

Online Appendix: Supporting Information

1 Survey Questions on Unions and Trade

The following survey items were used to measure members' views and knowledge about the position of their union on trade policy and the frequency with which the union communicated about the topic (reported in Section 4):

- Overall, where do you think the union stands on the question of whether trade with other countries should be expanded, reduced or kept at its current level?
- How familiar would you say you are with the union's view on trade with other countries? Do you think that trade with other countries is good or bad for you and your family?
- During the past year, approximately how often would you estimate the union has communicated with you about trade with other countries?

2 Description of Selected Industries

The survey was conducted with more than 4,000 American workers employed in the 12 selected industries. Table A1 describes the varying characteristics of the selected industries over pertinent dimensions.

Table A1: Descriptive Statistics for Selected Industries

Industry:	Total Employed (1000s)	Output per Worker (\$)	Trade Balance (B\$)	Share BA Degree	Median Income (\$)	Union Member (%)	Sample Size (#)
Manufacturing							
Food products	1,485	292,093	8,400	22%	51,000	11.0	218
Chemical	850	546,482	-3,100	40%	88,945	8.0	225
Transportation equipment	1,607	362,878	-14,000	24%	76,005	17.4	270
Computer electronics	1,248	412,519	-110,000	48%	96,004	1.2	349
Fabricated metal products	1,528	163,973	-9,900	15%	61,570	9.4	352
Services							
Data processing and internet	395	359,059	0	45%	82,557	1.3	320
Financial	858	507,517	41	65%	110,067	0.5	375
Telecommunications	1,022	470,191	2	34%	83,000	15.2	375
Construction	7,215	119,281	0	15%	55,197	12.0	393
Nursing and residential care	3,008	43,584	0	18%	4,590	6.8	382
Ambulatory health care	5,661	112,263	0	48%	73,067	5.8	446
Education	3,037	51,309	13	65%	79,235	34.4	607

Source: March Supplement of Current Population Survey 2009;

2010 United States International Trade Commission data on imports and exports

3 Union Membership across Industries

Figure A1 compares the actual share of unionized members in each industry to the share obtained in the survey sample. As the graph indicates, the sample is representative of the actual distribution of union membership across the industries.

Figure A1: Unionization Rate by Industry: Actual vs. Sample

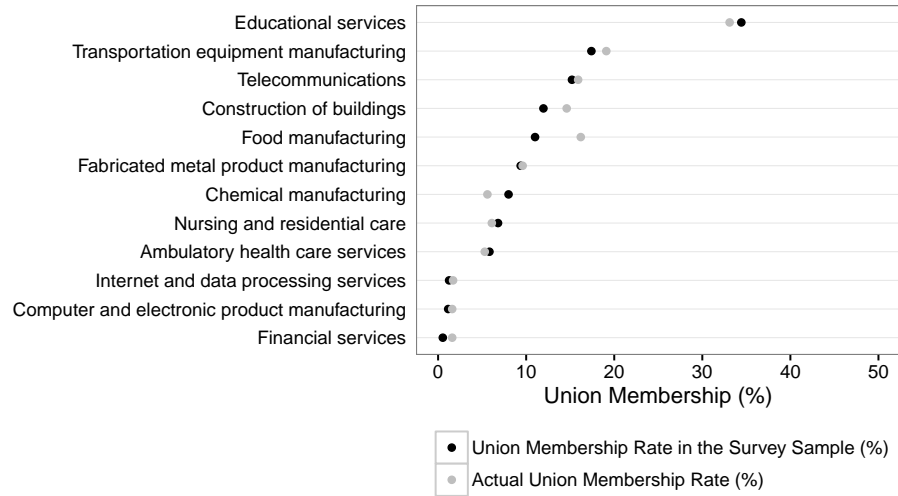
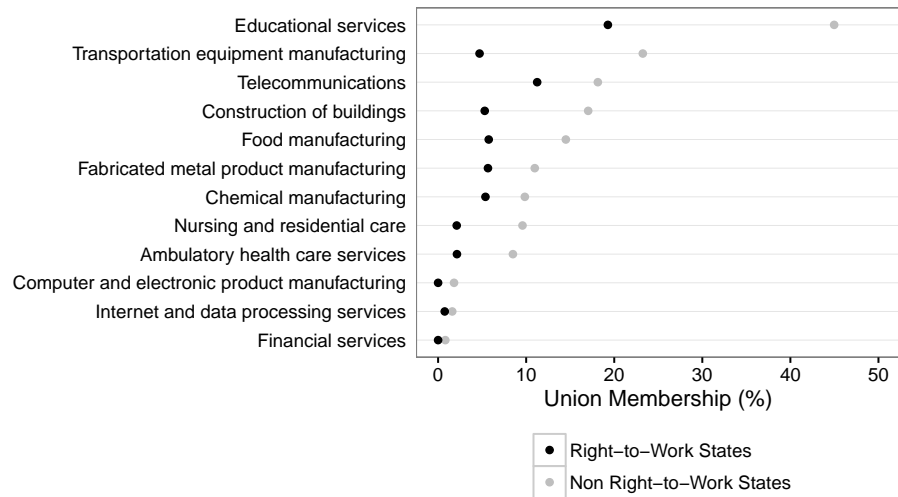


