

## ONLINE APPENDIX

Table A.1 Industries with Greatest Number of TAA Applications (Top-10, by period)

SIC	Industry Name	Cases	Estimated # of Workers	Avg. Workers Per Application	Certification Rate
<i>December 2000 -November 2004</i>					
367	Electronic Components And Accessories	622	119,360	191.9	70.1%
232	Men's And Boys' Furnishings, Work Clothing, And Allied Garments	596	66,861	112.2	90.1%
371	Motor Vehicles And Motor Vehicle Equipment	399	55,462	139.0	56.9%
372	Aircraft and Parts	80	53,364	667.1	59.6%
331	Steel Works, Blast Furnaces, And Rolling And Finishing Mills	339	50,378	148.6	65.2%
366	Communications Equipment	186	38,943	209.4	64.0%
233	Women's, Misses', And Juniors' Outerwear	391	38,638	98.8	85.9%
221	Broadwoven Fabric Mills, Cotton	175	29,480	168.5	74.4%
251	Household Furniture	241	27,160	112.7	78.2%
354	Metalworking Machinery And Equipment	324	27,089	83.6	49.6%
<i>November 1996 -November 2000</i>					
232	Men's And Boys' Furnishings, Work Clothing, And Allied Garments	998	136,775	137.0	89.1%
367	Electronic Components And Accessories	235	39,714	169.0	63.2%
371	Motor Vehicles And Motor Vehicle Equipment	213	38,841	182.4	63.5%
233	Women's, Misses', And Juniors' Outerwear	493	35,338	71.7	87.2%
372	Aircraft and Parts	45	29,399	653.3	25.0%
357	Computer And Office Equipment	153	25,610	167.4	61.5%
138	Oil And Gas Field Services	543	23,722	43.7	80.6%
225	Knitting Mills	176	21,945	124.7	71.8%
234	Women's, Misses', Children's, And Infants' Undergarments	143	16,694	116.7	88.4%
363	Household Appliances	52	16,469	316.7	82.5%

*Note:* calculations based on applications for which a determination was made (i.e. excluding terminated applications).

Table A.3 Correlations between different measures of job losses at the county level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) % Workforce applied to TAA (2001-2004)	1							
(2) Unemployment Rate (2004)	0.23	1						
(3) Unemployment ( $\Delta\%$ 2003-04)	-0.16	-0.09	1					
(4) Unemployment ( $\Delta\%$ 2000-04)	0.21	0.42	0.17	1				
(5) % Workforce Laid Off (Net MLS applicants)	-0.14	0.27	-0.05	0.12	1			
(6) Job Losses from: Offshore Outsourcing	0.50	0.12	-0.09	0.18	-0.07	1		
(7) Job Losses from: Imports	0.49	0.15	-0.02	0.17	-0.07	0.04	1	
(8) Job Losses from: Indirect Foreign Competition	0.55	0.09	-0.12	0.04	-0.08	0.02	0.09	1

### **Missing County data**

Twenty four county observations from Virginia are missing from the analysis (out of 105 counties in VA), because the BEA’s Regional Economic Information System (REIS) calculates “local area estimates for all counties and county equivalents and for all county-based Metropolitan Areas recognized for statistical purposes by the Office of Management and Budget except for the following areas, which are combined with adjacent counties: Kalawao County, HI; the Montana portion of Yellowstone National Park; Menominee County, WI; and the smaller independent cities of Virginia.”

Kalawao County of Hawaii is calculated as part of Maui County, and small independent cities of Virginia—generally those with less than 100,000 residents—are combined with an adjacent county. Since there are no separate REIS estimates for the counties that constitute these combinations, they were coded missing in County Characteristics.

Table A.4 Full Set of Regression Estimates in Benchmark Specification

	<u>Coefficient</u>	<u>Std. Error</u>
% Workforce applied to TAA 2001-2004	-0.089	(.031)
Unemployment Rate (2004)	0.104	(.105)
Unemployment Rate (Change 2003-04)	-0.189	(.24)
Unemployment Rate (Change 2000-04)	-0.323	(.133)
Income per capita (log) 2004	-5.122	(.754)
Income Per Capita (% Change 2000-04)	0.050	(.017)
Workforce (log) 2004	0.482	(.104)
% Protestant	0.027	(.07)
% Catholic	0.012	(.07)
% Jewish	0.164	(.085)
% Age 5-17	-0.800	(.295)
% Age 18-29	-0.767	(.209)
% Age 30-49	-0.647	(.255)
% Age 50-64	-0.676	(.199)
% Age 65+	-0.611	(.243)
% Small Employers	-0.021	(.026)
% Large Employers	0.157	(.487)
% Home Owners	0.051	(.011)
$\Delta$ Proportion Black (2000-2004)	-0.322	(.16)
$\Delta$ Proportion White(2000-2004)	0.089	(.143)
$\Delta$ Proportion Hispanic (2000-2004)	-0.233	(.089)
Proportion Black 2000	-0.040	(.021)
Proportion White 2000	0.015	(.019)
Proportion Hispanic 2000	0.006	(.011)
Republican Vote Share ( $\Delta\%$ 1996-2000)	0.148	(.042)

Note: List of controls from benchmark specification (Table 2, Column 6).  
 Estimation includes state fixed effects. Errors clustered by state.

