Online Appendix
Local labor market effects of the 2002 Bush steel tariffs

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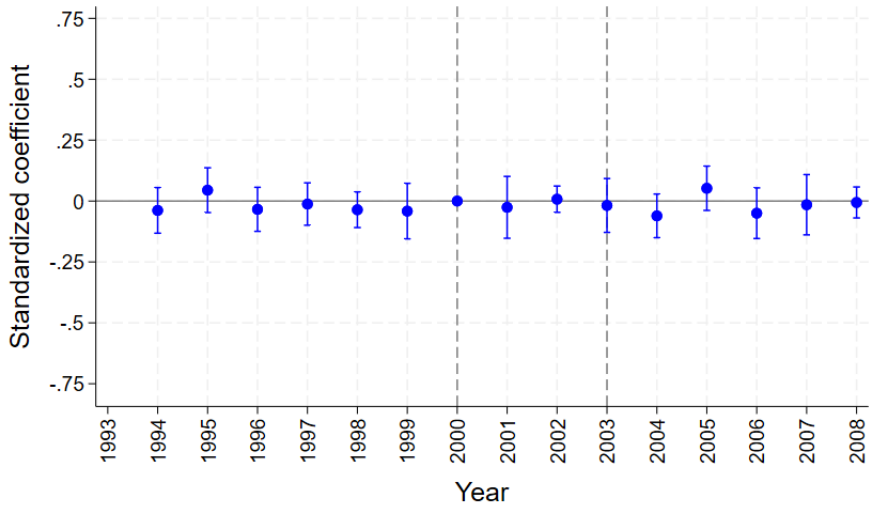
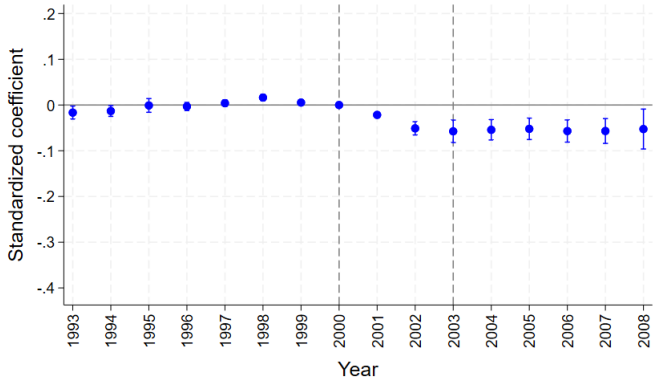
1 Online appendix tables & figures

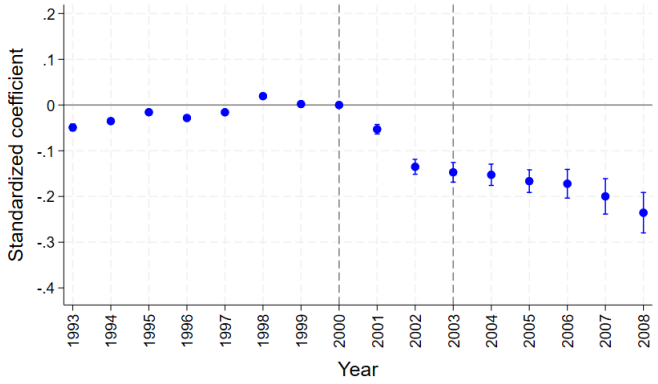


Notes: Figure reports standardized coefficients for time-varying point estimates of local protection (P_c) on the steel-intensive manufacturing employment share from first-differenced version of equation (3) in the main text. Controls $\boldsymbol{X}_{ct}$ consist of 1990 CZ characteristics in panel B of Table 2 in the main text in the main text interacted with year dummies, first-differenced Chinese import competition (IPW_{ct}), and first-differenced protection from and vulnerability to steel AD duties (P_{ct}^{AD}, V_{ct}^{AD}). Fixed effects are state-year fixed effects. 95% confidence intervals with standard errors clustered by state. Vertical lines at 2000 and 2003 indicate, respectively, last year before Bush steel tariff process starts (omitted base year) and year Bush steel tariffs removed (removed in December 2003).

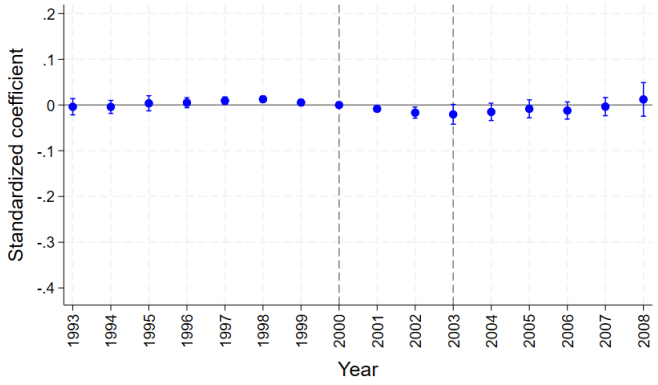
Figure 1: Effects of protection on CZ steel-production employment share – Removing linear trend



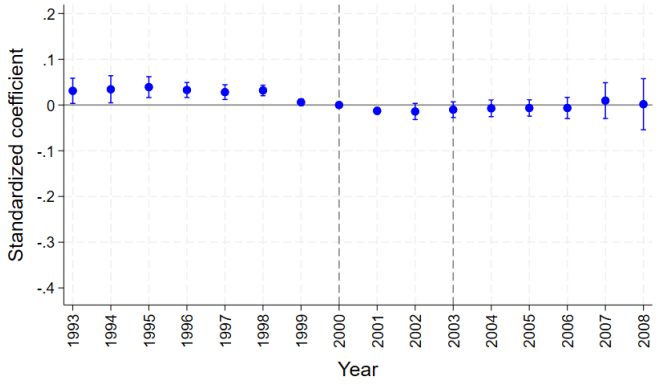
(a) Vulnerability (V_c) & manuf. emp. share



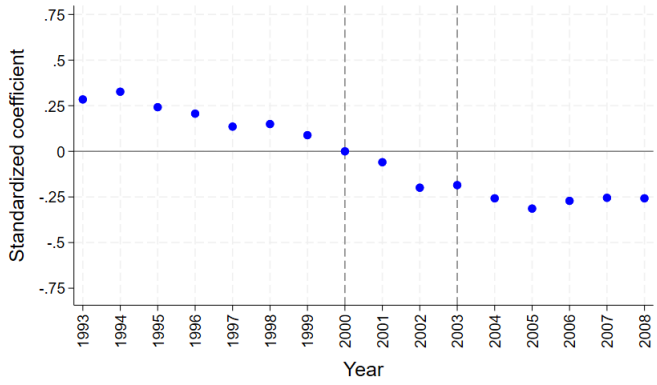
(b) Vulnerability (V_c) & steel-intensive manuf. emp. share



(c) Vulnerability (V_c) & non-steel-int. manuf. emp. share



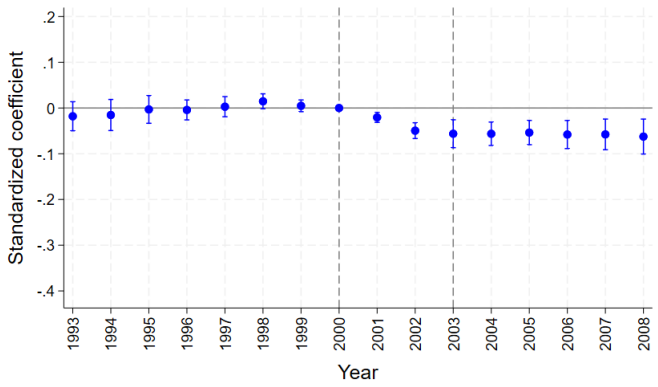
(d) Vulnerability (V_c) & emp.-to-working-age-pop. ratio



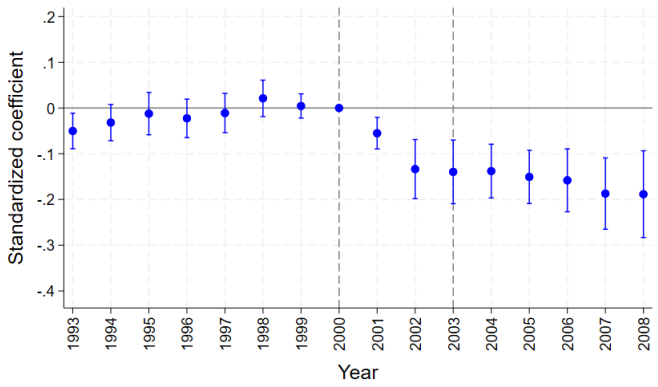
(e) Protection (P_c) & steel-production emp. share

Notes: Panels report standardized coefficients for time-varying point estimates $\boldsymbol{\beta}$ from equation (3) in the main text. Controls $\boldsymbol{X}_{ct}$ consist of 1990 CZ characteristics in panel B of Table 2 in the main text in the main text interacted with year dummies, Chinese import competition (IPW_{ct}), and protection from and vulnerability to steel AD duties (P_{ct}^{AD}, V_{ct}^{AD}). 95% confidence intervals with Borusyak et al. (2022) exposure-robust standard errors clustered by NAICS sub-sector. Vertical lines at 2000 and 2003 indicate, respectively, last year before Bush steel tariff process starts (omitted base year) and year Bush steel tariffs removed (removed in December 2003).

