How Responsive is Trade Adjustment Assistance?

Supplementary Information

Contents

A1 Data Description

This section describes data sources and construction of key variables. Section A1.1 illustrates the construction of variables used in the analyses of TAA responsiveness and electoral outcomes. Section A1.2 illustrates the geographic, temporal, and industry-level variation TAA petitions.

A1.1 Data Sources and Measurement

- **TAA petitions**: We use the petition-level data which include information on the employer, the workplace, the estimated number of affected workers, and the certification status. For each petition, we obtained a latitude and longitude coordinate of the workplace using Texas A&M Geocoder's Geocoding API and Google Maps Geocoding API. The two APIs use different algorithms, but the returned coordinates are matched to the same county in 98% of cases. In the remaining cases, we match each location to a county using the location-name-to-county crosswalk, and choose the one between the two coordinates that is matched to this location-name-based-county-match.

- **TAA spending**: We apportion state-level TAA payments to each CZ in proportion to (i) the number of petitions, (ii) the number of workers included in the petitions, and (iii) the number of certified workers in each CZ. For the CZ-level TAA payments in 2000 and 2007, we apportion the state-level budget based on the petitions filed in the year of observation and the two preceding years. For 1990, we apportion the budget based on the petitions filed in 1989, 1990, and 1991 due to the absence of information before 1989. A petition sometimes covered multiple locations within a state (e.g. the address states "all locations throughout the state"). We distribute such cases (3.3% in the data) to CZs according to their share of petitions within a state.

- **Presidential elections**: We use county-level voting data from Dave Leip's Atlas of the U.S. Presidential Elections. For CZ-level analysis, we match each county to a corresponding CZ using the crosswalk constructed by Autor, Dorn and Hanson (2013).

- **Occupation and industry characteristics**: We include the CZ-level share of employment in manufacturing industry, routine-task-intensity index and offshorability index. We use the data for 2000, and the data are from Autor, Dorn and Hanson (2013).

- **Demographic characteristics**: We include county-level population shares for nine age and four racial groups, and the shares of the county population that are female, college educated, foreign born, and Hispanic. Data for these variables were obtained from the U.S. Census. We use the data measured in 2000.

A1.2 Description of TAA Petitions and Budget Allocation

- Table A1 presents the list of industries with the 20 largest number of estimated workers included in the TAA petitions from 1990 and 2007. The apparel and other textile products industry, which filed 5,624 petitions covering 493,314 workers, is on top of the list. The US's top import partner for the textile industry is China.

Table A1: TAA Petitions and Affected Workers by Industries, 1990-2007

2-Digit SIC Codes	Petitions	Certified Petitions	Petitioning Workers	Certified Workers
23 Apparel & Other Textile Products	5,624	4,671	493,314	456,336
13 Oil & Gas Extraction	3,882	2,974	106,408	82,323
36 Electronic & Other Electric Equipment	3,477	2,176	406,412	276,242
35 Industrial Machinery & Equipment	3,038	1,509	272,571	162,487
22 Textile Mill Products	2,367	1,640	202,244	160,494
37 Transportation Equipment	1,857	979	428,367	240,997
34 Fabricated Metal Products	1,761	940	142,865	85,486
73 Business Services	1,602	190	86,150	9,370
33 Primary Metal Industries	1,527	835	165,432	107,634
24 Lumber & Wood Products	1,296	727	69,413	45,086
38 Instruments & Related Products	1,169	746	95,842	68,456
30 Rubber & Miscellaneous Plastics Products	1,133	661	99,900	63,720
28 Chemical & Allied Products	1,045	570	78,886	47,371
25 Furniture & Fixtures	864	592	83,571	64,790
39 Miscellaneous Manufacturing Industries	798	550	56,412	42,659
26 Paper & Allied Products	762	389	75,778	48,457
31 Leather & Leather Products	732	525	57,011	50,710
32 Stone, Clay, & Glass Products	659	394	56,163	38,778
20 Food & Kindred Products	505	229	72,016	37,189
27 Printing & Publishing	348	150	28,492	12,231

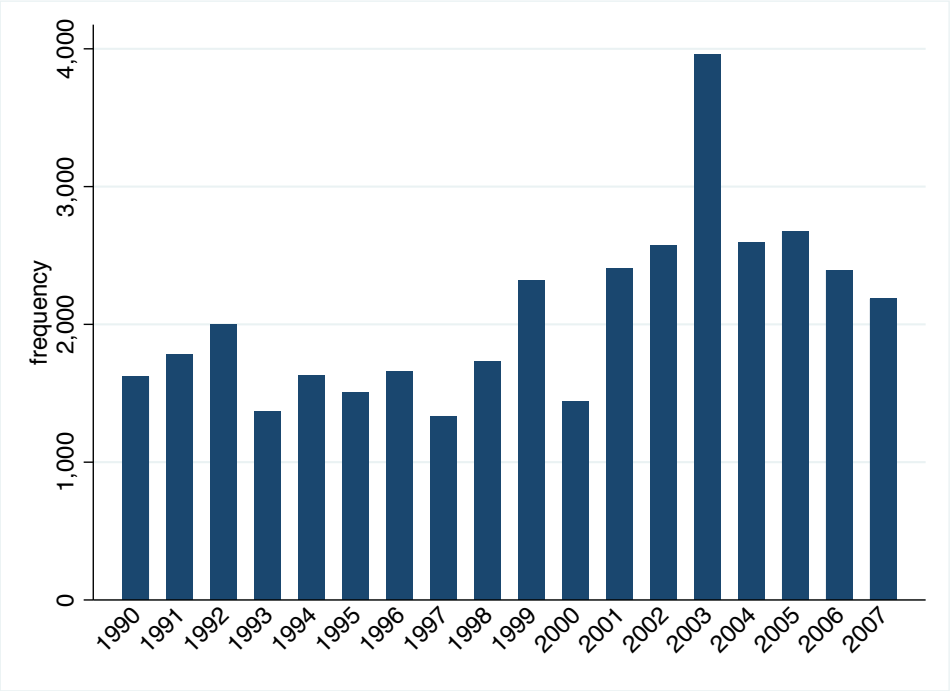
- Table A2 presents the list of countries which are recorded to affect worker groups in TAA petitions. The information is partial because country information is available for less than half of the petitions submitted from 2003.

