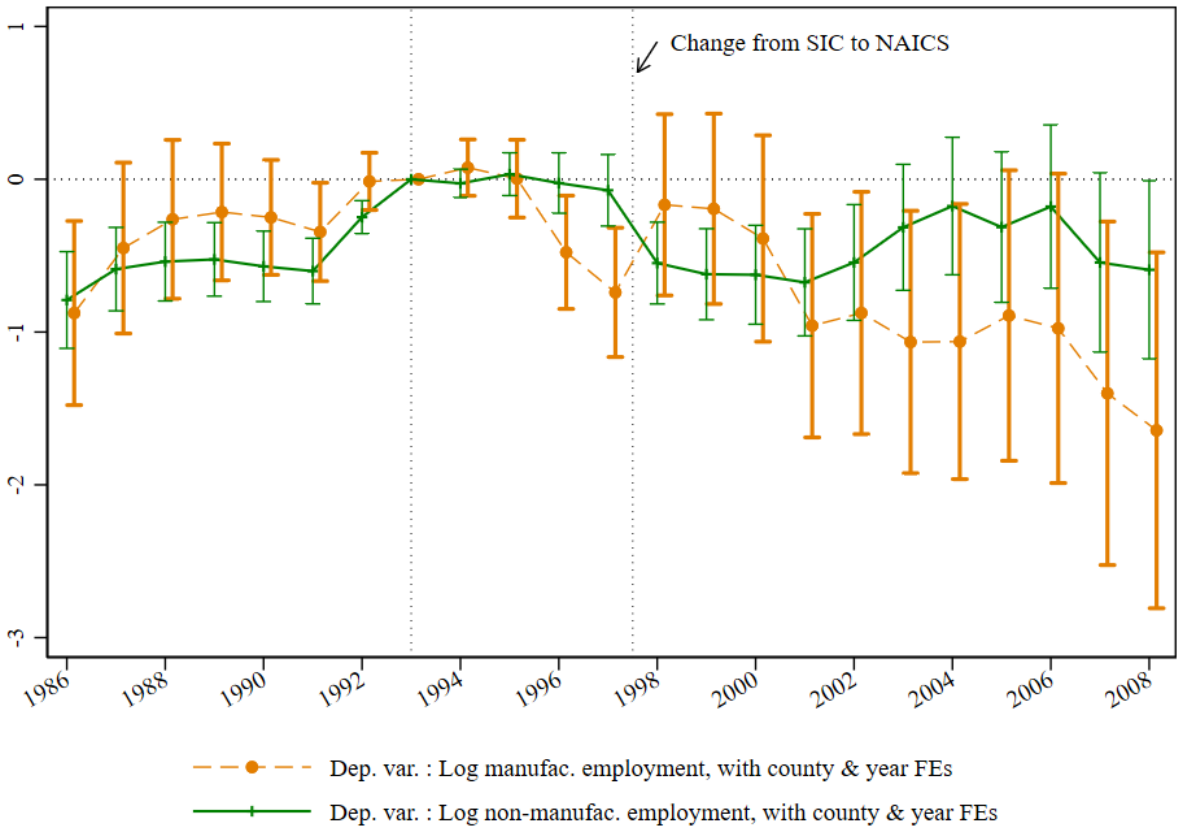
Notes: The figure shows the event-study coefficient estimates from different specifications of equation (3), where the log of the county employment ratio is the dependent variable. All specifications are weighted by 1990 county population. The first series shows the coefficient estimates from a specification where we control for only county and year fixed effects. The specification for the second series includes add to this baseline specification *state*×*year* fixed effects. The third specification adds to the second specification CZ-level measure of Chinese import exposure from Autor, Dorn and Hanson (2013) interacted with year fixed effects. The fourth specification adds to the second specification 1990 county manufacturing share of employment interacted with year fixed effects. The final specification adds to to the second specification 1990 county share college graduates interacted with year fixed effects.

Appendix Figure A.5: Evolution of log CZ employment, as a function of NAFTA vulnerability



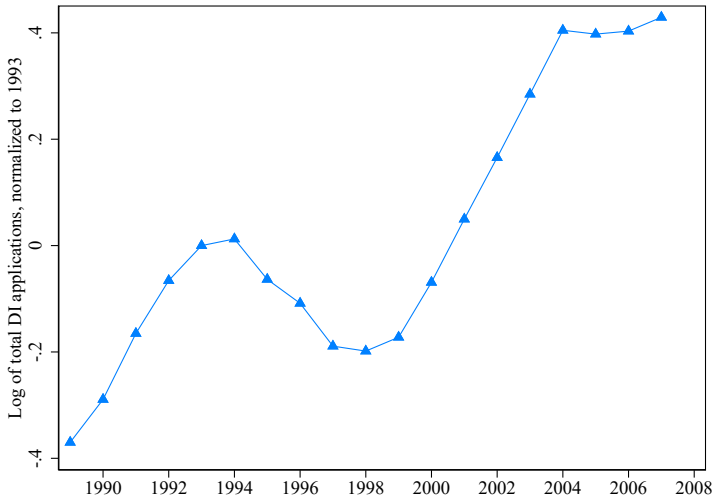
Notes: The figure shows the event-study coefficient estimates from different specifications of equation (3), where log of total county employment is the dependent variable. All specifications are weighted by 1990 county population. The first series shows the coefficient estimates from a specification where we control for county and year fixed effects, state-year fixed effects, ADH China shock measure interacted with year fixed effects. The specification for the second series includes county and year fixed effects, state-year fixed effects, CZ-level measure of Chinese import exposure from Autor, Dorn and Hanson (2013) interacted with year fixed effects, and share of manufacturing in 1990 interacted with year fixed effects. The third specification includes county and year fixed effects, state-year fixed effects, the ADH measure interacted with year fixed effects, and share of black population in 1990 interacted with year FE. The fourth specification includes county and year fixed effects, state-year fixed effects, the ADH measure interacted with year fixed effects, and share of foreign-born population in 1990 interacted with year FE. The fifth specification includes county and year fixed effects, state-year fixed effects, the ADH measure interacted with year fixed effects, and share of college graduates in 1990 interacted with year fixed effects.