Figure A2 compares the share of unionized member in states with Right-to-Work (RTW) laws to the share in non-RTW states across industries. The graph shows that union membership rates are much higher in non-RTW states.

Figure A2: Unionization Rate by Industry and Right-to-Work Law Status



4 Matching Procedure and Diagnostics

We conduct a nearest-neighbor matching exercise to estimate the overall ‘union effect’ across all industries. We match each union member with non-unionized workers employed in the same industry and sector (private vs. public), and require that they are also of the same gender, ethnicity, marital status and education level (measured as a binary indicator denoting completion of a 4-year college degree). After the requirement for exact matching on these criteria is fulfilled, the matching algorithm is instructed to seek the closest observation in terms of income level and age. Each union member can be matched with up to ten non-unionized workers, conditional on the exact matching criteria being fully satisfied. We then estimate a probit regression model using the matched data and calculate the average treatment effect of union membership on all three outcome variables, as presented in Figure A3. Matching diagnostics are presented here in Table A2. As we impose the exact matching requirement for all the variables except income level and age, the matched data is perfectly balanced for those variables.

Figure A3: Average Treatment Effects (ATEs) of Union Membership

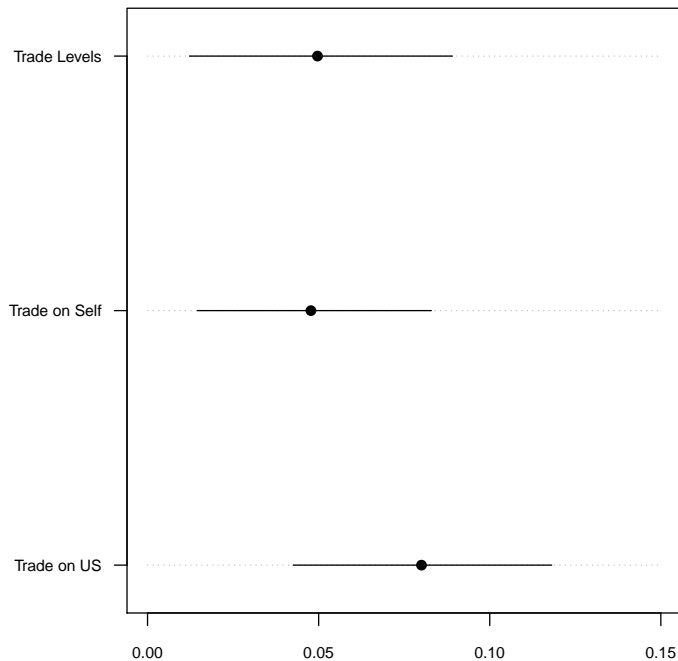


Table A2: Matching Summary Statistics for the Union Effects

Variable	Full Data (N=3991)			Matched Data (N=2018)		
	(Treated: 462, Control: 3449)			(Treated: 421, Control: 1597)		
	Mean Treated	Mean Control	Mean Difference	Mean Treated	Mean Control	Mean Difference
Distance	0.121	0.118	0.003	0.121	0.121	0.000
Family Income	9.446	9.956	-0.510	9.437	9.311	0.126
Age	50.883	50.602	0.281	51.235	49.521	1.715
College Education	0.465	0.511	-0.046	0.444	0.444	0.000
Married	0.630	0.692	-0.062	0.637	0.637	0.000
Black	0.089	0.050	0.039	0.057	0.057	0.000
Hispanic	0.028	0.039	-0.010	0.024	0.024	0.000
White	0.786	0.841	-0.056	0.848	0.848	0.000
Female	0.400	0.362	0.038	0.382	0.382	0.000
Public Sector	0.394	0.065	0.329	0.352	0.352	0.000
Building Construction	0.093	0.091	0.002	0.100	0.100	0.000
Food Manufacturing	0.050	0.052	-0.003	0.055	0.055	0.000
Chemical Manufacturing	0.035	0.054	-0.019	0.033	0.033	0.000
Fabricated Metal Manufacturing	0.067	0.086	-0.019	0.069	0.069	0.000
Computer Electronics	0.009	0.088	-0.079	0.007	0.007	0.000
Transportation Equipment	0.097	0.056	0.041	0.100	0.100	0.000
Telecommunications	0.113	0.084	0.028	0.121	0.121	0.000
Data Processing	0.009	0.083	-0.074	0.005	0.005	0.000
Securities	0.004	0.097	-0.093	0.005	0.005	0.000
Educational Services	0.413	0.107	0.307	0.401	0.401	0.000
Ambulatory Health	0.054	0.106	-0.052	0.057	0.057	0.000
Nursing and Residential Care	0.056	0.097	-0.040	0.048	0.048	0.000
Nursing and Residential Care	0.057	0.096	-0.039	0.049	0.049	0.000

5 Calculation of the Union Protectionism Score