Table A2: TAA Petitions by Countries of Production Shift, 2003-2007

Country	TAA Petitions	Affected Workers
Mexico	1,116	126,741
China	1,159	85,465
Canada	367	40,643
Honduras	90	11,510
Korea	40	8,670
India	144	8,422
Brazil	51	8,233
Singapore	64	7,700
Pakistan	41	7,280
Dominican Republic	77	6,512
All Country-Identified Petitions	3,041	279,981

- Figure A1 presents the number of TAA petitions filed per year from 1990 to 2007.

Figure A1: TAA Petitions, 1990-2007



- Table A3 presents TAA program statistics as of 2018 to show the size of the program in terms of petitions, certified petitions, covered workers, and budget allocation.

Table A3: TAA Budget, 2018

Petitions	1,178
Certification	895
Estimated Workers Covered	76,902
Training Fund Allocation	$397,860,000
Total TAA Funding (TaOA, TRA, A/RTAA)	$667,142,000

* **Training and Other Activities (TaOA)**: TaOA funds are used to for TAA training, case management activities, job search allowances, relocation allowances, and administration.

* **Trade Readjustment Allowances (TRA)**: TRA funds are used for providing Trade Readjustment Allowances.

Alternative Trade Adjustment Assistance (ATAA) and **Reemployment Trade Adjustment Assistance (RTAA)**: A/RTAA funds are funds are used for providing these two specific benefits.

- Table A4 presents the allocation of training fund across states in 2018.

Table A4: TAA Budget Allocation and Program Statistics by States, 2018

State	Petitions	Certifications	Workers	Training Fund Allocation
AK	0	0	0	$0
AL	8	6	1,335	$2,757,234
AR	23	11	277	$6,740,987
AZ	12	10	272	$2,583,247
CA	138	116	6,193	$23,546,359
CO	20	17	1,078	$4,801,884
CT	37	27	2,670	$7,453,953
DC	0	0	0	$0
DE	2	0	0	$276,093
FL	13	16	784	$3,280,628
GA	24	17	3,440	$4,299,661
HI	0	0	0	$537,243
IA	31	20	1,490	$10,762,659
ID	7	6	190	$1,788,487
IL	65	50	3,125	$20,220,267
IN	28	20	3,078	$7,069,867
KS	16	13	883	$3,062,476
KY	8	6	865	$12,542,230
LA	3	2	175	$1,200,822
MA	50	34	2,807	$10,708,991
MD	14	6	807	$1,523,183
ME	3	2	111	$5,242,738
MI	31	37	2,827	$19,515,965
MN	37	27	2,470	$10,791,017
MO	25	14	836	$10,704,417
MS	1	1	137	$1,151,247
MT	1	1	1	$599,147
NC	22	15	2,326	$11,040,654
ND	4	5	332	$426,550
NE	16	8	385	$1,121,566
NH	5	5	213	$716,870
NJ	34	25	1,847	$6,251,802
NM	1	2	334	$4,356,571
NV	2	1	6	$0
NY	74	54	2,914	$11,646,379
OH	55	42	4,241	$14,447,163
OK	9	4	215	$7,923,136
OR	59	45	4,482	$19,384,578
PA	84	61	4,463	$48,669,588
PR	2	1	10	$1,447,541
RI	7	6	461	$1,298,821
SC	11	14	2,063	$8,554,015
SD	1	0	0	$954,310
TN	18	16	2,549	$7,238,354
TX	66	53	5,125	$38,291,637
UT	8	7	597	$3,490,198
VA	35	20	2,786	$2,353,394
VT	2	3	539	$627,117
WA	39	27	2,182	$23,471,333
WI	14	16	2,157	$7,368,317
WV	12	5	823	$3,619,304
WY	1	1	1	$0
US	**1,178**	**895**	**76,902**	**$397,860,000**

A2 TAA Spending Based on Unemployment Insurance versus TAA Petitions

We compare the CZ-level estimates of TAA spending based on unemployment insurance (UI) versus TAA petitions focusing on the estimated level of TAA payments in 1990, 2000 and 2007. In Panel A in Table 1, we examine ten-year equivalent change in payments based on information from 1990, 2000 and 2007 by calculating the change between 1990 and 2000, and 2000 and 2007, thus leaving us with 1444 observations (722 CZs X 2 decades for the difference between 1990 and 2000 and between 2000 and 2007). In **Table A5**, we provide summary statistics for the values in 1990, 2000 and 2007 for 722 CZs, and hence we have 2166 observations (722 CZs X 3 years for 1990, 2000 and 2007).

- **Table A5** presents summary statistics for four measures. It is notable that all TAA spending variables calculated based on TAA applications show greater variation than UI-based measure.

Table A5: Summary statistics

Variable	N	Mean	Std. Dev.	Min.	Max.
Unemployment Insurance	2166	1.51	2.02	-0.00	20.90
TAA Petitions	2166	1.84	3.56	0.00	46.34
Certified Petitions	2166	1.91	3.89	0.00	52.46
Petitioning Workers	2166	1.59	3.30	0.00	33.21
Certified Workers	2166	1.72	3.85	0.00	40.46