### Calculating the overall electoral effect of trade-related job losses

To generate a rough estimate of the overall electoral impact of trade-related job losses, I consider two effects. The first effect is associated with the fact that workers in the county lost their job specifically due to foreign competition. The second electoral effect of trade-related job losses (the “generic effect”) occurs via their contribution to the change in the county’s unemployment rate and to the decrease in the country’s labor-force (i.e. laid off workers dropping out of the workforce, what is technically referred to as “discouraged workers”). The results of the benchmark specification indicate that the statistically significant variables that need to be included in this calculation are: % Workforce applied to TAA; Unemployment ( $\Delta\%$  2000-04); Labor Force Size (log). The formula for calculating the overall electoral effect of trade related job losses is as follows:

$$(6) \quad \text{Total electoral effect} = \beta_{\% \text{ Applied to TAA}} * \lambda + \beta_{\text{Unemployment}(\Delta\% \text{ 2000-04})} * \omega + \\ + \beta_{\ln(\text{laborforcesize})} * [\ln(\text{laborforce2004} + \varphi) - \ln(\text{laborforce2004})]$$

Where:

$\lambda$  = % Share of Workforce Applied to TAA

$\omega$  = Trade displaced workers that were unemployed at the time of the 2004 elections as a share of the total workforce

$\varphi$  = Trade displaced workers that dropped out from labor-force

As noted,  $\lambda$  is obtained directly via the TAA applications data. The figures for  $\omega$  and  $\varphi$  are calculated by applying the re-employment figures from the BLS’s Displaced Workers Report (DWR) to the TAA data. The Displaced Workers survey is administered as a supplement to the Current Population Survey (CPS) and each time covers a period of three years. The DWR reports the share of displaced workers in each industry that were able to find new employment by the time of the subsequent survey. It also reports the share of displaced workers from each industry that dropped out of the labor force as well as those that remained unemployed (i.e. actively seeking new

employment). For example, the DWR finds that of the 294,000 workers displaced from the “Computers and electronic products” industry during the three year period covered in the 2004 survey, 63.8% were able to find new employment, 26.0% remained unemployed and 10.3% dropped out of the labor force by the time of the survey.

In order to calculate  $\omega$  and  $\varphi$ , I apply to each group of affected workers included in the TAA dataset the average probability rates of re-employment, unemployment and drop-out reported for their specific industry in the DWR (see Table A5. for the scheme I used to map the TAA’s SIC codes and the data for each industry). For example, let us assume that a company in the computer and electronic products industry shut down and laid off its 100 workers. To calculate the measures of interest, I assign the average values reported above for this specific industry: 26 workers are assumed to contribute to displaced workers that remained unemployed ( $\omega$ ) and 10.3 workers assumed to contribute to the workers that dropped out of the labor force ( $\varphi$ ). I then aggregate these figures for each county and incorporate the figures in estimating equation (6).

Note that this method of calculation means that workers laid off eight months before the election are assigned the same probability of finding new employment by the time of the election as a worker from the same industry that lost their job two years earlier. Therefore, this calculation most likely underestimates the actual contribution of trade-related layoffs to the unemployment figure at the time of the election. However, given that the DWR data indicates that the vast majority of workers that manage to find a new job do so within the first six months after the layoff, this underestimation is quite small. To examine this effect, I have also tried alternative calculations of the re-employment formula which introduce assumptions about the changing probabilities of finding a job over time (e.g. linear decrease over time). These calculations, in addition to relying on arbitrary criteria, do not significantly impact the substantive results of the analysis.

Table A.5 Mapping of SIC Industry Categories (from the TAA Database) to the BLS Displaced Worker industry categories.