Appendix Figure A.6: Evolution of log employment as a function of NAFTA vulnerability, separating manufacturing v. other industries



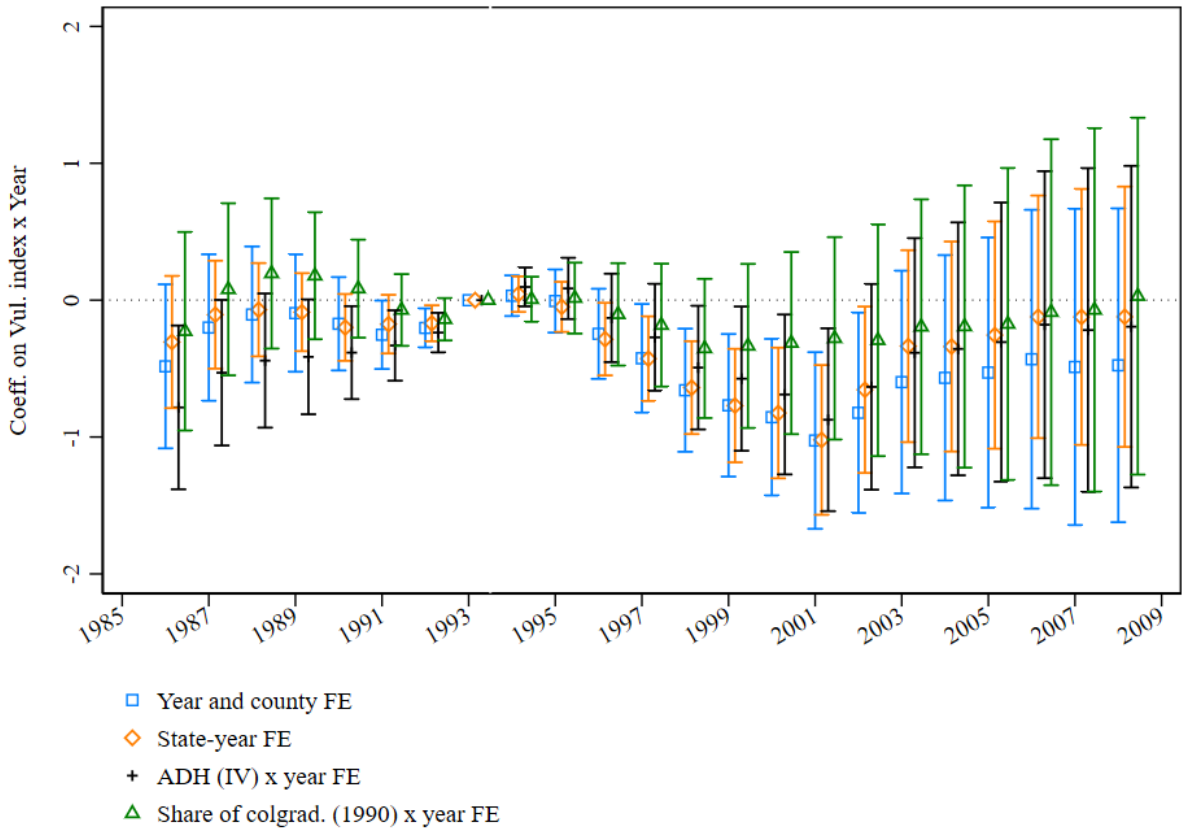
Note : The figure shows the event-study coefficient estimates from specifications of equation (3), where log of total manufacturing employment and log of total non-manufacturing employment are the dependent variable for the first and second series, respectively. Both specifications are weighted by 1990 county population, and they include county and year fixed effects.

Appendix Figure A.7: Log annual DI applications (normalized to zero in 1993)



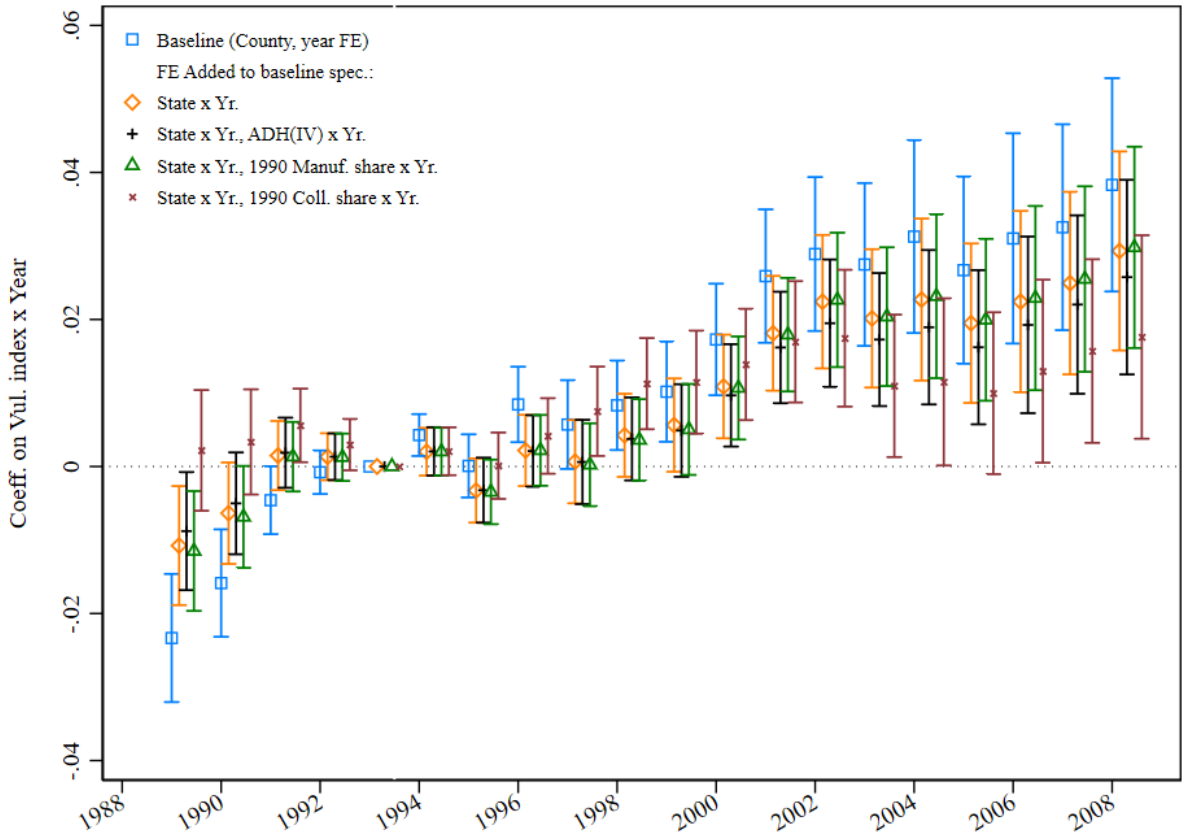
Source: SSA Annual Statistical Supplement, 2018, Table 6.C7.