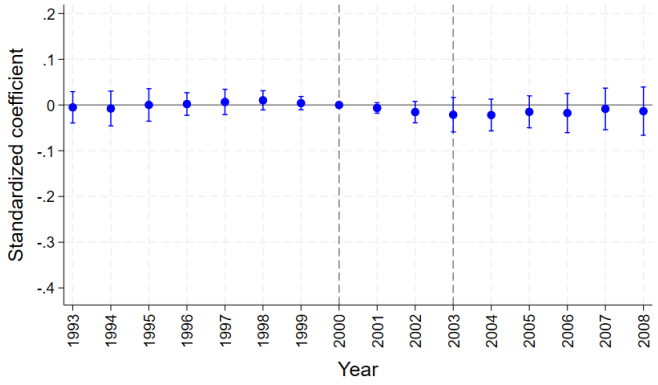
Figure 2: Effects of vulnerability & protection on CZ employment shares – Exposure-robust standard errors



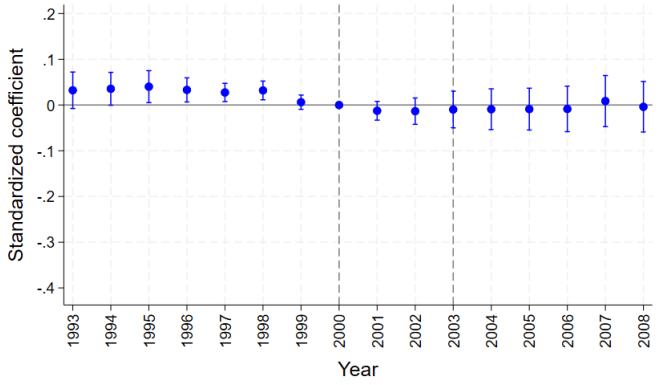
(a) Vulnerability (V_c) & manuf. emp. share



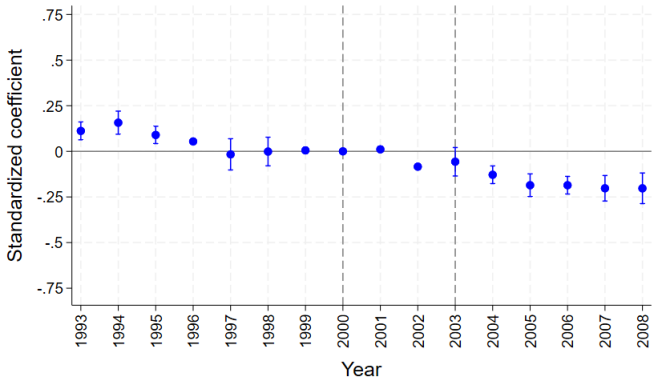
(b) Vulnerability (V_c) & steel-intensive manuf. emp. share



(c) Vulnerability (V_c) & non-steel-int. manuf. emp. share



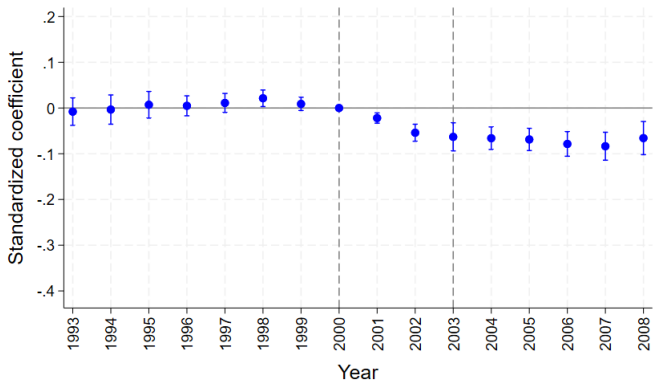
(d) Vulnerability (V_c) & emp.-to-working-age-pop. ratio



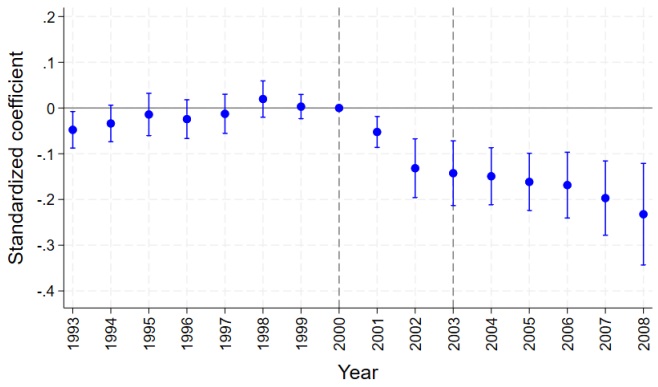
(e) Protection (P_c) & steel-production emp. share

Notes: Panels report standardized coefficients for time-varying point estimates $\boldsymbol{\beta}$ from equation (3) in the main text. Controls $\boldsymbol{X}_{ct}$ consist of 1990 CZ characteristics in panel B of Table 2 in the main text interacted with year dummies and Chinese import competition (IPW_{ct}). 95% confidence intervals with standard errors clustered by state. Regressions weighted by 1998 CZ working-age population. Vertical lines at 2000 and 2003 indicate, respectively, last year before Bush steel tariff process starts (omitted base year) and year Bush steel tariffs removed (removed in December 2003).

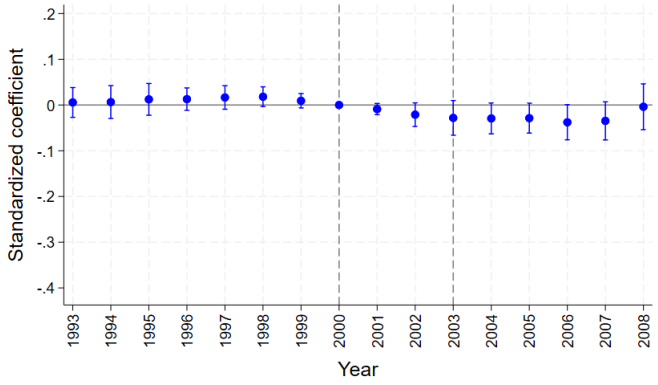
Figure 3: Effects of vulnerability & protection on CZ employment shares – Local China shock as only non-Bush trade shock control



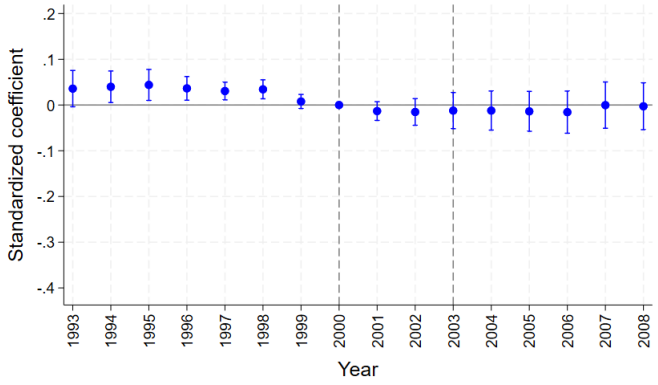
(a) Vulnerability (V_c) & manuf. emp. share



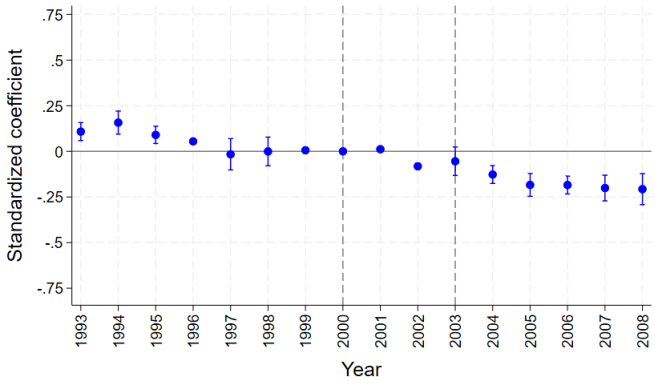
(b) Vulnerability (V_c) & steel-intensive manuf. emp. share



(c) Vulnerability (V_c) & non-steel-int. manuf. emp. share



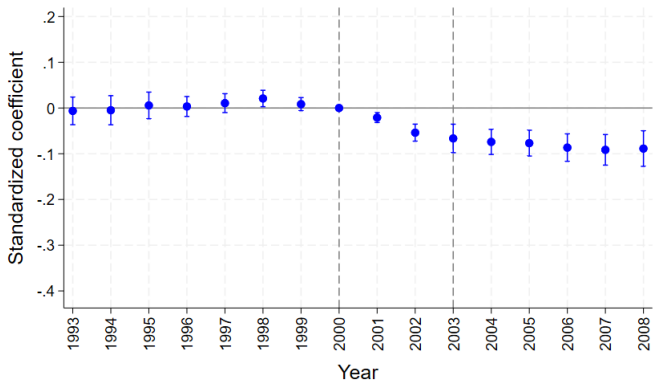
(d) Vulnerability (V_c) & emp.-to-working-age-pop. ratio



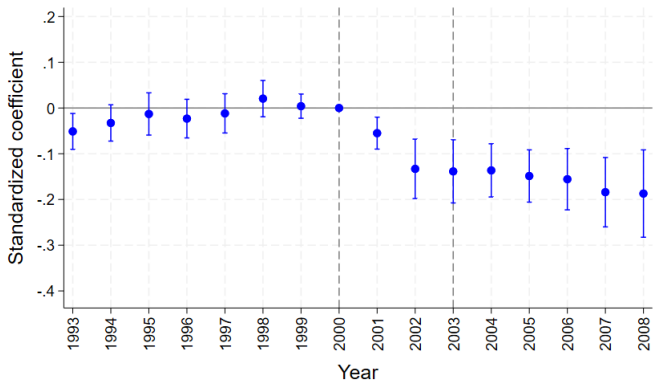
(e) Protection (P_c) & steel-production emp. share

Notes: Panels report standardized coefficients for time-varying point estimates $\boldsymbol{\beta}$ from equation (3) in the main text. Controls $\boldsymbol{X}_{ct}$ consist of 1990 CZ characteristics in panel B of Table 2 in the main text interacted with year dummies and vulnerability to steel AD duties (V_{ct}^{AD}). 95% confidence intervals with standard errors clustered by state. Regressions weighted by 1998 CZ working-age population. Vertical lines at 2000 and 2003 indicate, respectively, last year before Bush steel tariff process starts (omitted base year) and year Bush steel tariffs removed (removed in December 2003).