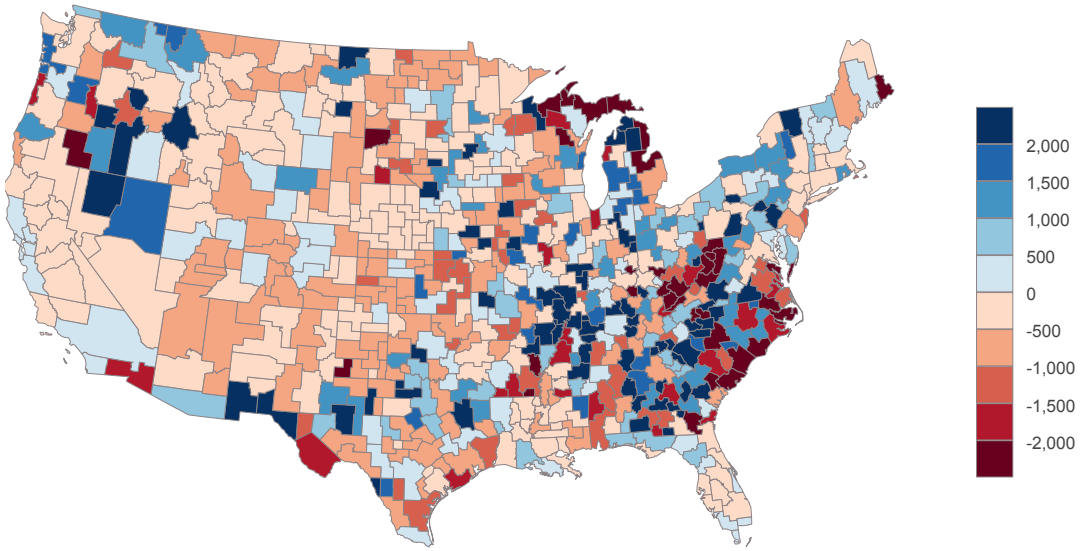
- **Table A6** shows the correlation matrix. The correlation coefficients between UI-based measure and petition-based measures range between 0.58 and 0.65.

Table A6: Cross-correlation table

	(1)	(2)	(3)	(4)	(5)
(1) Unemployment Insurance	1.00				
(2) TAA Petitions	0.65	1.00			
(3) Certified Petitions	0.61	0.94	1.00		
(4) Petitioning Workers	0.64	0.82	0.78	1.00	
(5) Certified Workers	0.58	0.78	0.80	0.95	1.00

- **Figure A2** is a geographical illustration of the difference in TAA transfers calculated based on the number of TAA-certified workers versus UI. The values are calculated as the difference between the average TAA-based estimates and UI-based estimates focusing on 1990, 2000 and 2007. TAA-based estimates are higher (lower) than UI-based estimates in blue (red) areas.

Figure A2: Difference in the estimated level of TAA payments based on TAA petitions versus UI



- **Table A7** demonstrates that the higher share of manufacturing employment is positively correlated with the calculated difference between TAA-based estimates and UI-based estimates. This follows intuition, as TAA is specifically targeted toward trade dislocation.

Table A7: Manufacturing employment and difference in the estimated TAA spending

	(1) Difference TAA-UI
Manufacturing Employment, %	103.116**
	(12.050)
Observations	722

Standard errors in parentheses

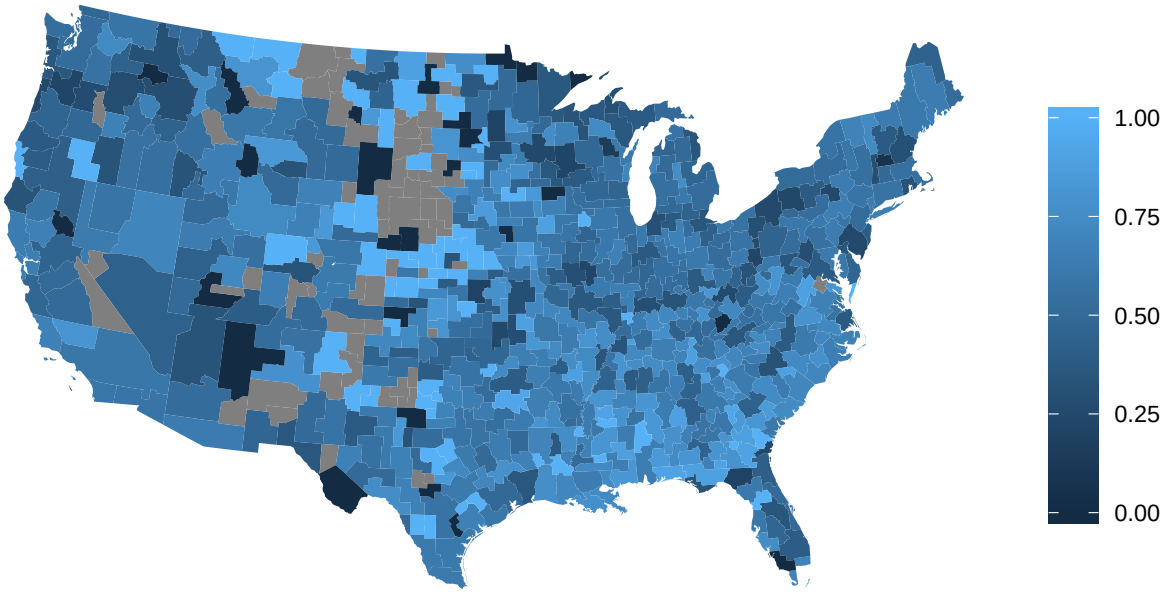
$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

A3 TAA Certification Rates

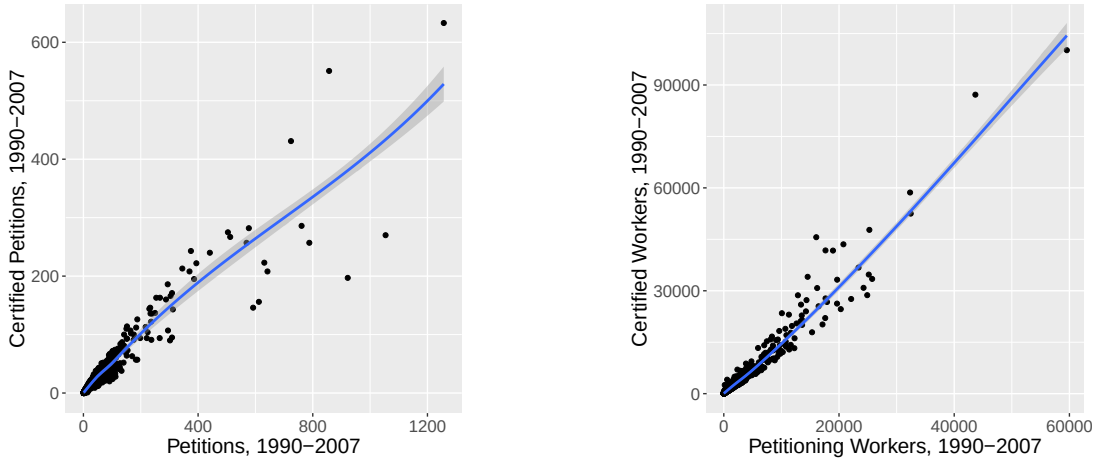
This section describes the success rate of TAA petitions, calculated as the number of certified petitions divided by the number of all filed petitions. One may expect that workers can anticipate the success rate of TAA petitions and decide accordingly whether to apply for TAA program. Such systematic differences in the beliefs about the likelihood of success would lead to differences in the decision to apply, which could lead to bias in our estimation. To ensure that our results are not reducible to workers' calculation about the likely success of their petitions, we illustrate the geographical variation in TAA certification rate in Figure A3 and plot the number of certified petitions by the number of all filed petitions in Figure A4. We also examine in Table A8 whether certification success rate is systematically associated with state's political characteristics, specifically, the partisanship of the governor.