Appendix Figure A.8: Evolution of log employment as a function of county NAFTA vulnerability, for a balanced panel of XXX counties for which we have DI application data



Note : The figure shows average log county population trends from 1986 to 2001 by 1990 county vulnerability quartiles. Log county population is computed using the intercensal county population estimates.

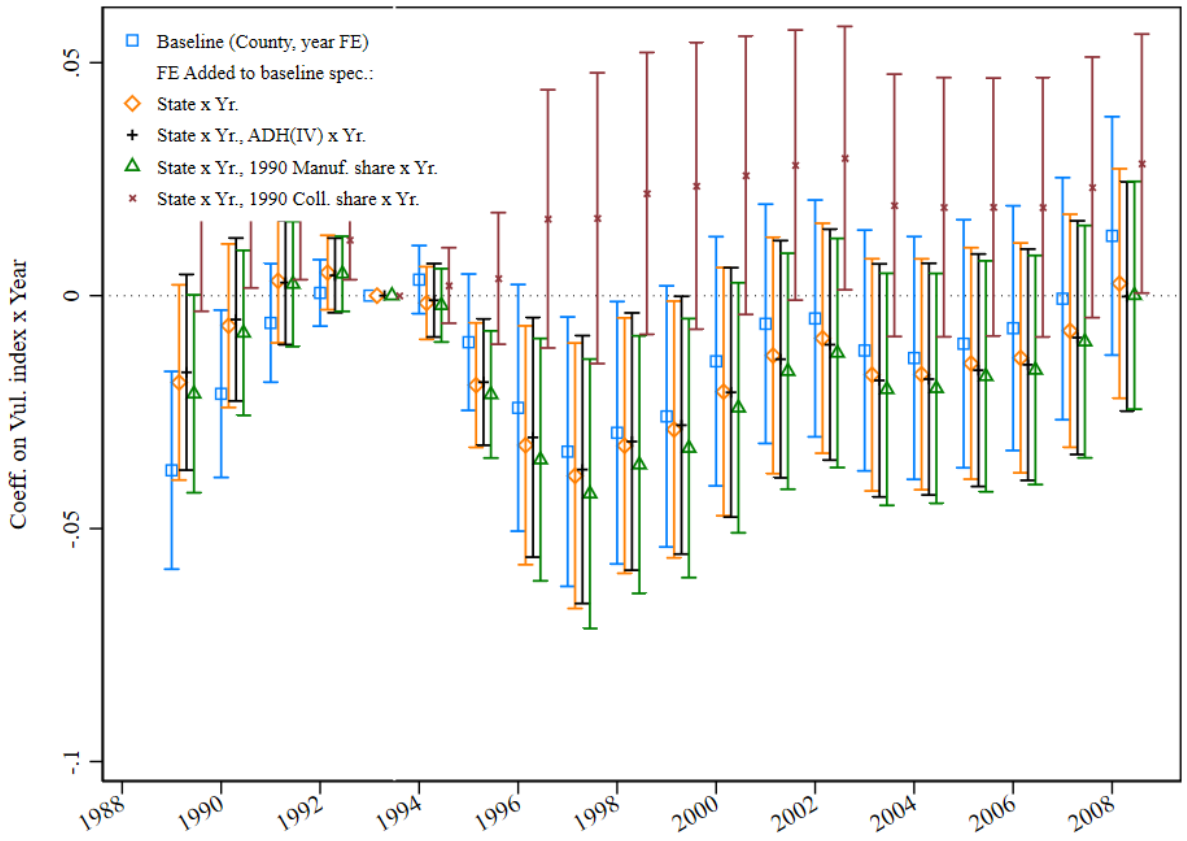
Appendix Figure A.9: Evolution of DI applications per capita as a function of county NAFTA vulnerability



Sources: Social Security Administration. Data are a balanced panel from a subset of counties (see Appendix Table **??** for summary statistics. See Appendix B for more details on data construction.

Notes: This figure shows results from estimating equation (3) when per capita DI applications is the outcome variable.

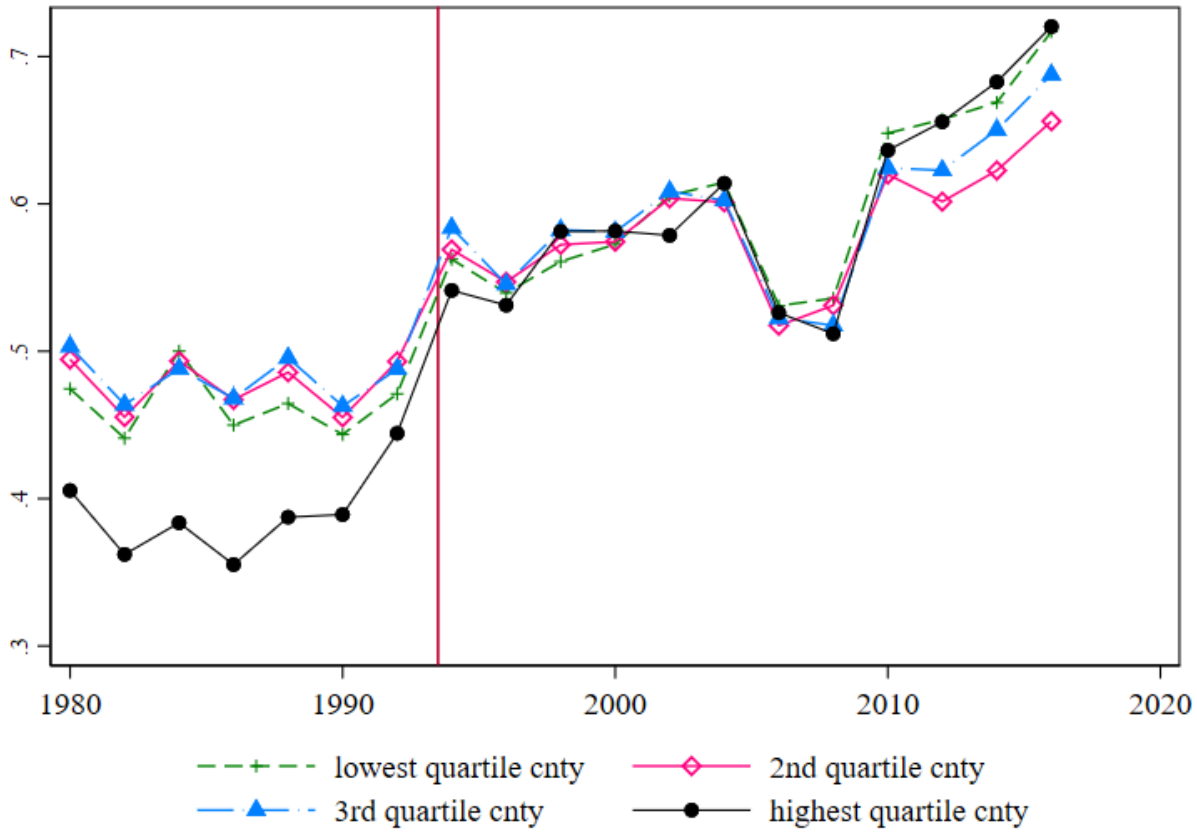
Appendix Figure A.10: Evolution of DI awards per capita as a function of county NAFTA vulnerability, final status