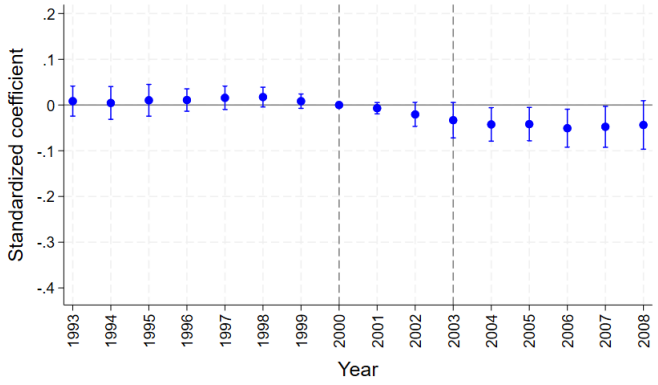
Figure 4: Effects of vulnerability & protection on CZ employment shares – Local AD vulnerability as only non-Bush trade shock control



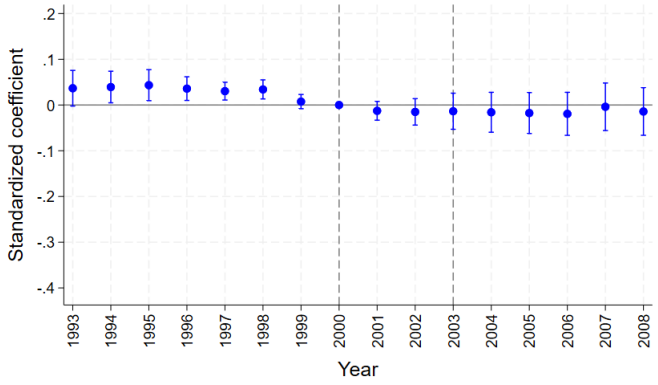
(a) Vulnerability (V_c) & manuf. emp. share



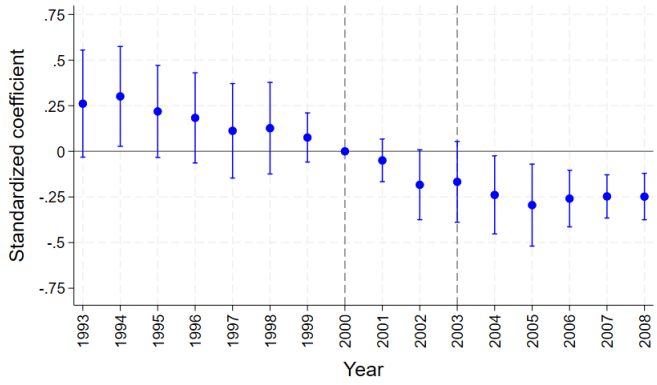
(b) Vulnerability (V_c) & steel-intensive manuf. emp. share



(c) Vulnerability (V_c) & non-steel-int. manuf. emp. share



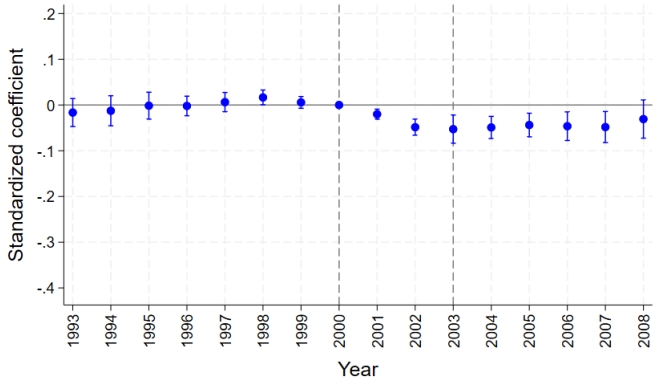
(d) Vulnerability (V_c) & emp.-to-working-age-pop. ratio



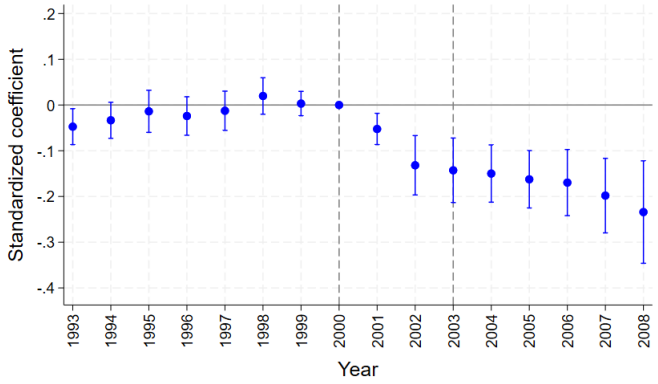
(e) Protection (P_c) & steel-production emp. share

Notes: Panels report standardized coefficients for time-varying point estimates $\boldsymbol{\beta}$ from equation (3) in the main text. Controls $\boldsymbol{X}_{ct}$ consist of 1990 CZ characteristics in panel B of Table 2 in the main text interacted with year dummies and protection from steel AD duties (P_{ct}^{AD}). 95% confidence intervals with standard errors clustered by state. Regressions weighted by 1998 CZ working-age population. Vertical lines at 2000 and 2003 indicate, respectively, last year before Bush steel tariff process starts (omitted base year) and year Bush steel tariffs removed (removed in December 2003).

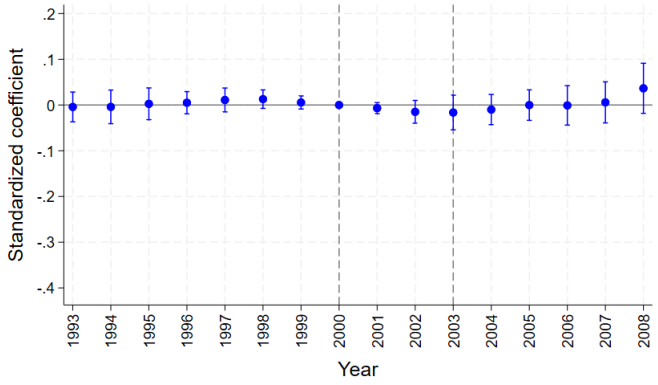
Figure 5: Effects of vulnerability & protection on CZ employment shares – Local AD protection as only non-Bush trade shock control



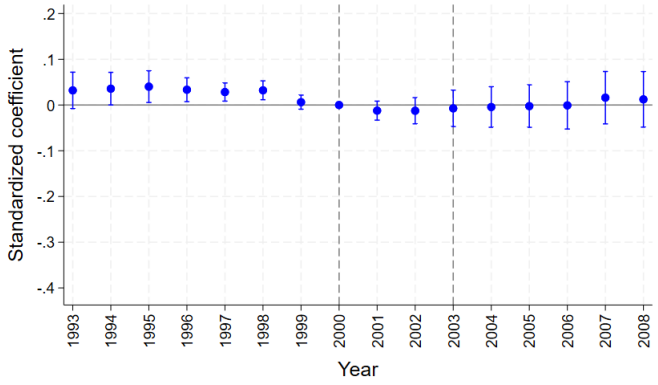
(a) Vulnerability (V_c) & manuf. emp. share



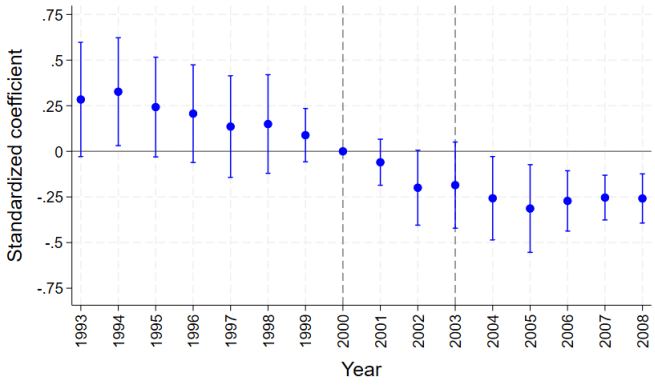
(b) Vulnerability (V_c) & steel-intensive manuf. emp. share



(c) Vulnerability (V_c) & non-steel-int. manuf. emp. share



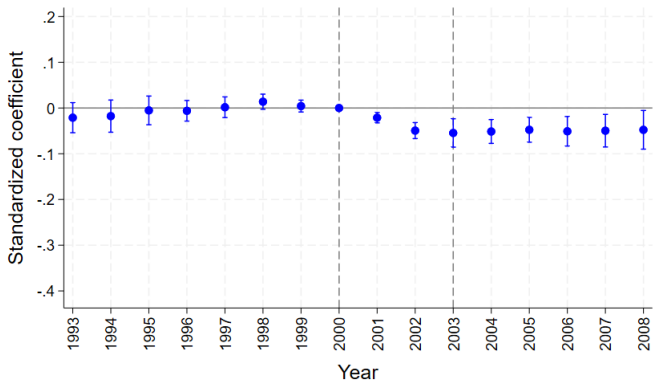
(d) Vulnerability (V_c) & emp.-to-working-age-pop. ratio



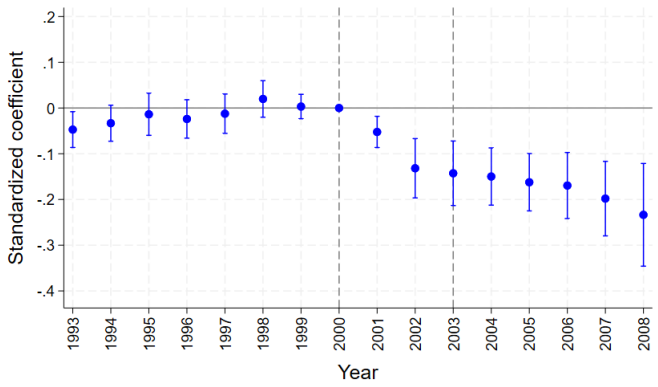
(e) Protection (P_c) & steel-production emp. share

Notes: Panels report standardized coefficients for time-varying point estimates $\boldsymbol{\beta}$ from equation (3) in the main text. Controls $\boldsymbol{X}_{ct}$ consist of 1990 CZ characteristics in panel B of Table 2 in the main text interacted with year dummies, Chinese import competition IV (IPW_{ct}^{IV}), and protection from and vulnerability to steel AD duties (P_{ct}^{AD}, V_{ct}^{AD}). 95% confidence intervals with standard errors clustered by state. Regressions weighted by 1998 CZ working-age population. Vertical lines at 2000 and 2003 indicate, respectively, last year before Bush steel tariff process starts (omitted base year) and year Bush steel tariffs removed (removed in December 2003).