To measure a union’s stance on trade policy we generated a new metric that is based on the union’s lobbying activity and its official announcements on trade-related legislation. Focusing on the two years prior to the study, we coded the positions the unions took on trade-related bills and used this data to place the unions along a trade protectionist-liberalizer scale. For every bill, we code the union’s position along a seven-point scale that ranges from ‘strongly protectionist’ (+3) to ‘strongly pro-trade’ (-3). We elaborate on the selection of trade-related bills and the coding scheme below.

5.1 Trade-related Bills

Our analysis focuses on the the position of each union on trade-related issues that were tied to a legislative bill during the period under examination. We only exclude bills that were purely industry-specific (e.g. the United Steelworkers lobbying on an antidumping case on

coated paper), since such bills do not allow for a comparison with the position taken by unions outside the industry. Based on these criteria, we used the fourteen bills in Table A3 to generate the unions’ protectionism measure.

Table A3: Congressional Bills on Foreign Trade Lobbied by Unions

Lobbied Bills Included for Measuring Union’s Protectionist Stance	Coding
Trade Reform, Accountability, Development and Employment Act of 2009	protectionist
US-Colombia Trade Promotion Agreement	free trade
US-Panama Free Trade Agreement	free trade
US-Korea Free Trade Agreement	free trade
US-Peru Trade Promotion Agreement Implementation Act	free trade
Withdrawal of the US from NAFTA	protectionist
Reauthorizing Trade Adjustment Assistance	protectionist
Currency Reform for Fair Trade Act; Currency Exchange Rate Oversight Reform Act of 2009	protectionist
Trade Enforcement Act of 2009	protectionist
Buy American Provision in the American Recovery and Reinvestment Act of 2009	protectionist
Reciprocal Market Access Act of 2009	protectionist
Trade Agreement Benchmarks and Accountability Act	protectionist
Export Promotion Act of 2010	free trade

5.2 Coding Scheme

For the selected bills, we code each union’s position along a seven-point scale based on the position expressed by the union (i.e., pro- or anti-liberalization) and the number of quarters it registered lobbying activity for or against the bill. For bills on which a union lobbied against liberalization for five quarters or more, the union’s position is coded as ‘strongly protectionist’ (+3). If the lobbying took place for a shorter period of 1 to 4 quarters, we assign a ‘protectionist’ (+2) score; we code a union as ‘weakly protectionist’ (+1) score if it did not lobby on the bill but had expressed a protectionist stance on the issue in its official pronouncements. Conversely, we assign scores between -1 and -3 using the same coding criteria when the union takes a pro-liberalization stance. Finally, a ‘neutral position’ (0) is assigned if the union did not express any view on the issue nor conducted any related lobbying activity.¹ Importantly, when we revise the threshold to four or six quarters for distinguishing a strong position from a weak position, our results regarding the measured union stance remains robust.