Sources: Social Security Administration. Data are a balanced panel from a subset of counties (see Appendix Table **??** for summary statistics. See Appendix B for more details on data construction.

Notes: This figure shows results from estimating equation (3) when per capita DI awards is the outcome variable.

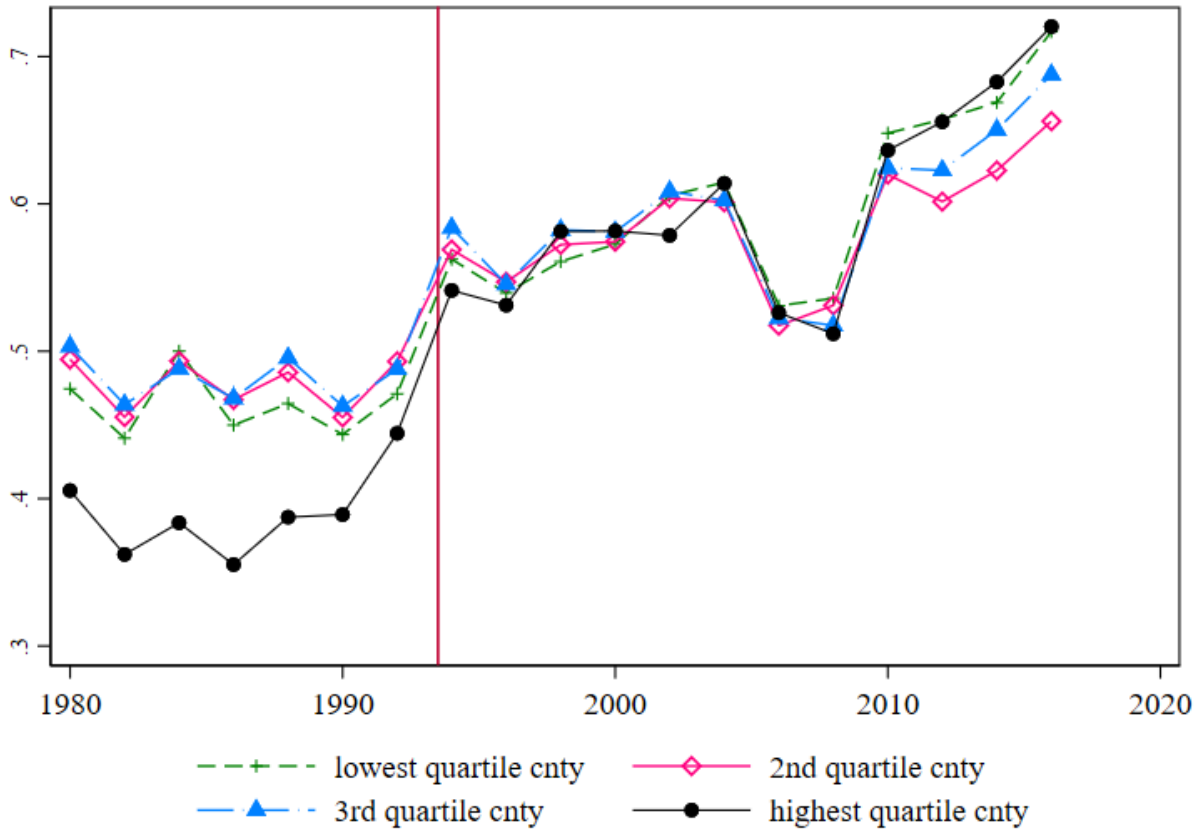
Appendix Figure A.11: Two-party Republican vote share in House elections, separately by vulnerability quartile (raw means, not normalized)



Sources: XXXXX.

Notes : The figure shows average two-party Republican House vote share trends from 1990 to 2016 by 1990 county vulnerability quartiles. The two-party Democrat vote share is computed using ICPSR general voting data and Dave Leip's Atlas of U.S. Presidential Election data.