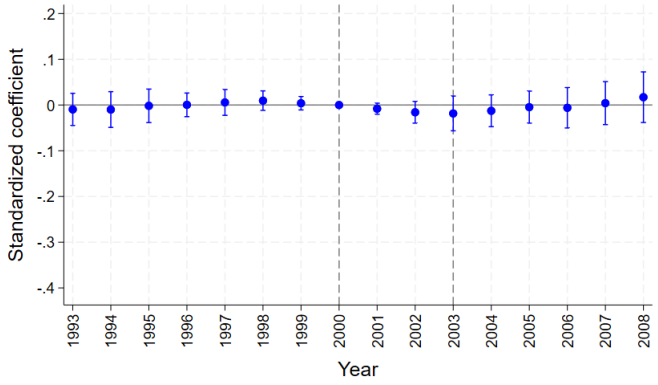
Figure 6: Effects of vulnerability & protection on CZ employment shares – Local China shock instrument as a control



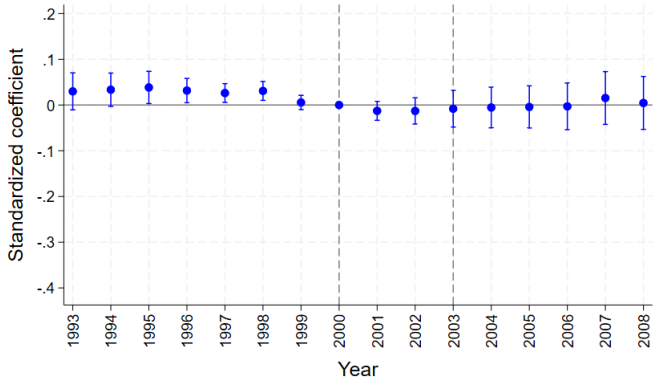
(a) Vulnerability (V_c) & manuf. emp. share



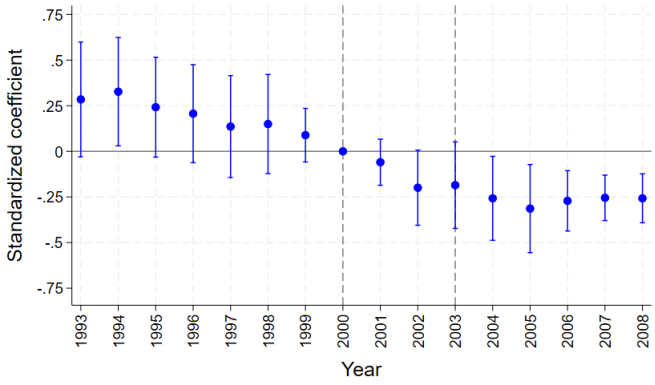
(b) Vulnerability (V_c) & steel-intensive manuf. emp. share



(c) Vulnerability (V_c) & non-steel-int. manuf. emp. share



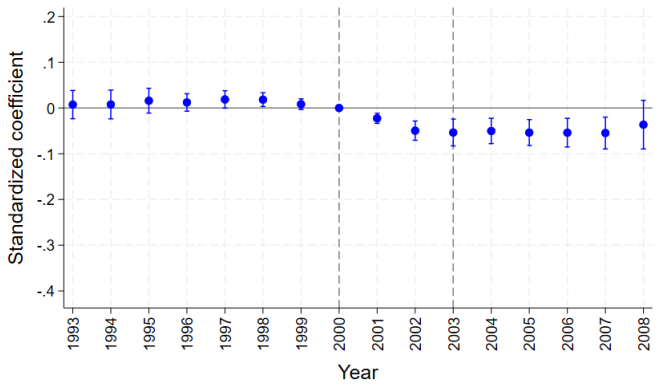
(d) Vulnerability (V_c) & emp.-to-working-age-pop. ratio



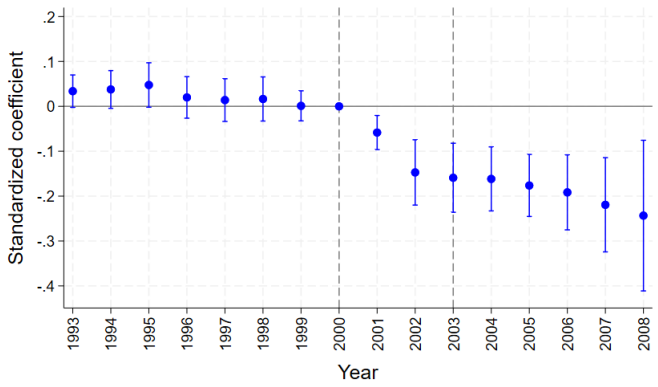
(e) Protection (P_c) & steel-production emp. share

Notes: Panels report standardized coefficients for time-varying point estimates $\boldsymbol{\beta}$ from equation (3) in the main text. Controls $\boldsymbol{X}_{ct}$ consist of 1990 CZ characteristics in panel B of Table 2 in the main text interacted with year dummies, Chinese import competition (IPW_{ct}) instrumented with IPW_{ct}^{IV}, and protection from and vulnerability to steel AD duties (P_{ct}^{AD}, V_{ct}^{AD}). Chinese import competition 95% confidence intervals with standard errors clustered by state. Regressions weighted by 1998 CZ working-age population. Vertical lines at 2000 and 2003 indicate, respectively, last year before Bush steel tariff process starts (omitted base year) and year Bush steel tariffs removed (removed in December 2003).

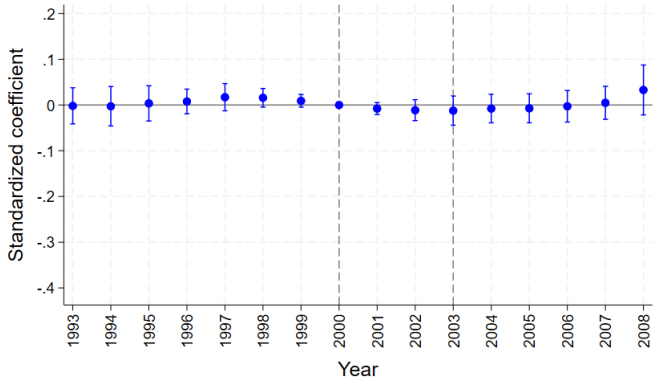
Figure 7: Effects of vulnerability & protection on CZ employment shares – Instrumenting for local China shock



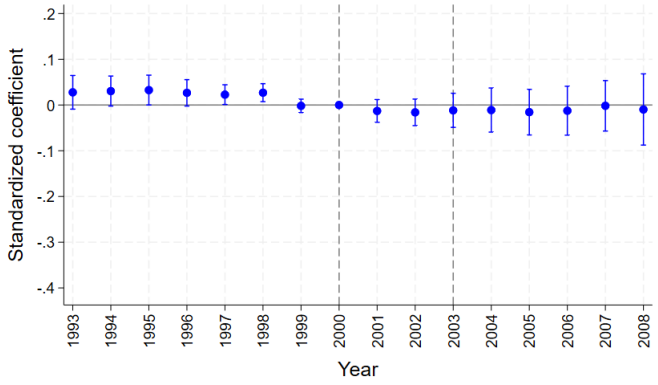
(a) Vulnerability (V_c) & manuf. emp. share



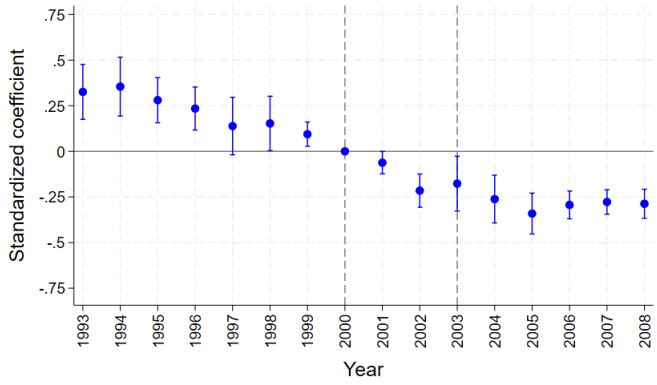
(b) Vulnerability (V_c) & steel-intensive manuf. emp. share