- **Figure A3** illustrates the geographical variation in the certification rate for the period of 1990-2007. Lighter colored zones denote higher success rates. The grey-colored cells denote areas without a single petition over the examined period.

Figure A3: TAA Certification Rate, 1990-2007



- **Figure A4** plots the number of certified petitions over the number of all filed petitions (left) and the number of certified workers over the number of petitioning workers (right). The certification rate is by-and-large similar across commuting zones—outliers tend to correspond to areas with only a handful of petitions.



(a) TAA Petitions and Certification

(b) Petitioning Workers and Certified Workers

Figure A4: TAA Petitions and Certification across Commuting Zones

- **Table A8** examines how the partisanship of the governor is related with the certification success rate. If workers calculate the likely success of their TAA petitions and decide accordingly whether to apply for the program, one potential systematic factor that may affect their calculation is the partisanship of the governor. Democratic governors might be more likely to be supportive of social welfare program. We test this expectation in Table A8, where the dependent variable is the yearly certification rate for each CZ. There appears to be no consistent relationship between the partisanship of governor and certification success rates.

Table A8: Partisanship of Governor and Certification Success Rate

	(1)	(2)	(3)	(4)	(5)	(6)
	Certified Petitions			Certified Workers		
Democratic governor	0.004	-0.003	0.012	0.016	-0.006	0.011
	(0.020)	(0.013)	(0.011)	(0.019)	(0.014)	(0.011)
State FE	No	Yes	Yes	No	Yes	Yes
Year FE	No	No	Yes	No	No	Yes
Observations	7070	7070	7070	6906	6906	6906

Standard errors in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

A4 Additional Tests

This section examines whether the results presented in the main manuscript are robust to alternative model specifications. **Section A4.1** presents additional test results on responses of TAA to import exposure. **Section A4.2** illustrates variation in TAA responsivenss. **Section A4.3** presents additional results on the effects of TAA responsiveness on the 2016 presidential election.

A4.1 Responses of TAA to Import Exposure

This section presents the estimation results of alternative model specifications on responses of TAA to import exposure. The presented results in Tables A9-A11 are variations of models presented in Table 1. Across different estimations, the findings remain substantively similar to the main results reported in the manuscript. In Table A12, we also present the test results of the statistical significance of difference in coefficients estimated via ADH approach versus our approach.

- **Table A9** presents the models without decade fixed effects. The results show that TAA is more responsive to the import shock than estimated by ADH.
- **Table A10** add CZ fixed effects to the models presented in panel B of Table 1. The results show that our estimate of TAA responsiveness to Chinese import shock is 2.7-6.3 times larger than ADH's estimate.
- **Table A11** re-estimates the models presented in panel A of Table 1 ith log change of TAA transfers as the dependent variable. Due to "zero" observations in TAA transfers (corresponding to areas without TAA petitions), we lose a significant number of observations in Models (2)-(4), which rely on log change of transfers. The results are thus not comparable to our main findings, which remain more reliable, but the substantive relationship between our estimates and ADH's remains apparent.

Table A9: TAA Responsiveness to Chinese Import Shock without Decade FE

	(1) ADH	(2)	(3)	(4)	(5)
		Petition-Based Measure			
		Petitions	Certified Petitions	Workers	Certified Workers
Panel A: Ten-Year Equivalent Change in Payments					
Δ Import exposure per worker	0.472*	0.659**	0.681**	0.620**	0.631*
	(0.186)	(0.225)	(0.237)	(0.217)	(0.246)
Panel B: Level of TAA Payments in 1990 and 2000					
Import exposure per worker	0.436**	0.711**	0.778**	0.696**	0.823**
	(0.111)	(0.156)	(0.176)	(0.147)	(0.181)
Observations	1444	1444	1444	1444	1444

Robust standard errors clustered on states in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table A10: TAA Responsiveness to Chinese Import Shock with CZ Fixed Effects

	(1) ADH	(2)	(3)	(4)	(5)
		Petition-Based Measure			
		Petitions	Certified Petitions	Workers	Certified Workers
DV: Level of TAA Payments in 1990 and 2000					
Import exposure per worker	0.077	0.209	0.284	0.313*	0.483*
	(0.094)	(0.151)	(0.186)	(0.151)	(0.204)
CZ FE	Yes	Yes	Yes	Yes	Yes
Decade FE	Yes	Yes	Yes	Yes	Yes
Observations	1444	1444	1444	1444	1444

Robust standard errors clustered on states in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table A11: TAA Responsiveness to Chinese Import Shock with Percentage Change

	(1) ADH	(2)	(3)	(4)	(5)
		Petition-Based Measure			
		Petitions	Certified Petitions	Workers	Certified Workers
DV: Ten-Year Equivalent Percentage Change in Payments					
Δ Import exposure per worker	14.406^{+}	13.922	17.520	6.680	13.369
	(7.588)	(9.795)	(13.130)	(9.366)	(13.645)
Decade FE	Yes	Yes	Yes	Yes	Yes
Observations	1436	818	736	806	736

Robust standard errors clustered on states in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

- We test whether the coefficient on import exposure is statistically significantly different when we measure CZ-level TAA allocations via ADH approach (apportioning state-level budget based on UI payments, Model (1) in Panels A and B) versus our approach (apportioning based on TAA petitions, Models (2)-(4) in Panels A and B). **Table A12** summarizes our tests on statistical significance of difference in coefficients. In all tests, the null hypotheses we test are:

$$\beta_{1,Model(UI)} = \beta_{1,Model(TAA)}$$

where the left-hand side denotes the coefficient β_1 on import exposure when CZ-level TAA allocations are measured using UI payments and the right-hand side denotes the coefficient β_1 when TAA allocations are measured using TAA petitions. The test results show that the differences in coefficients between Model (1) versus Models (2)-(4) are statistically significant at the conventional level in Panel B.