BLS Classification for Re-employment Rates	SIC Categories	Employed	Unemployed	Not in the Labor Force
Mining, quarrying, and oil and gas extraction*	1000-15000	49.1	36	15
Construction	1501-1800	49.1	39.2	11.6
Manufacturing	2000-3999	38.7	44.6	16.7
Primary metals and fabricated metal products	3400-3499	36.5	53.5	10
Machinery manufacturing	3500-3569	30.7	52.4	16.9
Computers and electronic products	3570-3579	38	47.4	14.6
Electrical equipment and appliances*	3580-3699	49.1	36	15
Transportation equipment	3710-3799	35.9	42.4	21.8
Miscellaneous manufacturing	3910-3999	30.7	47.3	22
Food manufacturing*	2001-2199	49.1	36	15
Textiles, apparel, and leather	2200-2399	48.1	32.4	19.5
Paper and printing	2600-2799	29.8	47.2	23
Wholesale trade	5000-5199	50.4	36.7	12.9
Retail trade	5200-5399	48.1	30.9	21
Transportation and utilities	4010-4789	44.5	38.8	16.7
Information	4810-4899	41.3	43.5	15.2
Financial activities	6000-6799	58.4	28.7	12.8
Finance and insurance	6000-6299	57.6	29.1	13.3
Finance	6300-6499	58	28.7	13.3
Insurance	6500-6559	56.7	30.1	13.2
Real estate and rental and leasing	7310-7389	61.1	27.4	11.5
Professional and business services	8710-8748	52	35.2	12.8
Educational services	8210-8299	49.3	28.6	22.1
Health services, except hospitals	8000-8099	55.6	31.6	12.8
Hospitals	8062-8069	64	27.6	8.4
Accommodation and food services	7010-7041	62.5	26	11.4
Other services	7000-8999	64	20.4	15.6
Nonagricultural industries wage and salary workers	Other	49.1	36	15

Note: Where categories overlap, I allocated the re-employment rates of the more specific category.

\* The BLS does not report figures when the base is less than 75,000. In those case, I applied the average rate for "Non-agricultural industries wage and salary workers"

### **Additional Robustness Tests**

This section presents results of additional robustness tests examining the plausibility of other alternative explanations. I show that the electoral effect of trade-related job losses holds also when controlling for the industry concentration in each county (which is also an implicit measure of unionization and deindustrialization rates) as well as for various political factors that were prominent in the 2004 elections (Iraq war, gay marriage). Inclusion of these different measures has minimal impact on the magnitude or statistical significance of the results reported in the paper.

I begin by examining the effect of the county-level industry concentration on the results. Since unionization rates are higher in some industries than in others, it could be that greater mobilization of unions in an industry accounts for at least some of the results presented in the paper. Furthermore, some scholars have argued that deindustrialization (rather than globalization) is a key driver of demands for greater government protection (Cusack and Iversen, 2000). It may also be, then, that the results presented earlier are an artifact of anti-incumbent vote in areas experiencing a stronger process of deindustrialization. To examine whether these explanations account for the results reported in the paper I gathered data from the County Business Patterns data (U.S. Census Bureau) on the share of county workers employed in each industry (at the 3-digit NAICS level). I then included the share of county workforce employed in each industry as additional controls in each of the estimations.<sup>1</sup>

Column (1) of Table A6 presents the results of the estimation when controlling for the county's employment by industry. The model also includes all of the demographic, income and unemployment controls used in the benchmark specification reported in the paper, as well as state fixed effects. As the results show, the effect associated with trade-related job losses remains statistically significant and the point estimate is only marginally reduced by the inclusion of the

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<sup>1</sup> Due to the multitude of coefficients for each of the industry variables, I omit them from Table A3.



additional controls. While many of the industry concentration variables are significant in statistical terms, they have only a small substantive effect on the measure of interest.

Next, I examine the possible role of campaign specific issues that were prominent in the 2004 elections, since one must worry that if campaign specific issues are correlated with the variable of interest (in this case – trade-related job losses), omitted variables can produce a spurious correlation.<sup>2</sup> I therefore attempt to control for some of the features that were unique to the 2004 elections but were not present in the elections four year prior. Most importantly, I introduce measures that pertain to the localized effect of the Iraq War, since the war was a campaign issue which has been shown to have influenced voting preferences in the 2004 election (Karol and Miguel 2007). If localities in which employment was hurt by foreign trade were also more exposed to the Iraq War (in terms of drafted soldiers, or number of casualties), one might falsely attribute the electoral effect of the war to the impact of job dislocations caused by foreign competition.

Column (2) includes three different measures of the county's exposure to the Iraq War: the share of county adults enlisted in the armed forces, the share of military veterans, and the number of war casualties from the county, adjusted per capita<sup>3</sup>. The results indicate that the effect associated with trade-related job losses remains significant and is within the range of the estimations reported earlier.

Following the election, much has been made of the fact that exit poll results indicated that the candidates' positions on "moral values" was the most common factor voters cited as important in their vote choice. Column (3) this includes a proxy for whether the county had a gay marriage ban initiative on its ballot. Given that the variation is across states, column (3) excludes state fixed

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<sup>2</sup> It should be noted that this concern is partly addressed by the analysis presented in Table 5 of the paper, which also includes data on the previous election cycle (2000 vs. 1996).