(c) Vulnerability (V_c) & non-steel-int. manuf. emp. share



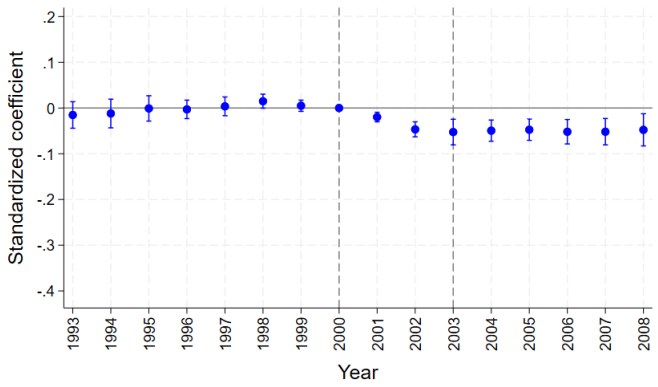
(d) Vulnerability (V_c) & emp.-to-working-age-pop. ratio



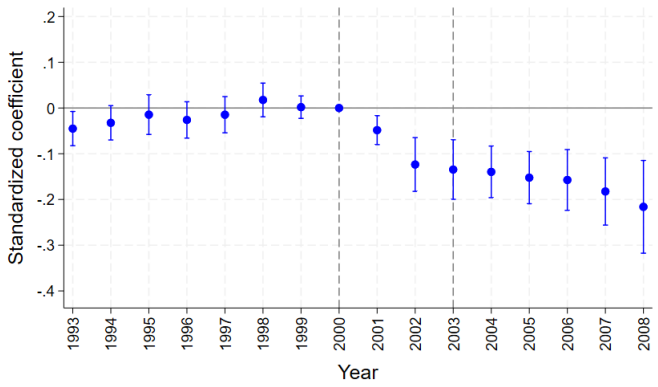
(e) Protection (P_c) & steel-production emp. share

Notes: Panels report standardized coefficients for time-varying point estimates $\boldsymbol{\beta}$ from equation (3) in the main text. Controls $\boldsymbol{X}_{ct}$ consist of 1990 CZ characteristics in panel B of Table 2 in the main text interacted with year dummies, Chinese import competition (IPW_{ct}), and protection from and vulnerability to steel AD duties (P_{ct}^{AD}, V_{ct}^{AD}). 1993 CZ-employment weights in equations (7)-(8) and (9)-(10) in the main text for $V_c, P_c, V_{ct}^{AD}, P_{ct}^{AD}, IPW_{ct}$ and IPW_{ct}^{IV}. 95% confidence intervals with standard errors clustered by state. Regressions weighted by 1993 CZ working-age population. Vertical lines at 2000 and 2003 indicate, respectively, last year before Bush steel tariff process starts (omitted base year) and year Bush steel tariffs removed (removed in December 2003).

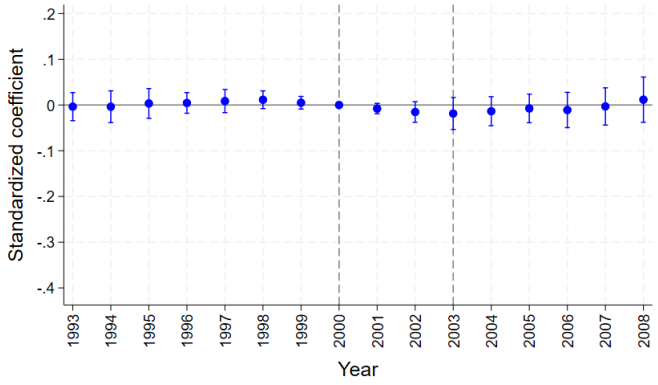
Figure 8: Effects of vulnerability & protection on CZ employment shares – 1993 CZ-industry employment weights & CZ working-age population regression weights



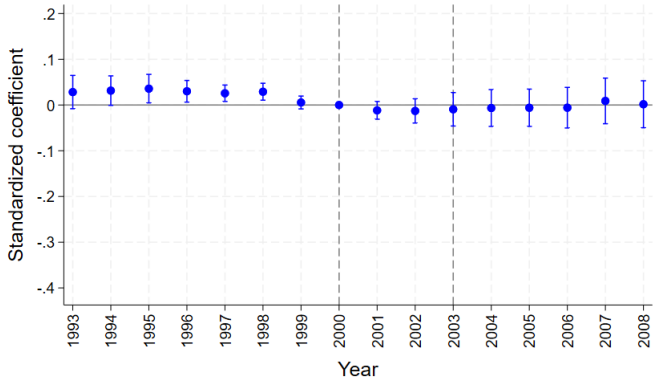
(a) Vulnerability (V_c) & manuf. emp. share



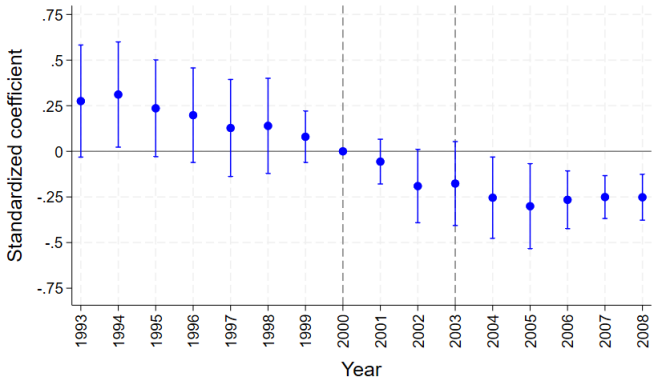
(b) Vulnerability (V_c) & steel-intensive manuf. emp. share



(c) Vulnerability (V_c) & non-steel-int. manuf. emp. share



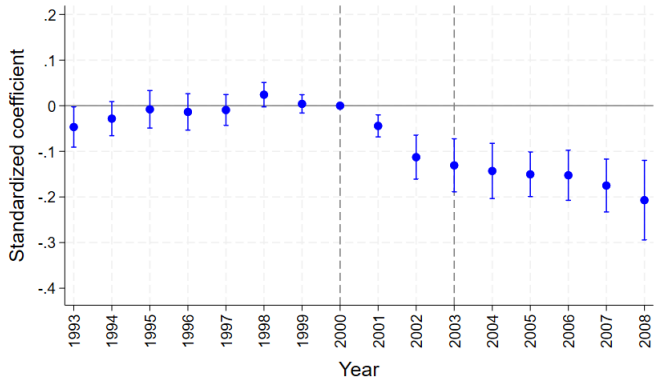
(d) Vulnerability (V_c) & emp.-to-working-age-pop. ratio



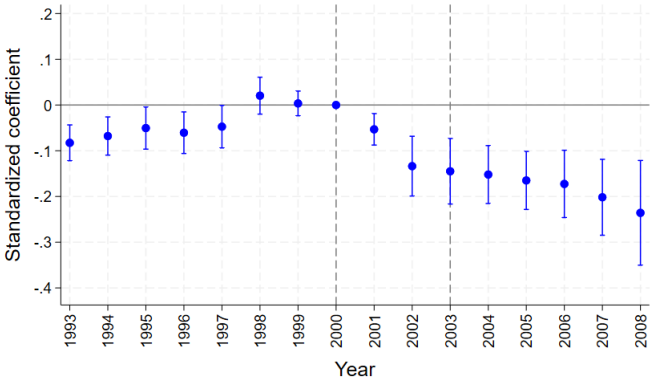
(e) Protection (P_c) & steel-production emp. share

Notes: Panels report standardized coefficients for time-varying point estimates $\boldsymbol{\beta}$ from equation (3) in the main text. Bush steel tariff industries (steel HS chapters 72 and 73) excluded as steel-using industries j in equation (7) for V_c (V_{ct}^{AD}). Controls $\boldsymbol{X}_{ct}$ consist of 1990 CZ characteristics in panel B of Table 2 in the main text interacted with year dummies, Chinese import competition (IPW_{ct}), and protection from and vulnerability to steel AD duties (P_{ct}^{AD}, V_{ct}^{AD}). Chinese import competition 95% confidence intervals with standard errors clustered by state. Regressions weighted by 1998 CZ working-age population. Vertical lines at 2000 and 2003 indicate, respectively, last year before Bush steel tariff process starts (omitted base year) and year Bush steel tariffs removed (removed in December 2003).

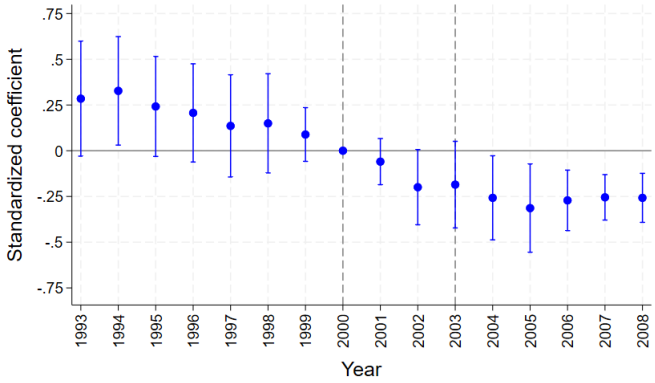
Figure 9: Effects of vulnerability & protection on CZ employment shares – Excluding steel as a steel-consuming industry



(a) Vulnerability (V_c) & steel-int. manuf. emp. share



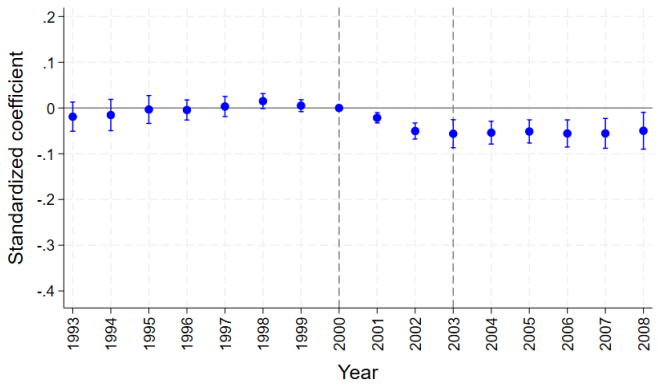
(b) Vulnerability (V_c) & steel-int. manuf. emp. share