Table A12: Statistical Significance of Difference in Coefficients

Panel A: Ten-Year Equivalent Change in Payments				
	Models (1) & (2)	Models (1) & (3)	Models (1) & (4)	Models (1) & (5)
H_0	$\beta_{1,Model1} = \beta_{1,Model2}$	$\beta_{1,Model1} = \beta_{1,Model3}$	$\beta_{1,Model1} = \beta_{1,Model4}$	$\beta_{1,Model1} = \beta_{1,Model5}$
Chi-square	1.75	2.66	2.03	1.38
P-value	0.1859	0.1032	0.1539	0.2393
Panel B: Level of TAA Payments in 1990 and 2000				
	Models (1) & (2)	Models (1) & (3)	Models (1) & (4)	Models (1) & (5)
H_0	$\beta_{1,Model1} = \beta_{1,Model2}$	$\beta_{1,Model1} = \beta_{1,Model3}$	$\beta_{1,Model1} = \beta_{1,Model4}$	$\beta_{1,Model1} = \beta_{1,Model5}$
Chi-square	11.41	13.18	8.57	11.84
P-value	0.0007	0.0003	0.0034	0.0006

A4.2 Variation in TAA Responsiveness

- **Figure A5** presents the degree of TAA responsiveness to import exposure in the 1990s and the 2000s. While Figure 2 in the main manuscript examines the pattern using the data from 1990 to 2007, we also replicate the figure using the data from 1990 to 2010. The main pattern illustrated in **Figure A5** is almost identical to the one described in Figure 2.

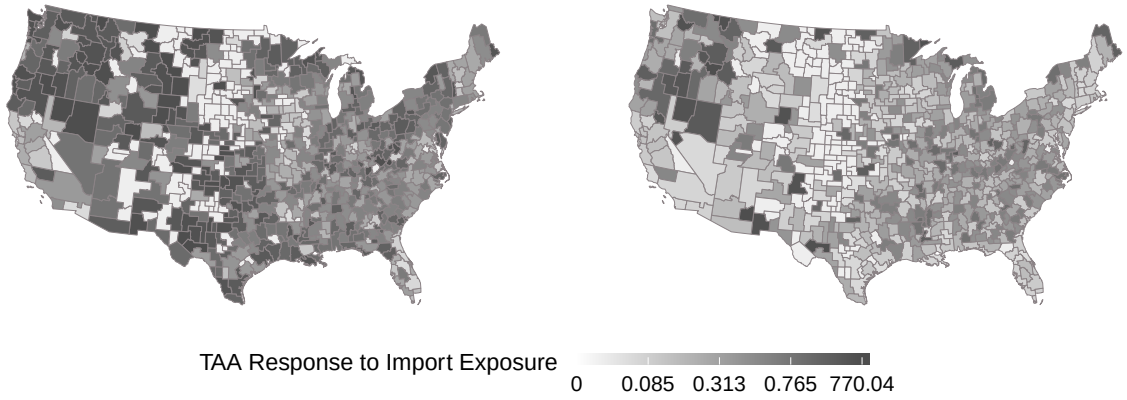


Figure A5: TAA Petitioners by Import Exposure per Worker in the 1990s (left) and 2000s (right)

- **Figure A6** illustrates the shift in TAA responsiveness from the 1990s to 2000s, as in Figure 2, but with the proportion of TAA-certified workers instead of TAA-petitioning workers. We measure responsiveness as the proportion of TAA-certified workers divided by the import exposure in each CZ. Again, the figure demonstrates the overall level of responsiveness decreased in the 2000s compared to the 1990s.

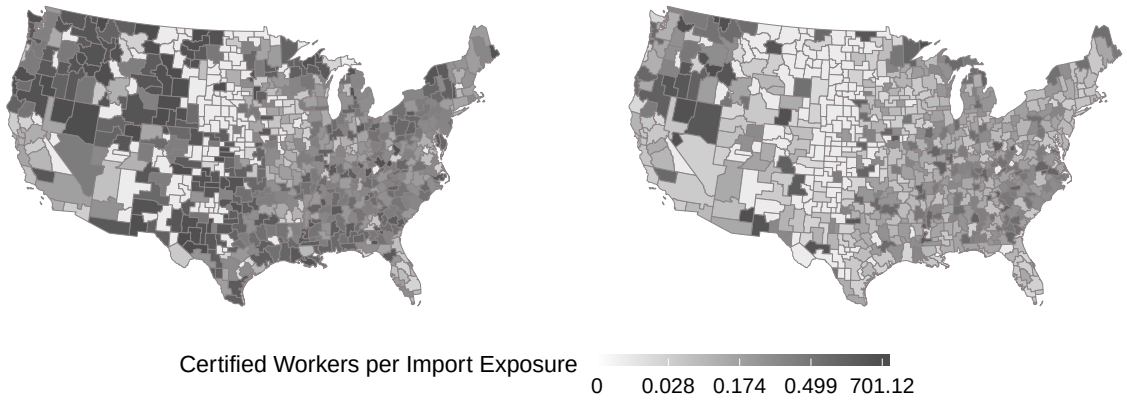


Figure A6: TAA-Certified Workers by Import Exposure in the 1990s (left) and 2000s (right)

- **Figure A7** describes the change in the responsiveness of TAA to import exposure. Red (blue)-colored CZs denote the areas where the level of responsiveness decreased (increased) in the second decade than in the first one. The figure demonstrates that take-up of TAA did not increase as much as import exposure.