With respect to the coding of unions’ position on specific bills, we made the following determinations:

¹In the few instances where information was provided only about the lobbying activity taking place but not about the actual stance taken by the union, the position value was coded as missing.

- We code support for the “Trade Reform, Accountability, Development and Employment Act” of 2009 as a protectionist stance, because the bill: i) Required a re-evaluation of US free trade agreements every two years; ii) Would have restricted the applicability of trade agreements with regard to trade in services, foreign investment, government procurement, IPR protection, trade remedies, among other areas; and iii) Required the President to submit to Congress a plan to renegotiate any trade agreement that does not meet the stated requirement already in effect.
- Support for the Trade Enforcement Act of 2009 and the Reciprocal Market Access Act of 2009 is coded as protectionist. The Trade Enforcement Act of 2009 proposes to apply countervailing duties to non-market economy countries. The Reciprocal Market Access Act proposes to limit the President’s authority to reduce or eliminate tariffs pursuant to trade agreements until certain conditions are met, as well as to withdraw tariff concessions against trade partners who violated the trade agreement.

5.3 Data Coverage

We coded the activities of 15 labor unions that represent 75% of the unionized survey respondents who provided information on their affiliated unions. Of the 497 surveyed union members, 343 respondents provided information on their union affiliation. The majority provided the exact names of their union. For those respondents who only provided the codes of their local branches (e.g. local 101) or their firm names, we were able to infer their union affiliation based on residence, industry, and firm name. For that, we used the records of collective bargaining agreements between firms and unions available through the Office of Labor-Management Standards (<http://www.dol.gov/olms/regs/compliance/cba/>) and the Center for Union Facts (<http://www.unionfacts.com/>). Among the remaining unionized workers not represented through the 15 unions, 57% belong to other unions in the education sector which presumably hold a similar stance on policy issues with the primary unions in the sector that we do examine, namely the National Education Association and the American Federation of Teachers; the other 33% belong to 32 different organizations for which have only one or two members in the entire sample.

5.4 Calculated Protectionism Score

We present the score of every union on the trade protectionism scale in Table A4. The most protectionist unions operate in the import competing sectors, while the least protectionist unions operate in the export-oriented sector.

Table A4: Union's Position on Each Issue and Calculated Protectionism Score

	TRADE	Colombia	Panama	Korea	Peru	NAFTA	TAA	Currency	Enft	BuyAmr	Recip	Total
USW: Steelworkers	+3	+3	+2	+2	0	0	+1	+2	+3	+1	+2	+20
IAM: Machinists	+3	+3	+3	+3	+1	+1	+2	+2	0	+1	0	+19
1) UAW: Auto Workers	0	+3	+2	+3	0	0	+1	+3	+3	0	0	+15
IFPTE: Technical Engineers	+2	+2	0	0	+2	0	0	0	0	+2	0	+8
IBT: Teamsters	+3	+3	+3	+3	+1	+2	+3	+1	+1	+2	0	+22
2) UBC: Carpenters	+2	+3	+3	+3	+1	0	0	0	0	+1	0	+13
IBEW: Electrical Workers	+1	+1	+1	+1	+1	0	+1	+1	0	+1	0	+8
3) CWA: Communications	+3	+2	+2	0	0	0	+1	0	0	+1	0	+9
AFGE: Government Employees	+2	+1	0	0	0	0	+1	+2	0	0	0	+6
SEIU: Service Employees	+1	+2	0	0	+2	0	0	0	0	0	0	+5
4) NEA: Natl Education Assn	0	0	0	0	0	0	0	0	0	0	0	0
AFT: Federation of Teachers	0	0	0	0	0	0	0	0	0	0	0	0
AFSCME: St./Cty./Mun.	+1	+1	0	0	0	0	+1	0	0	0	0	+3
5) UFCW: Food/Commercial	+2	+1	0	-1	+1	0	0	+1	0	0	0	+4
BCTGM: Bakery/Tobacco	0	0	0	0	0	0	0	0	0	0	0	0

1) Import competing industries: fabricated metal manufacturing, transportation equipment manufacturing, chemical manufacturing.