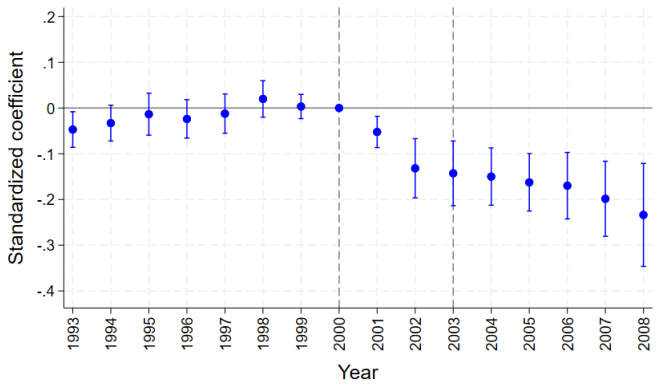
(c) Protection (P_c) & steel-production emp. share

Notes: Panels report standardized coefficients for time-varying point estimates $\boldsymbol{\beta}$ from equation (3) in the main text. In panel (a), steel-intensive manufacturing employment share defined using direct requirement of \$5 per \$100 of output. In panels (b) and (c), pre-1998 non-concorded employment left unallocated to 6-digit NAICS industries. Controls $\boldsymbol{X}_{ct}$ consist of 1990 CZ characteristics in panel B of Table 2 in the main text interacted with year dummies, Chinese import competition (IPW_{ct}), and protection from and vulnerability to steel AD duties (P_{ct}^{AD}, V_{ct}^{AD}). Chinese import competition 95% confidence intervals with standard errors clustered by state. Regressions weighted by 1998 CZ working-age population. Vertical lines at 2000 and 2003 indicate, respectively, last year before Bush steel tariff process starts (omitted base year) and year Bush steel tariffs removed (removed in December 2003).

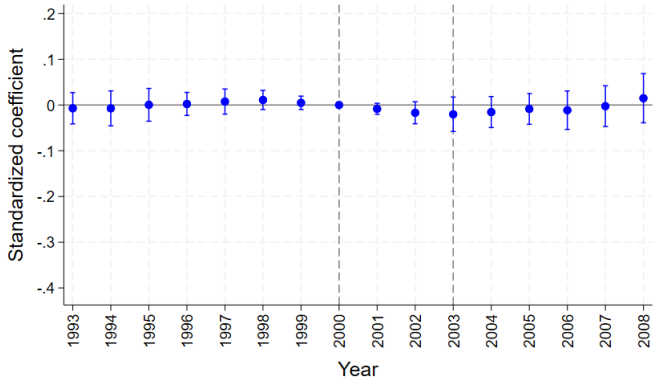
Figure 10: Effects of vulnerability & protection on CZ employment shares – Alternative dependent variables



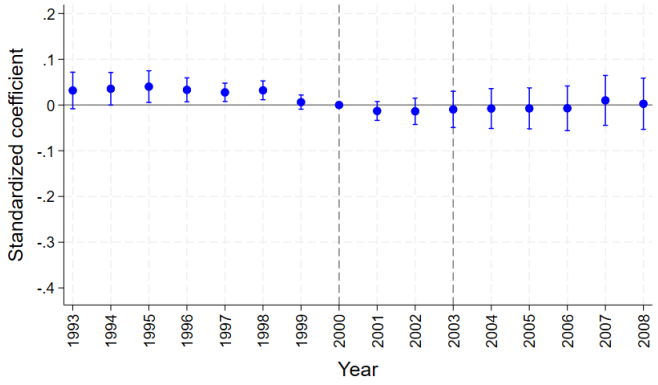
(a) Vulnerability (V_c) & manuf. emp. share



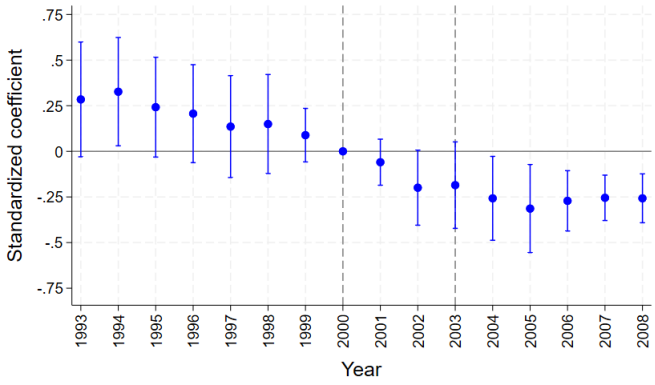
(b) Vulnerability (V_c) & steel-intensive manuf. emp. share



(c) Vulnerability (V_c) & non-steel-int. manuf. emp. share



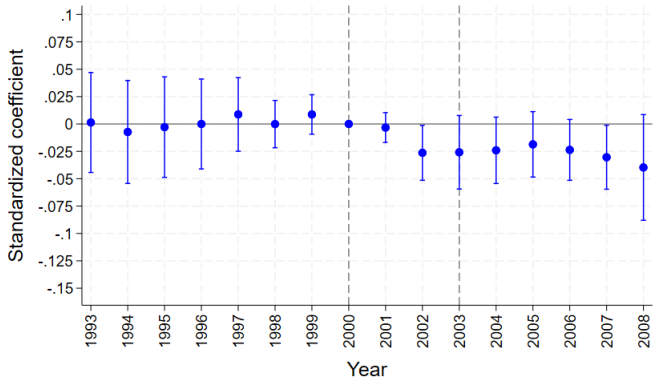
(d) Vulnerability (V_c) & emp.-to-working-age-pop. ratio



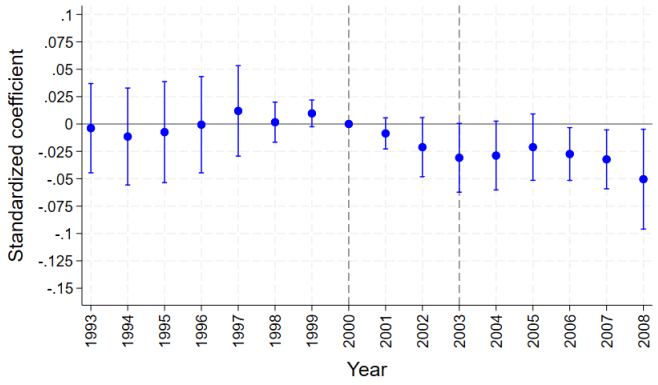
(e) Protection (P_c) & steel-production emp. share

Notes: Panels report standardized coefficients for time-varying point estimates $\boldsymbol{\beta}$ from equation (3) in the main text. Observation dropped if in top or bottom 1% of distribution for dependent variable, V_c (in panels (a)-(d)), or P_c (in panel (e)). Controls $\boldsymbol{X}_{ct}$ consist of 1990 CZ characteristics in panel B of Table 2 in the main text interacted with year dummies, Chinese import competition (IPW_{ct}), and protection from and vulnerability to steel AD duties (P_{ct}^{AD}, V_{ct}^{AD}). Chinese import competition 95% confidence intervals with standard errors clustered by state. Regressions weighted by 1998 CZ working-age population. Vertical lines at 2000 and 2003 indicate, respectively, last year before Bush steel tariff process starts (omitted base year) and year Bush steel tariffs removed (removed in December 2003).

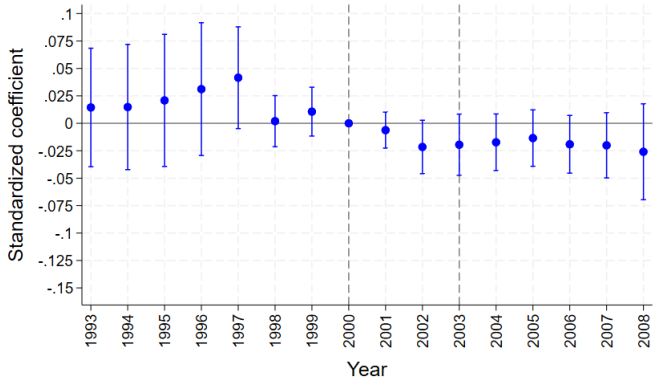
Figure 11: Effects of vulnerability & protection on CZ employment shares – Excluding outliers



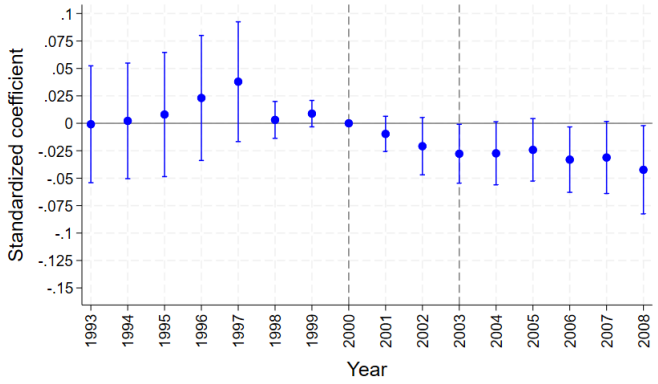
(a) Steel-int. share of manuf. estab. (7.5% direct usage)



(b) Steel-int. share of manuf estab. (5% direct usage)



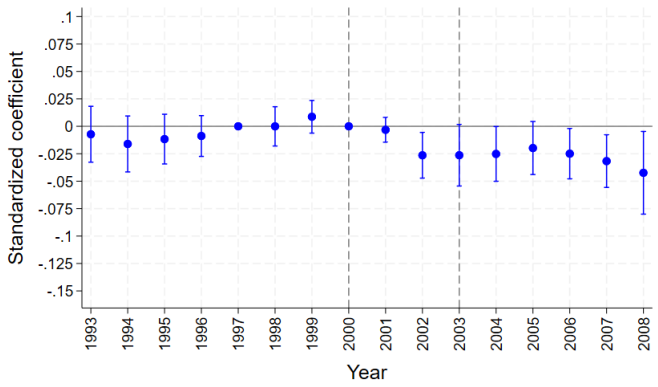
(c) Steel-int. share of estab. (7.5% direct usage)