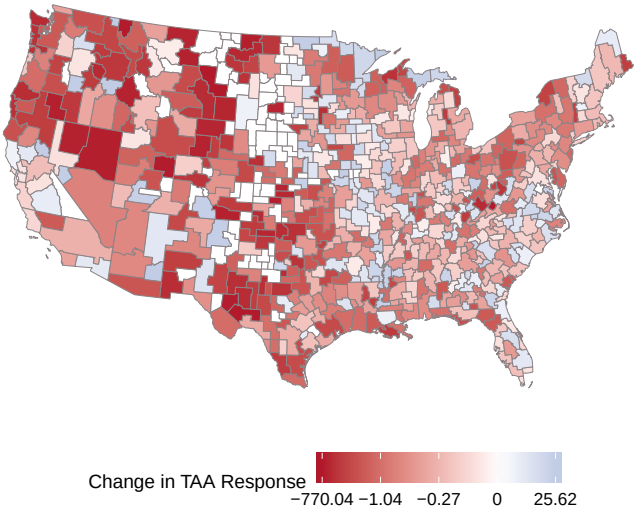


Figure A7: Change in TAA Responses to Import Exposure, 1990-2007

- **Figure A8** replicates the above figure with the TAA petitions data from 1990 to 2010. The pattern is almost identical to the one illustrated in Figure A7.

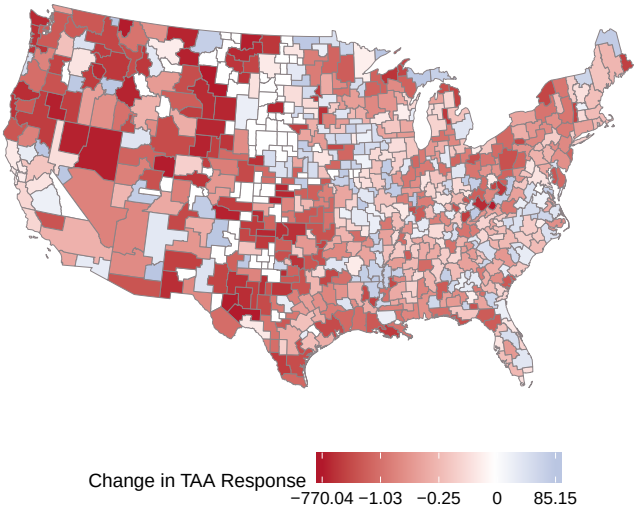


Figure A8: Change in TAA Responses to Import Exposure, 1990-2010

- **Figure A9** shows a dramatic increase in import exposure per worker over the two decades.

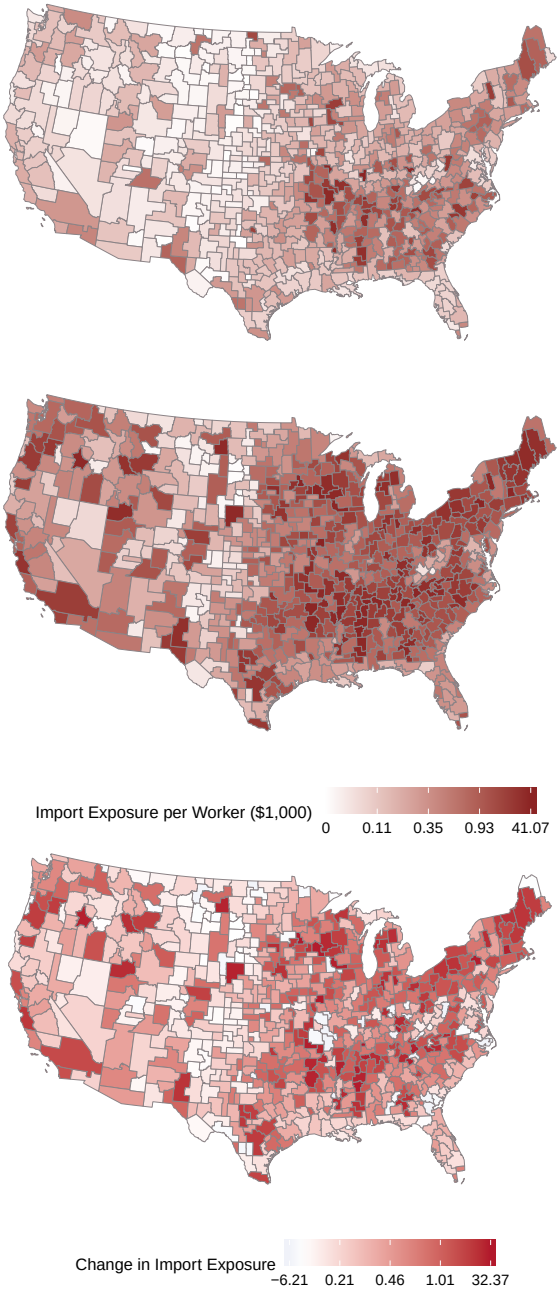


Figure A9: Import exposure in the 1990s (top), 2000s (middle), and their change (bottom)

- **Figure A10** shows that the increase in import exposure was not matched by an increase in TAA take-up. The average number of TAA petitioning workers even decreased in 43.1% of CZs over the two decades, while it increased in 45.7% but only to a modest degree.