2) Building construction; * Intl Brotherhood of Teamsters also encompasses educational service, ambulatory service, and food manufacturing sectors.

3) Telecommunication

4) Education services, nursing, and ambulatory health

5) Export oriented industry: food manufacturing

6 Measuring Alignment between the Union’s Stance and Workers’ Policy Preferences

Figure 5 in the paper graphically illustrates the alignment between a union’s stance and the policy preferences of its members. It also shows the correlation between the *Average Protectionism Score* of unions in the industry and the policy preferences of union members and non-members working in the industry. We also examined this empirical relationship in a regression format that included a full set of controls. We estimated a probit model:

$$\begin{aligned} \text{Probit}(Y_i) = & \alpha + \beta_1 \text{Industry Protectionism Score}_i + \beta_2 \text{Union Member}_i \\ & + \beta_3 \text{Industry Protectionism Stance} * \text{Union Member}_i + \theta \text{Controls}_i + \epsilon_i, \end{aligned}$$

where Y_i is a binary measure of individual i ’s view on trade and *Average Protectionism Stance* is the average protectionism score for unions in i ’s industry of employment. *Union Member* is a binary indicator for union members, and *Industry Protectionism Stance*Union Member* is the key variable of interest, capturing the interaction between the two variables. The controls we include are education, age, income, gender, race and marital status.

Table A5: Union Average Protectionism Stance and Worker’s View on Trade

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Trade Level			Trade on Self			Trade on US		
Industry Protectionism Score	-0.002 (0.001)	-0.004* (0.002)	-0.003 (0.002)	0.001 (0.001)	-0.000 (0.001)	0.001 (0.002)	-0.000 (0.001)	-0.002 (0.002)	-0.000 (0.002)
Union Member	0.024 (0.024)	-0.063+ (0.035)	-0.005 (0.043)	0.038+ (0.021)	-0.015 (0.032)	0.019 (0.038)	0.057* (0.023)	-0.023 (0.033)	0.018 (0.040)
Industry Protectionism Score*Union Member		0.011** (0.004)	0.007 (0.004)		0.007* (0.003)	0.003 (0.004)		0.010** (0.003)	0.006+ (0.004)
Demographic Controls	No	No	Yes	No	No	Yes	No	No	Yes
Observations	3194	3194	2911	3194	3194	2911	3194	3194	2911

Marginal effects; Standard errors in parentheses; + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

The results of the estimation, presented as marginal effects in Table A5, suggest that the unions’ stance on trade has a notable impact on the attitudes of the union members, but not on the attitudes of the non-members. We find a positive and statistically significant coefficient for the interaction term β_3 , but the coefficient for β_1 is in most specifications very small in magnitude and statistically indistinguishable from zero (When we include the full set of controls, the estimated effect remains positive and fairly large in magnitude but drops below the 95% confidence level). Union members thus exhibit attitudes on trade that are much closer to the position staked by the unions than the attitudes of the non-members employed in the same industry.

7 Robustness Tests

7.1 Cross-State Legal Differences and the Union Effect

We conduct a broad set of robustness tests for all the analyses reported in the paper. Below, we briefly describe each of these tests.

- **Estimating the Models Using Pre-processed Data:** We estimate the same models using pre-processed data from the matching exercise. We estimate the models with the subset of the data that includes individuals matched exactly on college education, industry, marital status, race, gender, and employment sector. Respondents are also additionally matched on income and age with the nearest neighbor technique. The results presented in Table A6 show that the findings remain intact when using the pre-processed data.
- **Estimating the Models Using Weighted Data:** We re-estimate the same models using weighted data. Our main analyses use unweighted data because we do not aim to estimate the magnitude of the effects for the general US population. Yet, we demonstrate here that our results are both substantively and statistically unchanged when we re-estimate all models with weights. The results are presented in Table A7.
- **Including Public Sector Workers in the Analysis:** Our main analysis focuses on private sector workers because the Right-to-Work laws do not cover some public sector workers. To assess whether this trimming of the sample affects our results, we reanalyze all the same models, this time including both private and public sector workers. Table A8 presents the results and shows that all the findings of interest are unaffected by the the inclusion of the public sector workers.
- **Excluding Individuals in Management:** Managers and supervisors cannot join unions or be part of the bargaining unit because they are not protected by the National Labor Relations Act. As these individuals comprise about one fourth of non-union members in our dataset, the observed difference between members and non-members could in theory be driven by distinct characteristics of individuals in management. We therefore reanalyze all the original set of models while excluding all individuals in management. The results, reported in Table A9, indicate that all the findings hold. In other words, the share of managers in the sample of non-members does not account for the sizable ‘union effect’ reported in the paper.