<sup>3</sup> Data on war casualties is based on the information compiled by the [icasualties.org](http://icasualties.org) website from the Pentagon sources; data on Army and Air Force reservists is from the [defenselink.mil](http://defenselink.mil) website. This data was kindly provided by Edward Miguel and David Karol, to whom I am grateful.

effects. Again, the electoral effect associated with trade-related job losses remains significant, though the point estimates are not comparable to those reported in column (2) because the specification cannot include the state fixed effects.<sup>4</sup>

Finally, column (4) controls for various political factors that were unique to the strategies the parties took in the 2004 campaign. The estimation includes measures of campaign spending of the two major parties in each state, as well as binary variables for the six home states of the candidates on the ballots in the 2000 and 2004 elections<sup>5</sup>. Inclusion of these variables decreases the magnitude of the electoral effect associated with trade-related job dislocations (as compared to column (3)), but the effect remains quite significant ( $p=.08$ ).

In sum, the results reported in the paper are robust to alternative explanations of two broad types: those suggesting that the electoral effect of trade-related job losses is masking an omitted variable (e.g. union activity, de-industrialization) or those emphasizing the possible impact of campaign specific issues, such as the war in Iraq or the gay marriage ban. The analysis shows that these alternative explanations have little impact on the substantive results reported in the paper.

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<sup>4</sup> Interestingly, the effect is found to be significant yet negative, suggesting that inclusion of gay marriage ban on the ballot adversely affected support for Bush. Of course, it could be the case that the choice of where to locate the ballot accounts for the observed electoral effect, not the fact that the initiative was on the ballot.

<sup>5</sup> The six states are Texas (Bush), Wyoming (Cheney), Massachusetts (Kerry), North Carolina (Edwards), Tennessee (Gore) and Connecticut (Lieberman).

Table A.6 Testing Alternative Explanations

	Industry Concentration (1)	Iraq War (2)	Gay Marriage on Ballot (3)	Campaign Specific (4)
% Workforce Applied to TAA 2001-2004	-0.083*** (.029)	-0.076** (.028)	-0.117** (.053)	-0.090* (.05)
Industry Concentration (3-digit NAICS)	X	X	X	X
% Military Veterans		8.731* (5.074)	-10.146 (6.353)	-2.961 (6.49)
% in Armed Forces (2000)		4.459 (3.834)	12.117** (4.796)	11.180** (4.69)
Iraq War Fatalities (pc)		0.008 (.025)	-0.008 (.034)	-0.016 (.034)
Gay Marriage on Ballot			-0.860* (.481)	-0.733* (.405)
Republican State Spending				-0.059 (.293)
Democrats State Spending				-0.051 (.196)
Candidate State Dummies	-	-	-	X
State Fixed Effects	X	X	-	-
Observations	3053	3053	3053	3053
R-squared	0.735	0.738	0.551	0.609

Notes: All estimations include the complete set of income, unemployment and demographic variables included in Table 2 (not reported). Standard errors corrected for clustering at the state level. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

## Data Sources Used in Analysis

Income variables	Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce
Unemployment Rates by County	Bureau of Labor Statistics – Data Produced by the Local Area Unemployment Statistics (LAUS) program ( <a href="http://www.bls.gov/lau/#tables">http://www.bls.gov/lau/#tables</a> ) – Data accessed 09/18/2008
Size of Labor Force	Bureau of Labor Statistics – Data Produced by the Local Area Unemployment Statistics (LAUS) program ( <a href="http://www.bls.gov/lau/#tables">http://www.bls.gov/lau/#tables</a> ) – Data accessed 09/18/2008
County level voting records	Election Data Services
Industry concentration and size of employers	County Business Patterns - U.S. Census Bureau: <a href="http://www.census.gov/epcd/cbp/index.html">http://www.census.gov/epcd/cbp/index.html</a>
Demographics: Age and racial distribution	Data taken from: <a href="http://www.census.gov/support/DataDownload.htm#MAN">http://www.census.gov/support/DataDownload.htm#MAN</a>
Re-employment and drop-out rates	Bureau of Labor Statistics –Workers Displacement Report (2001-2003), July 2004.
Religiosity by denomination	Religious Congregations Membership Study” (RCMS) in 2000
Mass Layoff Data	Bureau of Labor Statistics – Mass Layoff Program

## **References:**

Karol, David and Edward Miguel. 2007. “The Electoral Cost of War: Iraq Casualties and the 2004 U.S. Presidential Election.” *The Journal of Politics* 69 (3): 631–46

Iversen, Torben and Thomas R. Cusack. 2000. “The Causes of Welfare State Expansion: Deindustrialization or Globalization?”, *World Politics*, Vol. 52, No. 3 (April), pp. 313-349