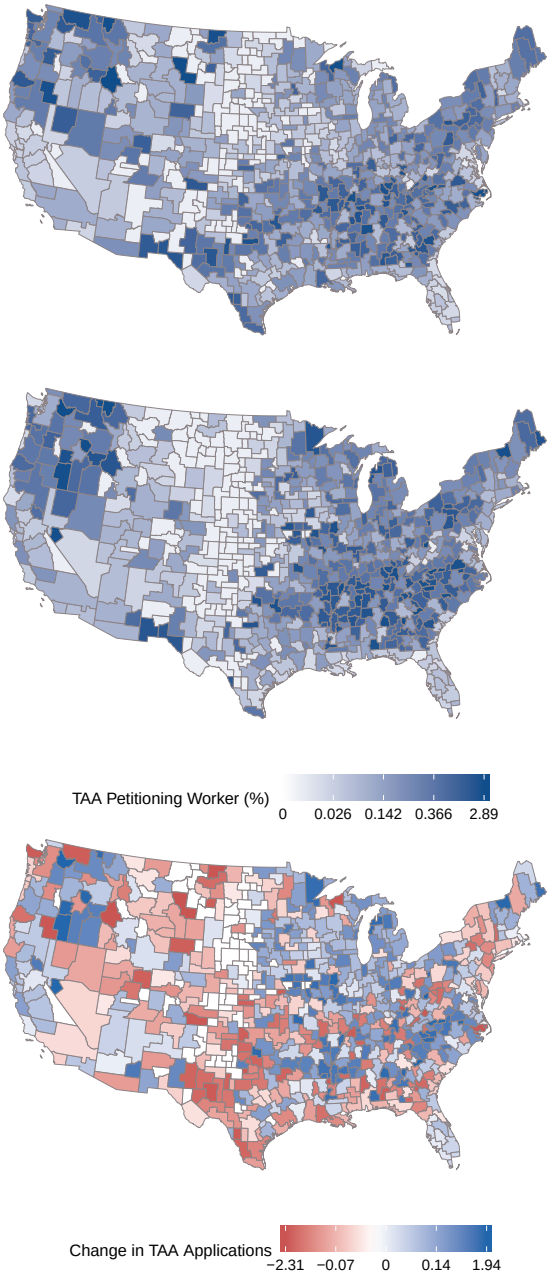


Figure A10: TAA Petitioners in the 1990s (top), 2000s (middle), and their change (bottom)

- In **Table A13**, we test whether TAA responsiveness to import shock had declined in the 2000s than in the 1990s. We examine observations of all years between 1990 to 2007 (or 2010) to fully utilize the available data. With CZ-by-year as the unit of analysis, we regress the percentage of workers covered in TAA petitions (Models 1, 2, 5, and 6) and the percentage of TAA-certified workers (Models 3, 4, 7, and 8) on the import shock variable, the binary indicator for the 2000s, and their interaction term. Specifically, we estimate the following model:

$$\begin{aligned} Y_{it} =& \alpha + \beta_1 \text{Import exposure per worker}_{it} + \beta_2 2000\text{s}_t \\ &+ \beta_3 \text{Import exposure per worker}_{it} * 2000\text{s}_t + X_{it}\gamma + \lambda + \epsilon_{it} \end{aligned}$$

where Y_{it} is the dependent variable of the percentage of workers covered in TAA petitions (Models 1, 2, 5, and 6) and the percentage of TAA-certified workers (Models 3, 4, 7, and 8) with i denoting CZ and t denoting year. *Import exposure per worker* is measured as the level of import exposure per worker in CZ i in the beginning of the decade of year t. The binary variable *2000s* is coded as 1 for years from 2000. All models include X_{it} – industry/occupation controls in the beginning of the decade and demographic factors. The model also includes fixed effects for regions.

Table A13: TAA Responsiveness to Import Shock in the 1990s versus the 2000s

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1990-2007				1990-2010			
	Petitioning Workers		Certified Workers		Petitioning Workers		Certified Workers	
Import exposure per worker	0.116**	0.098**	0.096**	0.102**	0.107**	0.087**	0.089**	0.092**
	(0.027)	(0.021)	(0.023)	(0.021)	(0.026)	(0.021)	(0.022)	(0.020)
2000s	-0.065**	0.068**	-0.035^{+}	0.074**	-0.043	0.093**	-0.014	0.099**
	(0.024)	(0.025)	(0.019)	(0.019)	(0.026)	(0.028)	(0.021)	(0.023)
Import exposure per worker * 2000s		-0.044**		-0.056**		-0.042*		-0.053**
		(0.015)		(0.016)		(0.017)		(0.016)
Observations	12996	12996	12996	12996	15162	15162	15162	15162

Standard errors clustered on states in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table A13 presents the results. In Models (1)-(4), we use observations from 1990 to 2007 (722 CZ*18 years = 12,996 observations). In Models (5)-(8), we utilize observations from 1990 to 2010 (722 CZ*21 years = 15,162). In models without interaction terms, we find the decade of 2000s saw a decrease in the percentage of petitioning or certified workers, controlling for the level of import shock. In models with interaction terms, we find a negative coefficient on the interaction of *Import exposure per worker* and *2000s*. The findings suggest that the effects of import exposure per worker on TAA petitions are lower in the decade of 2000s. They are in line with Figure 2 that illustrates the declining responsiveness of TAA to import shock in the 2000s.

A4.3 TAA Responsiveness and the 2016 Presidential Election

This section presents the estimation results of alternative model specifications on the effects of TAA responsiveness on the 2016 presidential elections. The presented results are variations of models presented in Table 2.

- **Table A14** presents the full results of Table 2 including coefficients for demographic controls and industry and occupation characteristics.
- **Table A15** estimates the same models presented in Table 2, but with CZ as a unit of analysis. This is an important robustness test because our import shock variable is measured at the CZ-level. The results remain substantively similar. The coefficients on *TAA Responsiveness* are negative across all models. The size of coefficients is substantively similar to the results estimated with county-level data.
- **Table A16** presents the results on the effects of TAA responsiveness on the 2016 Republican vote share, using the responsiveness measure based on the proportion of certified workers instead of petitioning workers. The results are substantively similar to Table 2.
- **Table A17** additionally controls for the partisanship of governor, the state-level unionization rate in the 1990s and the CZ-level TAA certification rate. As TAA responsiveness is influenced by demand-side factors, it is important to control for potential factors that influence workers' decisions to apply for TAA. First, we control for the partisanship of the governor as a proxy for state-level political factors that may influence TAA applications. Since we need a pre-treatment variable, we include a binary indicator for Democratic governor in 2000. Second, as unions play a significant role in the petition process, unionization rate might be correlated with our measures of TAA responsiveness. Third, we control for the TAA certification rate, calculated as the share of certified to total petitions in the 2000s. If there is any consistent variation in the certification rate at the CZ-level (though Figure A3 suggests such variation is limited), this could influence workers' willingness to apply for TAA. The results change little with the inclusion of these controls.
- **Table A18** presents estimates of the same models as above, but with a different measure of TAA responsiveness, based on value-added imports exposure. Shen and Silva (2018, 498) re-estimate the effects of Chinese import penetration on manufacturing employment using value-added import penetration from China, instead of gross import penetration (Model 2 in Table 9). They focus on the per-worker change in US value-added import penetration from China, from 2000 and 2007. Following their approach, we re-calculate TAA responsiveness as the average percentage of TAA-covered workers in a CZ over the period from 2000 and 2007, divided by the level of value-added import exposure in 2000. Consistent with our main results, the estimates show that this alternative measure of TAA responsiveness calculated using value-added imports exposure is also negatively related with votes for the Republican candidate.