Table A6: Effect of Union Membership on Attitudes toward Trade with Pre-processed Data

Strongly Protectionist Unions												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Trade Levels				Trade on Self				Trade on US			
Union Member	0.104** (0.039)	0.091* (0.044)	0.093* (0.045)	0.087+ (0.045)	0.074* (0.035)	0.087* (0.040)	0.089* (0.040)	0.091* (0.041)	0.134** (0.038)	0.148** (0.044)	0.151** (0.044)	0.150** (0.044)
RTW	0.010 (0.029)	0.003 (0.031)	0.006 (0.031)	-0.145 (0.221)	0.007 (0.025)	0.014 (0.027)	0.021 (0.027)	0.209 (0.221)	0.022 (0.027)	0.029 (0.029)	0.038 (0.029)	-0.030 (0.211)
RTW*Union Member		0.054 (0.089)	0.043 (0.089)	0.068 (0.095)		-0.050 (0.063)	-0.067 (0.058)	-0.076 (0.058)		-0.050 (0.066)	-0.066 (0.063)	-0.063 (0.065)
Party ID Control	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Full Interactions	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Observations	1158	1158	1139	1139	1158	1158	1139	1139	1158	1158	1139	1132
Not Strongly Protectionist Unions												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Trade Levels				Trade on Self				Trade on US			
Union Member	0.017 (0.065)	0.003 (0.067)	-0.009 (0.067)	-0.004 (0.065)	-0.010 (0.054)	0.008 (0.058)	-0.011 (0.058)	-0.005 (0.057)	-0.019 (0.058)	-0.016 (0.061)	-0.037 (0.061)	-0.031 (0.061)
RTW	0.004 (0.048)	-0.003 (0.049)	-0.014 (0.049)	0.999** (0.001)	0.015 (0.040)	0.025 (0.042)	0.013 (0.042)	0.046 (0.326)	0.010 (0.043)	0.011 (0.044)	0.000 (0.044)	0.422 (0.357)
RTW*Union Member		0.253 (0.230)	0.241 (0.216)	0.193 (0.225)						-0.043 (0.172)	-0.021 (0.186)	-0.061 (0.152)
Party ID Control	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Full Interactions	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Observations	486	486	473	473	465	461	448	448	486	486	473	473

Marginal effects; Standard errors in parentheses; + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

All models include fixed effects for *Industry* as well as *Controls* (income, gender, race, age, education, and marital status).

Full Interactions include the demographic controls interacted with *RTW*.

Table A7: Effect of Union Membership on Attitudes toward Trade with Sampling Weight

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Trade Levels				Trade on Self				Trade on US			
Union Member	0.100 ⁺ (0.051)	0.112 ⁺ (0.058)	0.114 ⁺ (0.059)	0.110 ⁺ (0.060)	0.061 (0.046)	0.109* (0.054)	0.118* (0.055)	0.123* (0.055)	0.131* (0.052)	0.159** (0.058)	0.170** (0.059)	0.171** (0.058)
RTW	0.025 (0.035)	0.030 (0.037)	0.035 (0.037)	-0.258 (0.218)	0.005 (0.031)	0.026 (0.032)	0.030 (0.032)	0.386 ⁺ (0.219)	0.031 (0.033)	0.043 (0.034)	0.050 (0.034)	0.009 (0.229)
RTW*Union Member		-0.049 (0.106)	-0.055 (0.105)	-0.039 (0.110)		-0.152** (0.048)	-0.162** (0.044)	-0.164** (0.042)		-0.095 (0.083)	-0.106 (0.080)	-0.114 (0.080)
Party ID Control	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Full Interactions	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Observations	1614	1614	1588	1588	1614	1614	1588	1588	1614	1614	1588	1588
Not Strongly Protectionist Unions												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Trade Levels				Trade on Self				Trade on US			
Union Member	-0.010 (0.063)	-0.026 (0.064)	-0.034 (0.063)	-0.039 (0.063)	0.046 (0.063)	0.074 (0.068)	0.065 (0.068)	0.052 (0.065)	0.005 (0.063)	0.002 (0.065)	-0.010 (0.064)	-0.011 (0.063)
RTW	0.017 (0.029)	0.014 (0.029)	0.010 (0.029)	0.157 (0.216)	-0.001 (0.023)	0.005 (0.023)	0.004 (0.023)	-0.197 (0.136)	-0.012 (0.025)	-0.013 (0.025)	-0.013 (0.026)	-0.134 (0.172)
RTW*Union Member		0.240 (0.252)	0.229 (0.248)	0.258 (0.248)					0.042 (0.234)	0.051 (0.240)	0.032 (0.230)	0.032 (0.230)
Party ID Control	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Full Interactions	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Observations	1810	1810	1778	1778	1810	1805	1773	1773	1810	1810	1778	1778