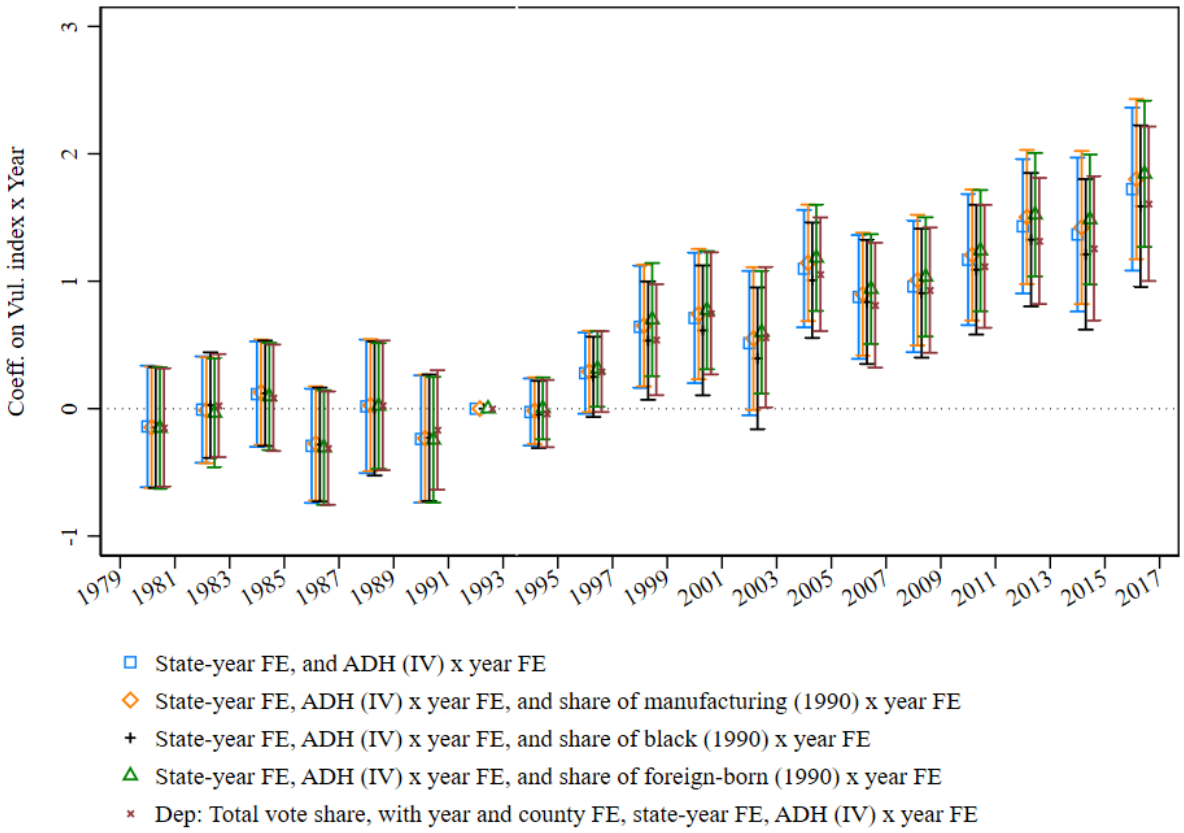
Appendix Figure A.12: Two-party Republican vote share in House elections, separately by vulnerability quartile (raw means, not normalized)



Sources: XXXXX.

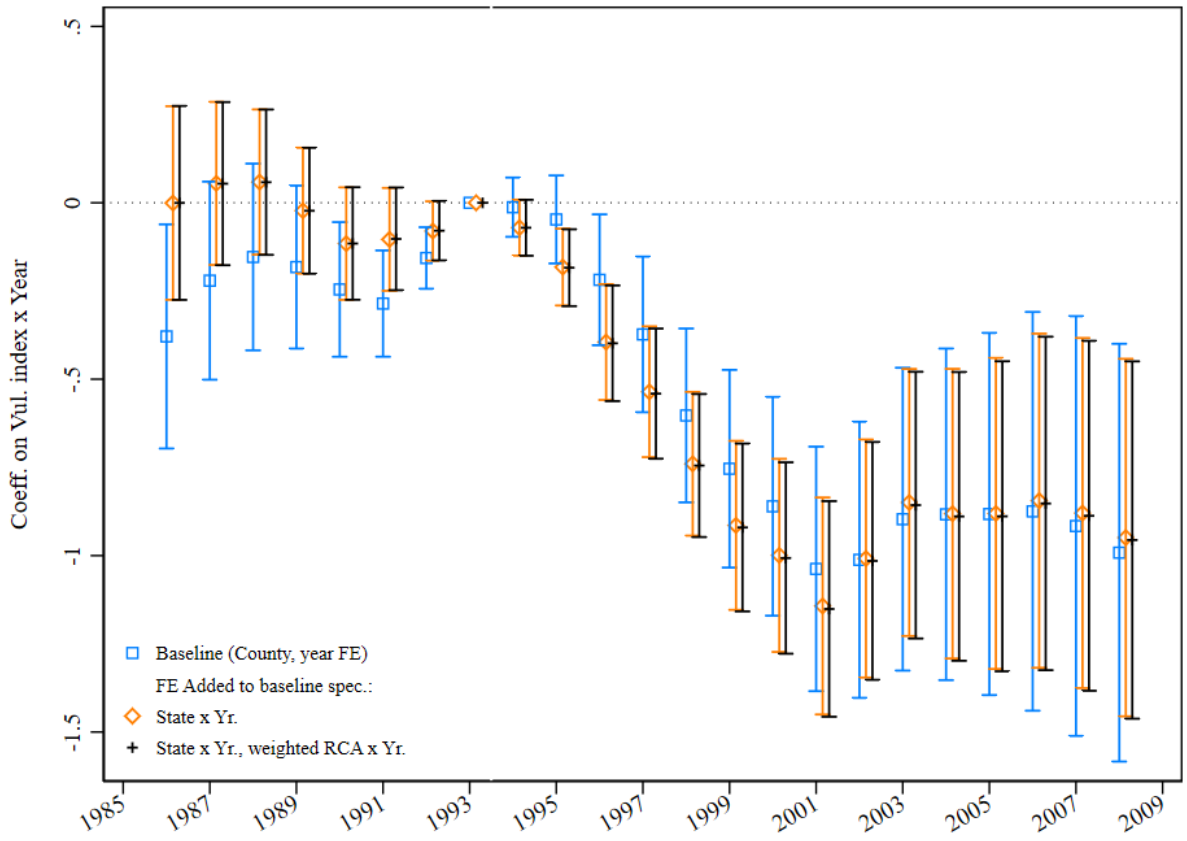
Notes : The figure shows average two-party Republican House vote share trends from 1990 to 2016 by 1990 county vulnerability quartiles. The two-party Democrat vote share is computed using ICPSR general voting data and Dave Leip's Atlas of U.S. Presidential Election data.