Table A14: TAA Responsiveness and the 2016 Republican Vote Share (Full Results)

	(1)	(2)	(3)	(4)
TAA Responsiveness	-0.232*	-0.431**	-0.407**	-0.275**
	(0.113)	(0.103)	(0.101)	(0.071)
%, Employment in Manufacturing		0.154**	-0.021	-0.019
		(0.053)	(0.043)	(0.040)
%, Employment in Routine Occupations		1.248**	0.378*	0.295+
		(0.227)	(0.179)	(0.165)
Average offshorability of occupations		-13.238**	-4.455**	-3.060**
		(1.579)	(1.114)	(1.035)
%, Female			0.469**	0.267+
			(0.146)	(0.138)
%, Hispanic			-0.143**	-0.255**
			(0.052)	(0.030)
%, Aged 20-24			0.602**	0.636**
			(0.197)	(0.175)
%, Aged 25-34			1.019**	0.802**
			(0.226)	(0.146)
%, Aged 35-44			0.757**	0.516+
			(0.268)	(0.285)
%, Aged 45-54			-0.281	0.370
			(0.344)	(0.285)
%, Aged 55-59			2.177**	1.685**
			(0.618)	(0.526)
%, Aged 60-64			0.550	0.446
			(0.416)	(0.303)
%, Aged 65-74			0.455	0.109
			(0.276)	(0.229)
%, Aged 75-84			-0.439	0.536+
			(0.421)	(0.312)
%, Aged 85-			2.167**	0.594
			(0.698)	(0.464)
%, White			-0.031	-0.180*
			(0.146)	(0.077)
%, Black			-0.286+	-0.459**
			(0.147)	(0.084)
%, Native			-0.126	-0.268**
			(0.130)	(0.073)
%, Asian			0.220	0.267*
			(0.202)	(0.129)
%, College Educated			-0.801**	-0.828**
			(0.050)	(0.039)
%, Foreign Born			-0.240**	-0.121
			(0.077)	(0.074)
Region FE	No	No	No	Yes
Observations	3107	3107	3107	3107

Robust standard errors clustered on states in parentheses

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table A15: TAA Responsiveness and the 2016 Republican Vote Share (CZ-Level)

	(1)	(2)	(3)	(4)
TAA Responsiveness	-0.285**	-0.402**	-0.127	-0.172^{+}
	(0.102)	(0.121)	(0.102)	(0.087)
2000 Industry/Occupation Controls	No	Yes	Yes	Yes
Individual Demographics	No	No	Yes	Yes
Region FE	No	No	No	Yes
Observations	722	722	722	722

Standard errors clustered on states in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table A16: TAA Responsiveness and the 2016 Republican Vote Share (with Certified Petitions)

	(1)	(2)	(3)	(4)
TAA Responsivenss	-0.248*	-0.425**	-0.389**	-0.281**
	(0.107)	(0.113)	(0.108)	(0.077)
2000 Industry/Occupation Controls	No	Yes	Yes	Yes
Individual Demographics	No	No	Yes	Yes
Region FE	No	No	No	Yes
Observations	3107	3107	3107	3107

Standard errors clustered on states in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table A17: TAA Responsiveness and the 2016 Republican Vote Share (with Additional Controls)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
TAA Responsiveness	-0.232*	-0.440**	-0.393**	-0.282**	-0.388**	-0.406**	-0.280**
	(0.113)	(0.105)	(0.082)	(0.078)	(0.072)	(0.072)	(0.046)
Democratic Governor		-2.480	-2.113	-1.032	-2.744	-2.408+	-1.528
		(1.994)	(1.327)	(1.251)	(2.003)	(1.314)	(1.249)
Union Density		0.106	-0.115	0.262*	0.092	-0.126	0.223*
		(0.122)	(0.090)	(0.106)	(0.121)	(0.090)	(0.109)
Certification Rate					-0.690	-0.133	-0.402
					(1.128)	(0.785)	(0.613)
2000 Industry/Occupation Controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Individual Demographics	No	No	Yes	Yes	No	Yes	Yes
Region FE	No	No	No	Yes	No	No	Yes
Observations	3107	3107	3107	3107	2838	2838	2838

Standard errors clustered on states in parentheses

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table A18: TAA Responsiveness and the 2016 Republican Vote Share (with Value-Added Imports Exposure)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
TAA Responsiveness	0.007	-0.015+	-0.020**	-0.015**	-0.016+	-0.021**	-0.015**
	(0.017)	(0.009)	(0.006)	(0.004)	(0.009)	(0.006)	(0.005)
Democratic Governor		-2.479	-2.096	-1.042	-2.745	-2.394+	-1.550
		(2.005)	(1.332)	(1.257)	(2.009)	(1.319)	(1.255)
Union Density		0.103	-0.117	0.265*	0.090	-0.127	0.226*
		(0.122)	(0.091)	(0.107)	(0.121)	(0.091)	(0.110)
Certification Rate					-0.683	-0.132	-0.383
					(1.133)	(0.795)	(0.617)
2000 Industry/Occupation Controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Individual Demographics	No	No	Yes	Yes	No	Yes	Yes
Region FE	No	No	No	Yes	No	No	Yes
Observations	3107	3107	3107	3107	2838	2838	2838

Standard errors clustered on states in parentheses

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$