Marginal effects; Standard errors in parentheses; ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

All models include fixed effects for *Industry* as well as *Controls* (income, gender, race, age, education, and marital status). Full Interactions include the demographic controls interacted with *RTW*.

Table A8: Effect of Union Membership on Attitudes toward Trade with the Full Sample

Strongly Protectionist Unions												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Trade Levels											
	Trade on Self						Trade on US					
Union Member	0.097** (0.037)	0.090* (0.042)	0.096* (0.043)	0.097* (0.044)	0.070* (0.033)	0.084* (0.038)	0.084* (0.039)	0.094* (0.040)	0.130** (0.036)	0.145** (0.042)	0.146** (0.042)	0.146** (0.042)
RTW	0.021 (0.024)	0.018 (0.025)	0.023 (0.026)	-0.076 (0.174)	-0.002 (0.021)	0.003 (0.022)	0.009 (0.022)	0.260 (0.170)	0.011 (0.022)	0.016 (0.023)	0.024 (0.024)	0.040 (0.170)
RTW*Union Member		0.026 (0.082)	0.007 (0.081)	0.008 (0.083)	-0.053 (0.058)	-0.069 (0.054)	-0.086 ⁺ (0.050)			-0.049 (0.062)	-0.066 (0.059)	-0.063 (0.060)
Party ID Control	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Full Interactions	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Observations	1634	1634	1607	1607	1634	1634	1607	1607	1634	1634	1607	1607
Not Strongly Protectionist Unions												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Trade Levels											
	Trade on Self						Trade on US					
Union Member	-0.013 (0.033)	0.018 (0.038)	0.017 (0.038)	0.010 (0.038)	0.012 (0.028)	0.024 (0.032)	0.019 (0.032)	0.011 (0.032)	0.010 (0.030)	0.008 (0.033)	0.002 (0.033)	-0.002 (0.033)
RTW	-0.004 (0.020)	0.007 (0.021)	0.007 (0.021)	0.051 (0.152)	-0.004 (0.017)	0.000 (0.018)	0.000 (0.018)	-0.054 (0.116)	-0.017 (0.018)	-0.018 (0.019)	-0.017 (0.019)	0.054 (0.139)
RTW*Union Member		-0.129* (0.054)	-0.130* (0.053)	-0.122* (0.055)	-0.049 (0.050)	-0.047 (0.051)	-0.028 (0.057)			0.008 (0.066)	0.011 (0.067)	0.025 (0.070)
Party ID Control	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Full Interactions	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Observations	2196	2196	2160	2160	2196	2196	2160	2160	2196	2196	2160	2160

Marginal effects; Standard errors in parentheses; ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

All models include fixed effects for *Industry* as well as *Controls* (income, gender, race, age, education, and marital status). Full Interactions include the demographic controls interacted with *RTW*.