Appendix Figure A.13: Event-study Democrat vote share graphs, robustness check



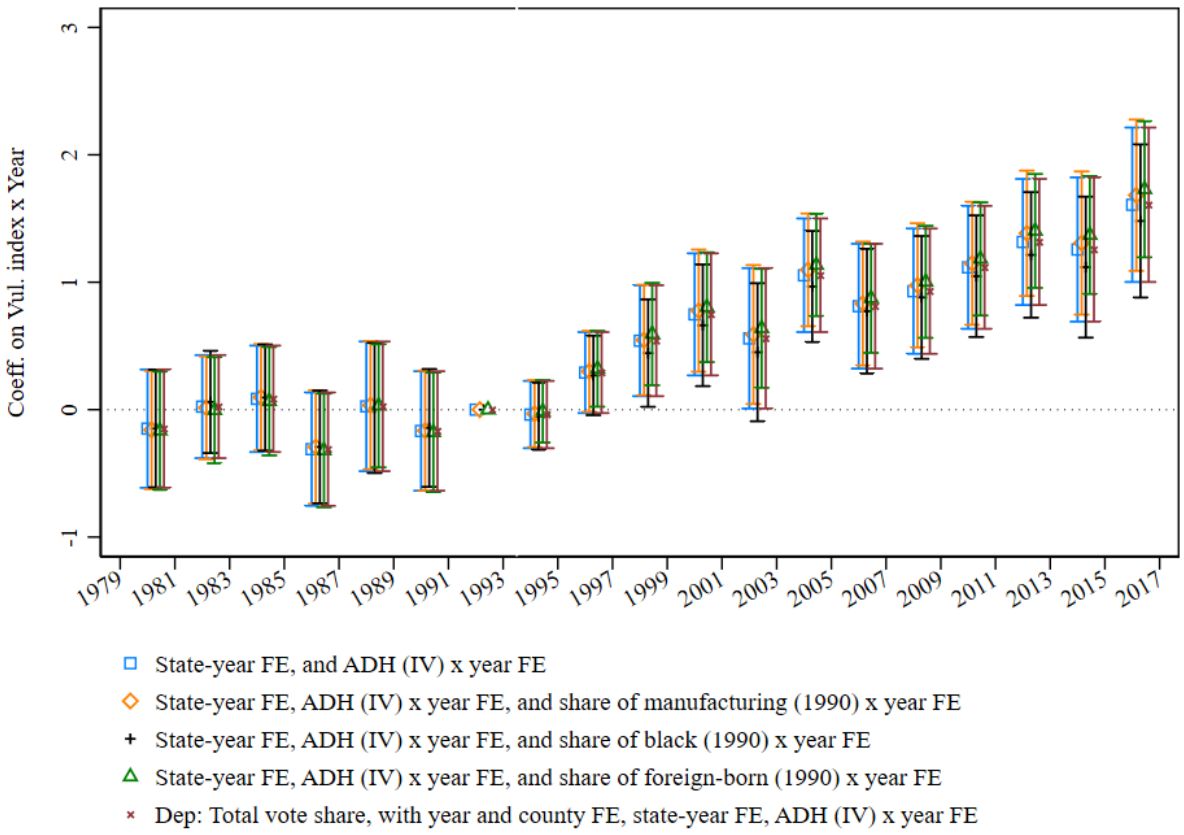
Notes: The figure shows the event-study coefficient estimates from different specifications of equation (3), where the two-party Democrat House vote share is the dependent variable for the first to fourth series, and the Democrat House vote share among total votes is the dependent variable for the fifth series. All specifications are weighted by 1990 county population. The first series shows the coefficient estimates from a specification where we control for county and year fixed effects, state-year fixed effects, the ADH China shock measure interacted with year fixed effects. The specification for second series includes county and year fixed effects, state-year fixed effects, the ADH measure interacted with year fixed effects, and share of manufacturing in 1990 interacted with year fixed effects. The third specification includes county and year fixed effects, state-year fixed effects, the ADH measure interacted with year fixed effects, and share of black population in 1990 interacted with year FE. The fourth specification includes county and year fixed effects, state-year fixed effects, the ADH measure interacted with year fixed effects, and share of foreign-born population in 1990 interacted with year FE. The fifth specification uses includes county and year fixed effects, state-year fixed effects, and the ADH measure interacted with year fixed effects.

Appendix Figure A.14: Evolution of log employment as a function of county NAFTA vulnerability, ruling out the Peso crisis



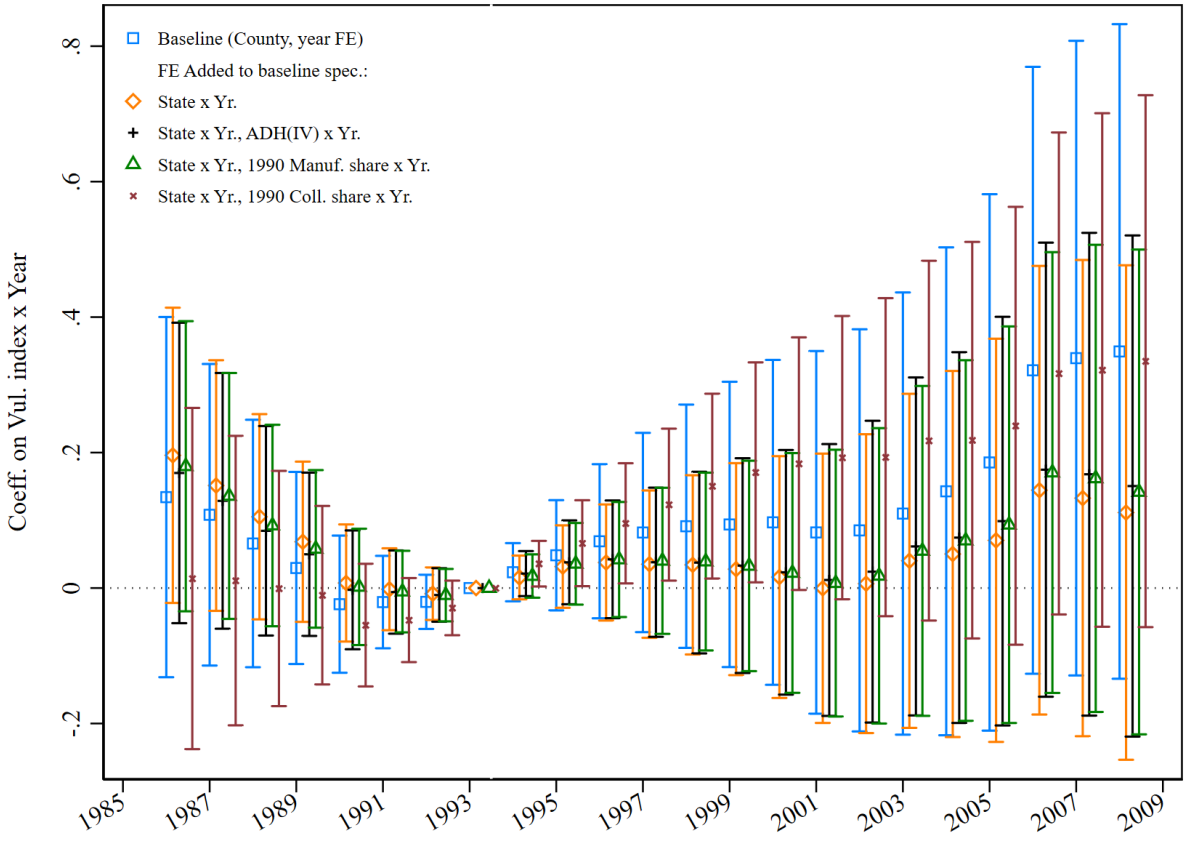
Notes: The figure shows the event-study coefficient estimates from different specifications of equation (3), where log of total employment is the dependent variable. All specifications are weighted by 1990 county population. The first series shows the coefficient estimates from a specification where we control for only county and year fixed effects. The specification for the second series includes add to this baseline specification $state \times year$ fixed effects. The third specification adds .....