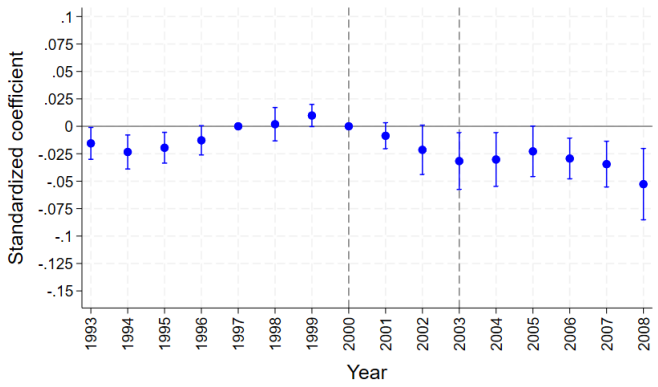
(d) Steel-int. share of estab. (5% direct usage)

Notes: Panels report standardized coefficients for time-varying point estimates $\boldsymbol{\beta}$ from equation (3) in the main text of Bush steel tariff vulnerability (V_c) with state-year and CZ fixed effects. Dependent variable is steel-intensive manufacturing establishments as share of manufacturing establishments in panels (a)-(b) and as share of all establishments in panels (c)-(d). Per \$100 output, direct usage threshold for steel-intensive defined as \$7.50 in panels (a) and (c) and \$5 in panels (b) and (d). Controls $\boldsymbol{X}_{ct}$ consist of 1990 CZ characteristics in panel B of Table 2 in the main text interacted with year dummies, Chinese import competition (IPW_{ct}), and protection from and vulnerability to steel AD duties (P_{ct}^{AD}, V_{ct}^{AD}). 95% confidence intervals with standard errors clustered by state. Regressions weighted by 1998 CZ working-age population. Vertical lines at 2000 and 2003 indicate, respectively, last year before Bush steel tariff process starts (omitted base year) and year Bush steel tariffs removed (removed in December 2003).

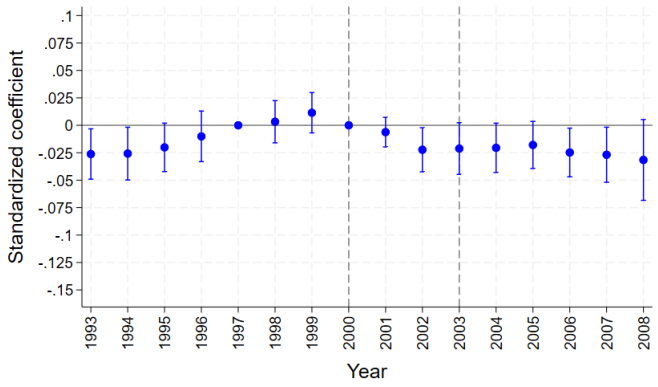
Figure 12: Impact of local vulnerability to Bush steel tariffs on CZ steel-intensive establishments (CZ fixed effects)



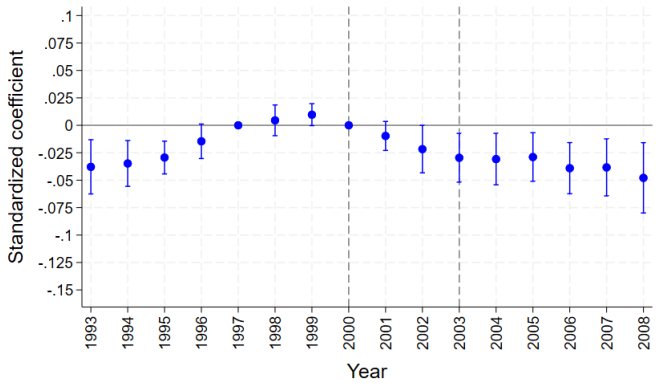
(a) Steel-int. share of manuf. estab. (7.5% direct usage)



(b) Steel-int. share of manuf estab. (5% direct usage)



(c) Steel-int. share of estab. (7.5% direct usage)



(d) Steel-int. share of estab. (5% direct usage)

Notes: Panels report standardized coefficients for time-varying point estimates $\boldsymbol{\beta}$ from equation (3) in the main text of Bush steel tariff vulnerability (V_c); fixed effects are state-year, CZ×pre1998, and CZ×post1997. Dependent variable is steel-intensive manufacturing establishments as share of manufacturing establishments in panels (a)-(b) and as share of all establishments in panels (c)-(d). Per \$100 output, direct usage threshold for steel-intensive defined as \$7.50 in panels (a) and (c) and \$5 in panels (b) and (d). Controls $\boldsymbol{X}_{ct}$ consist of 1990 CZ characteristics in panel B of Table 2 in the main text interacted with year dummies, Chinese import competition (IPW_{ct}), and protection from and vulnerability to steel AD duties (P_{ct}^{AD}, V_{ct}^{AD}). 90% confidence intervals with standard errors clustered by state. Regressions weighted by 1998 CZ working-age population. Vertical lines at 2000 and 2003 indicate, respectively, last year before Bush steel tariff process starts (omitted base year) and year Bush steel tariffs removed (removed in December 2003).

Figure 13: Impact of local vulnerability to Bush steel tariffs on CZ steel-intensive establishments – 90% confidence intervals

2 Data appendix

2.1 Input output data

We obtain 1997 input-output (IO) tables from the US Bureau of Economic Analysis (BEA). Specifically, we obtain direct requirement and total requirement tables. One version of the direct requirement table specifies the amount of row input i used directly by column industry j and another version specifies this usage per dollar of column industry j output. The latter version also gives column industry j output as the sum of intermediate inputs used plus value added. A cell in the total requirement table specifies the total amount of row input i used by column industry j per dollar of row industry j output. Total usage not only takes into account the industry's direct use of input i, but also its indirect usage in that other inputs k use input i and the inputs used by input k also use input i and so on. By construction, the diagonal elements of the total requirement table weakly exceed 1 and one needs to subtract 1 from these elements to see usage of row industry $i = j$ as an input by column industry j.

2.2 Employment dependent variables

We obtain annual county-NAICS employment data at the 6-digit NAICS level from Eckert et al. (2021). The source of their data is the County Business Patterns (CBP), but they have concorded the data so the industry classification is NAICS 2012 in each year. This overcomes the typical challenge of periodic NAICS revisions and, crucially in our context, the switch from SIC to NAICS in 1998.

However, their data has an important limitation in the pre-1998 SIC years that poses problems for measuring employment in steel-intensive manufacturing industries before 1998 (but not for measuring employment in any year from 1998 onward or for measuring employment in manufacturing or steel-producing industries before 1998). The limitation is that they cannot concord some SIC industries to 6-digit NAICS industries. In these cases, the sum of concorded employment across 6-digit NAICS industries for a county-year is less than total employment for the county-year. And the magnitude is non-trivial: on average across the years 1993-1998, the county-level share of employment concorded to 6-digit NAICS industries is only 46% with this share only reaching 75% at the 99^{th} percentile of the distribution.

Nevertheless, Eckert et al. (2021) also report employment at more aggregate NAICS levels. Thus, the sum of concorded employment across 6-digit NAICS industries for a county-year is less than employment at the 2-digit or 4-digit NAICS code for the county-year in situations where a SIC industry could not be concorded to 6-digit NAICS industries. This is helpful because it allows measuring the amount of non-concorded employment within 4-

digit and 2-digit NAICS codes for a county-year; indeed, all non-concorded manufacturing employment lies within 4-digit NAICS codes. Since these problems cease upon the switch from SIC to NAICS in 1998, we use a county's 1998 distribution of employment to allocate non-concorded employment for 4-digit NAICS codes across their constituent 6-digit codes when calculating pre-1998 steel-intensive manufacturing employment.

Given our reliance on the 1997 IO tables to define pre-Bush tariff measures of steel input usage across industries, we concord the Eckert et al. (2021) data to the 1997 NAICS used by the BEA in their IO tables. First, we use the US Census Bureau concordances to sequentially concord from NAICS 2012 to NAICS 2007 to NAICS 2002 to NAICS 1997. Although relatively rare, an industry in, say, NAICS 2007 can split among $N > 1$ NAICS 2002 industries. In these cases, we equally split the industry's NAICS 2007 employment among its N constituent NAICS 2002 industries. Second, we use the concordance provided by the BEA with their IO tables to concord from the official NAICS 1997 to the NAICS 1997 used by the BEA. These systems are quite similar, although the BEAs 1997 NAICS is more aggregate than the official 1997 NAICS. Construction is an exception where the 3-digit NAICS sub-sector 235 maps to all 6-digit construction codes in the BEA NAICS. In this case, we use 1997 output weights from the IO table to split 3-digit NAICS sub-sector 235 across the 6-digit BEA NAICS construction industries.

Ultimately, our annual county-industry employment data allows us to construct the dependent variables in our analysis: manufacturing employment share, steel-intensive manufacturing employment share, non-steel-intensive manufacturing employment share, steel-production employment share, and employment-to-working-age population ratio. Manufacturing industries are defined as 6-digit NAICS industries within 2-digit NAICS codes 31, 32, and 33. Our baseline definition of 6-digit steel-intensive manufacturing industries is 6-digit NAICS manufacturing industries with a direct requirement for at least one Bush steel tariff industry of at least \$7.50 per \$100 of output. Our alternative definition relaxes this direct requirement threshold to \$5 per \$100 of output. Non-steel-intensive manufacturing employment is defined as the difference between manufacturing and steel-intensive manufacturing employment. For the employment-to-working-age population ratio, we use annual county-level population from SEER. Specifically, we use the 19 age groups (adjusted) data and define the working-age population as 15-64 years of age. County-level employment and population data is concorded to 1990 CZs using the concordance on David Dorn's website.