Appendix Figure A.15: Event-study analysis of the Republican House vote share, adding additional controls



Notes: The figure shows the event-study coefficient estimates from different specifications of equation (3), where the Republican vote share in House elections is the dependent variable. All specifications are weighted by 1990 county population. .....

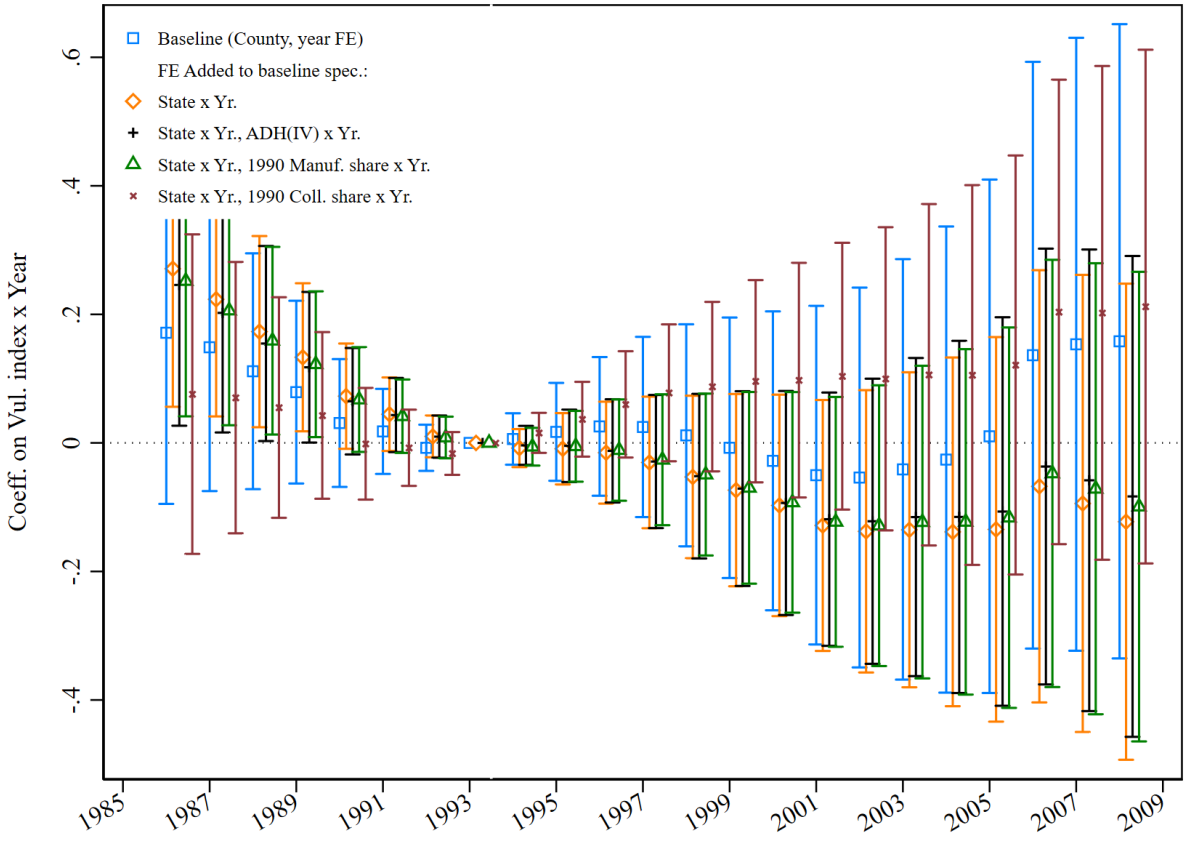
Appendix Figure A.16: Log male population as a function of county vulnerability



Sources: The dependent variable is taken from XXX. See Appendix B.3 for more detail.

Notes : The figure shows the event-study coefficient estimates from different specifications of equation (3), where log of total male population is the dependent variable. All specifications are weighted by 1990 county population. The first series shows the coefficient estimates from a specification where we control for only county and year fixed effects. The specification for the second series includes add to this baseline specification $state \times year$ fixed effects. The third specification adds to the second specification CZ-level measure of Chinese import exposure from Autor, Dorn and Hanson (2013) interacted with year fixed effects. The fourth specification adds to the second specification 1990 county manufacturing share of employment interacted with year fixed effects. The final specification adds to to the second specification 1990 county share college graduates interacted with year fixed effects.

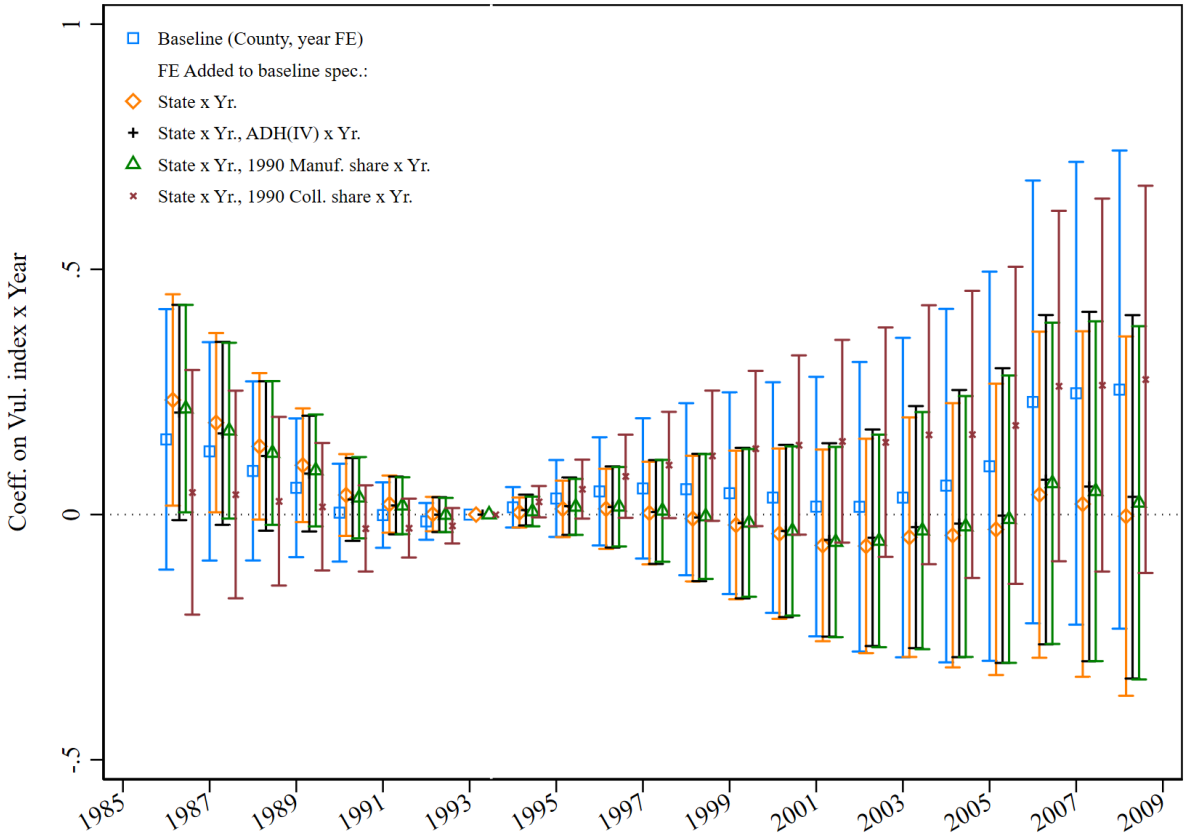
Appendix Figure A.17: Log female population as a function of county vulnerability



Sources: The dependent variable is taken from XXX. See Appendix B.3 for more detail.

Notes : The figure shows the event-study coefficient estimates from different specifications of equation (3), where log of total female population is the dependent variable. All specifications are weighted by 1990 county population. The first series shows the coefficient estimates from a specification where we control for only county and year fixed effects. The specification for the second series includes add to this baseline specification $state \times year$ fixed effects. The third specification adds to the second specification CZ-level measure of Chinese import exposure from Autor, Dorn and Hanson (2013) interacted with year fixed effects. The fourth specification adds to the second specification 1990 county manufacturing share of employment interacted with year fixed effects. The final specification adds to to the second specification 1990 county share college graduates interacted with year fixed effects.

Appendix Figure A.18: Log working-age population as a function of county vulnerability



Sources: The dependent variable is taken from XXX. See Appendix B.3 for more detail.

Notes : The figure shows the event-study coefficient estimates from different specifications of equation (3), where log of total working-age population is the dependent variable. All specifications are weighted by 1990 county population. The first series shows the coefficient estimates from a specification where we control for only county and year fixed effects. The specification for the second series includes add to this baseline specification *state*×*year* fixed effects. The third specification adds to the second specification CZ-level measure of Chinese import exposure from Autor, Dorn and Hanson (2013) interacted with year fixed effects. The fourth specification adds to the second specification 1990 county manufacturing share of employment interacted with year fixed effects. The final specification adds to to the second specification 1990 county share college graduates interacted with year fixed effects.

Appendix Table A.1: Pre-NAFTA characteristics of counties in the DI analysis sample, by vulnerability

Quartile (lower quartile : less vulnerable)	1	2	3	4
Demographics				
Population (in thousands)	176.437	360.696	298.636	133.33
Household income (in thousands)	27.393	29.861	27.878	24.819
Emp-to-Pop ratio	0.515	0.576	0.535	0.521
Share of white	0.877	0.871	0.873	0.847
Share of manufac. employment	0.142	0.215	0.213	0.248
Share of college grad.	0.186	0.199	0.180	0.144
pre-NAFTA political preference				
Republican house vote share (1980-1988)	0.445	0.459	0.469	0.448
Exposure to Chinese imports				
ADH (2013) China shock measure (IV)	0.847	1.000	1.039	1.424
Number of counties	195.000	194.000	193.000	193.000

Notes: The table contains average county characteristics by county vulnerability quartiles. The first quartile contains counties with 1990 vulnerability in the bottom 25th percentile, the second quartile between the 25th and the 50th percentile, the third quartile between the 50th and the 75th percentile, and the fourth in the top 25th percentile.tex

Appendix Table A.2: Partisan identity and views toward NAFTA, 1992-1994 panel data

	Move in Repub direction dummy x 100					
	(1)	(2)	(3)	(4)	(5)	(6)
Oppose NAFTA (asked in 1993)	7.777	11.09*	6.428	5.920	6.764	6.759
	[5.095]	[5.853]	[4.617]	[4.748]	[4.832]	[5.121]
Minorities sd help self				2.133*	2.313**	2.128**
				[1.050]	[1.041]	[1.043]
Wants active gov't				-0.282	-0.319	-1.293
				[1.328]	[1.520]	[1.725]
Support abortion				-1.170	-0.566	-0.670
				[1.932]	[2.219]	[2.434]
Attend church weekly				4.627	5.294	2.652
				[3.423]	[3.501]	[3.672]
Oppose gays in military					3.604	4.340
					[8.056]	[9.193]
Oppose gov't health care					-0.952	-1.439
					[0.943]	[1.009]
Favor term limits					-4.771	-3.688
					[3.985]	[4.656]
Dept. var. mean	25.93	25.69	25.89	25.77	25.77	25.77
Ex. DK	No	Yes	No	No	No	No
Demog. covars	No	No	Yes	Yes	Yes	Yes
State FE	No	No	No	No	No	Yes
R-squared	0.00489	0.0155	0.0489	0.0684	0.0727	0.121
Observations	621	288	618	617	613	613

Sources: ANES panel data, 1992-1994.

Notes: The dependent variable is a dummy (multiplied by 100) for whether the respondent moved in the GOP direction in the 1-7 partisan identity scale. All explanatory variables were asked in 1992, except for the NAFTA question, which was asked in the fall of 1993. "Excl. DK" means that respondents who did not have an opinion on NAFTA are dropped (they are otherwise coded as zero). Demographic controls include race, gender, education, age, log family income, and urbanicity. Standard errors clustered by state. $^{*}p = 0.1,^{**}p = 0.05,^{***}p = 0.01$.

Appendix B. Description of data sources

Appendix C. Assessing main results with randomization inference