2.3 Trade shocks

2.3.1 Bush steel tariffs and exemptions

We obtain the list of 8-digit HS products h subject to the Bush steel tariffs and the applicable tariff τ_h from Note 11(d)(iii) in the Annex to Presidential Proclamation 7529. The tariffs went into effect on March 20 2002. Although they were scheduled to last three years with removal on March 21 2005 and annual decreases in the tariff on March 21 2003 and March 21 2004, they were ultimately removed in December 2003.

We define τ_h as the tariff upon implementation. We concord the tariffs from 8-digit HS codes h to the 6-digit NAICS 1997 codes i used by the BEA in their IO tables using the concordance from Pierce and Schott (2012) to move from 8-digit HS codes to NAICS 1997 codes and then from NAICS 1997 codes to those used by the BEA as described above in Appendix 2.2. Ultimately, the four 6-digit NAICS 1997 industries hit with Bush steel tariffs are $i = 331111, 331222, 332910, 335120$ which correspond to Iron and Steel Mills, Steel Wire, Metal Valve Manufacturing, and Lighting Fixture Manufacturing.

Proclamation 7529 defines exporter-product exemptions to the tariffs. Item (2) on p.19 of the proclamation defines the US Free Trade Agreement partners – Israel, Canada, Mexico, and Jordan – as exempt. Item (3) on p.19 proclaims a set of developing countries exempt, as defined by Note 11(d)(i) in the Annex to the proclamation on p.44. Item (4) on p.19 proclaims exceptions to these developing country exemptions, as defined by Note 11(d)(ii) in the Annex to the proclamation on p.44. The exceptions define product-specific exceptions that apply to Brazil, Moldova, Turkey, Venezuela, Thailand, India, and Romania.

Our US import data comes from the USITC DataWeb. We use 1998 imports for consumption at the 8-digit HS level in equation (4) in the main text to calculate the Bush steel tariff duties d_i in NAICS industry i that would be collected on the pre-Bush tariff level of imports. The employment data described in Appendix 2.2 and the IO data described in Appendix 2.1 provide 1998 US industry-level employment L_i and steel usage s_{ij} needed to compute industry-level protection from the Bush steel tariffs P_i in equation (5) in the main text and industry-level vulnerability to the Bush steel tariffs V_j in equation (6) in the main text. The employment data described in Appendix 2.2 provide the 1998 CZ-industry level employment data L_{jc} and L_c needed to compute CZ-level vulnerability to and protection from the Bush steel tariffs in equations (7)-(8) in the main text.

2.3.2 Anti-dumping tariffs

We obtain data on anti-dumping (AD) tariffs from the Global Antidumping Database - 1980's-2015 hosted by The World Bank and originally developed by Chad Bown. These

data record AD tariffs τ_{kht}^{AD} faced by exporting country k for 8-digit HS product h in year t. We define steel products as HS Chapters 72 (Iron and Steel) and 73 (Article of Iron and Steel) and, with two exceptions, follow equations (4)-(8) in the main text to calculate local protection from steel AD tariffs P_{ct}^{AD} and local vulnerability to steel AD tariffs V_{ct}^{AD}.

The first exception is that we calculate local protection from and local vulnerability to the steel AD tariffs, P_{ct}^{AD} and V_{ct}^{AD}, at the annual frequency given the time-varying nature of AD tariffs which are, fundamentally, temporary trade barriers. The second exception is that, given the exporter-product nature of AD tariffs, we use 1998 exporter-product imports IM_{kh} instead of 1998 product imports IM_h to define steel AD duties d_i used in equation (4). Specifically, we use the following definition when computing time-varying industry-level and CZ-level protection from and vulnerability to steel AD tariffs:

$$d_{it}^{AD} = \sum_{h \in H(i)} \sum_{k} d_{kht}^{AD} = \sum_{h \in H(i)} \sum_{k} \tau_{kht}^{AD} IM_{kh}. \tag{1}$$

2.3.3 China shock

As described above, our US import data come from the USITC DataWeb. Additionally, we obtain annual imports at the 6-digit HS level from China into the high-income countries used for the China shock instrument (Australia, Denmark, Finland, Germany, Japan, New Zealand, Sweden, and Spain) from COMTRADE via the World Bank's WITS database. We normalize all imports to thousands of 1998 dollars using the GDP implicit price deflator (series A191RD3A086NBEA from the St.Louis Fed's FRED database) and concord to NAICS 1997 as described in Appendix 2.3.1. The employment data described in Appendix 2.2 then allows us to compute Chinese imports per worker IPW_{ct} and its instrument IPW_{ct}^{IV} as in equations (9)-(10) in the main text.

2.4 Other data

2.4.1 Steel prices

Section 3 in the main text uses three data sources for steel prices. First, we hand-collected data from the industry magazine *Purchasing* for monthly steel prices covering the period January 1998 through September 2003 when they stopped publishing these data. These prices represent transaction prices paid by US firms consuming steel as they come from a survey of a large number of firms purchasing steel. The magazine was published monthly and published prices in dollars per ton for hot-rolled (HR) steel sheet, cold-rolled (CR) steel sheet, hot-dipped (HD) galvanized steel sheet, and cold-formed (CF) steel bar. The

published data contain the "latest price" and the price from the "previous month". Where possible, we obtain the month t price as the "previous month" price published in month $t+1$ because it reflects any updates to the initially published "latest price". Occasionally, prices are not published in a given month. In this case, we obtain the month t price using the "latest price" published in month t. Our approach ensures complete monthly coverage for January 1998 through September 2003.

As a measure of steel prices received by US steel producers, we collect monthly producer price indices from the US Bureau of Labor Statistics (BLS) for the period January 1998 through December 2003. The series are HR steel sheet (PDU3312-311), CR steel sheet (PDU3312-8), HD galvanized sheet (PDU3312-313) and CF bar (PDU3316-71).

Figure 2 in the main text uses unit values as a measure of the tariff-exclusive price received by foreign exporters. As throughout the paper, US import data comes from the USITC DataWeb. Using these data, unit values are simply import value divided by import quantity.

2.4.2 Industry and CZ characteristics

The balance tests in panel A of Table 2 use 1998 industry characteristics. Except for the capital and high-tech share of investment from Acemoglu et al. (2016), we take all industry characteristics from the NBER-CES Manufacturing Database (Becker et al. (2013)). The 1990 CZ characteristics in the balance tests in panel B of Table 2 in the main text come from Autor et al. (2013).

2.4.3 Data used in heterogeneity analysis

We obtain annual county-level house price index data from the Federal Housing Finance Agency. This data is only available for 2739 counties, it is not available for 402 counties. We concord the county-level house price index data to the CZ level using the concordance described in Appendix 2.2 and aggregating house price indices across counties within a CZ using the 1998 county-level working-age population as weights that were described in Appendix 2.2. 658 out of 722 US mainland CZs have at least one county with house price index data in 2000 and 2007 so that we can compute 2000-2007 house price growth. Construction employment is defined as the 2-digit NAICS sector 23.

We define military NAICS industries following the classification developed by Peacock (2014). She defines five military industries. First, Guns & Ammunition consists of the official NAICS industries 332992, 332993 and 332994 which concord to the single BEA NAICS 1997 industry 33299A. Second, Tanks & Armored Vehicles consists of the official NAICS industry

336992 which is also a BEA NAICS 1997 industry. Third, Shipbuilding consists of the official NAICS industries 336611 and 336612 which are also BEA NAICS 1997 industries. Fourth, Aircraft, Engine & Parts consists of the official NAICS industries 336411, 336412 and 336413 which are also BEA NAICS 1997 industries. Fifth, Space Vehicle & Missile Manufacturing consists of the official NAICS industries 336414, 336415 and 336419 which concord to the BEA NAICS 1997 industries 336414 and 33641A.

We define the auto sector as two 4-digit NAICS industry groups and one 6-digit NAICS industry: Motor Vehicle Manufacturing (3361); Motor Vehicle Body, Trailer, and Parts Manufacturing (336A); and Motorcycle, Bicycle, and Parts Manufacturing (336991). The remainder of the 3-digit NAICS sub-sector 336 (Transportation Equipment Manufacturing) consists either of the military industries defined above or the two non-auto 6-digit NAICS industries of that are not 336500 Railroad Rolling Stock Manufacturing and 336999 All Other Transportation Equipment Manufacturing.

We obtain job turnover data from the Job Openings and Labor Turnover Survey from the BLS. Unfortunately, these data only vary across states and not within states. Thus, our job opening rate is state-level job openings as a share of state-level employment.

2.4.4 Establishment data

We obtain establishment count data from the County Business Patterns (CBP). The CBP report annual establishment counts at the county level and at the county-industry level (4-digit SIC in the pre-1998 years and 6-digit NAICS in the post-1997 years). We define all establishments for a county using the county-level establishment counts. We define manufacturing and steel-intensive manufacturing establishment counts for a county using the county-industry establishment counts.

To do so, we concord these establishment counts to the 1997 NAICS system used by the BEA in the 1997 IO tables. First, we concord the post-1997 NAICS years from their native NAICS to 1997 NAICS as described in Appendix 2.2. Second, we concord the pre-1998 SIC years to NAICS 1997 using Pierce and Schott (2012). Finally, we concord from NAICS 1997 to the NAICS 1997 system used by the BEA as described in Appendix 2.2.

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