Table A9: Robustness Analysis with Individuals in Management Excluded

Strongly Protectionist Unions												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Trade Levels					Trade on Self				Trade on US		
Union Member (d)	0.124** (0.040)	0.111* (0.045)	0.112* (0.046)	0.110* (0.047)	0.082* (0.036)	0.099* (0.042)	0.097* (0.042)	0.104* (0.043)	0.150** (0.039)	0.164** (0.045)	0.167** (0.045)	0.164** (0.046)
RTW (d)	0.020 (0.028)	0.014 (0.029)	0.023 (0.030)	-0.059 (0.200)	0.017 (0.024)	0.025 (0.026)	0.032 (0.026)	0.229 (0.193)	0.027 (0.026)	0.034 (0.027)	0.044 (0.028)	0.015 (0.192)
RTW*Union Member (d)		0.050 (0.089)	0.032 (0.089)	0.040 (0.092)		-0.059 (0.061)	-0.077 (0.057)	-0.090 ⁺ (0.054)		-0.051 (0.066)	-0.070 (0.063)	-0.064 (0.065)
Party ID Control	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Full Interactions	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Observations	1290	1290	1269	1269	1290	1290	1269	1269	1290	1290	1269	1269
Not Strongly Protectionist Unions												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Trade Levels					Trade on Self				Trade on US		
Union Member (d)	-0.027 (0.053)	-0.032 (0.054)	-0.040 (0.054)	-0.048 (0.054)	-0.024 (0.041)	-0.009 (0.045)	-0.020 (0.044)	-0.029 (0.042)	-0.025 (0.045)	-0.020 (0.048)	-0.031 (0.047)	-0.035 (0.047)
RTW (d)	-0.004 (0.024)	-0.005 (0.024)	-0.006 (0.024)	0.205 (0.191)	-0.012 (0.019)	-0.009 (0.020)	-0.009 (0.020)	-0.106 (0.128)	-0.029 (0.021)	-0.028 (0.021)	-0.026 (0.021)	-0.069 (0.157)
RTW*Union Member (d)		0.080 (0.197)	0.079 (0.194)	0.089 (0.190)						-0.068 (0.135)	-0.059 (0.143)	-0.070 (0.133)
Party ID Control	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Full Interactions	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Observations	1626	1626	1595	1595	1626	1621	1590	1590	1626	1626	1595	1595

Marginal effects; Standard errors in parentheses; ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

All models include fixed effects for *Industry* as well as *Controls* (income, gender, race, age, education, and marital status).

Full Interactions include the demographic controls interacted with *RTW*.

7.2 Members' Preferences when the Union Changes Position

We also conduct the robustness tests for the analysis of the UAW's change in position on KORUS.

- **Estimating the Models Using Pre-processed Data:** We re-analyze the models using pre-processed data. The results, similar to the original ones, are shown in Table A10.
- **Estimating the Models Using Weighted Data:** We estimate the models using the weighted data. The results remain substantively unchanged and are presented in Table A11.
- **Excluding Individuals in the Business and Management Sectors:** As discussed above, we reanalyze all the same models while excluding workers in the management and business sectors. The results presented in Table A12 again show that our findings remain robust to the exclusion of these individuals.

Table A10: Change in the Union's Policy Position and Members' Preferences with Preprocessed Data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Trade Level				Trade on Self		
Union Member	0.489** (0.138)	0.396* (0.167)	0.421* (0.166)	0.401* (0.180)	0.325* (0.151)	0.168 (0.176)	0.262 (0.189)	0.206 (0.205)
Post-Shift	-0.047 (0.150)	-0.085 (0.159)	-0.108 (0.159)	-0.051 (0.189)	-0.024 (0.147)	-0.039 (0.157)	-0.090 (0.159)	0.044 (0.190)
Post-Shift*Union Member	-0.442** (0.117)	-0.443** (0.138)	-0.431** (0.154)	-0.480** (0.149)	-0.081 (0.236)	0.050 (0.290)	0.170 (0.306)	0.327 (0.346)
Demographic Controls	No	Yes	Yes	Yes	No	Yes	Yes	Yes
News Consumption	No	No	Yes	Yes	No	No	Yes	Yes
Party ID	No	No	Yes	Yes	No	No	Yes	Yes
Auto States	No	No	No	Yes	No	No	No	Yes
Observations	81	81	80	80	81	81	80	80

Marginal effects; Standard errors in parentheses; + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Demographic Controls: income, gender, race, age, education & marital status

News Consumption: A binary indicator taking a value of 1 if the respondent read a newspaper once a day or more.

Auto States: Michigan, Post-Shift*Michigan, Ohio, Post-Shift*Ohio

Table A11: Change in the Union’s Policy Position and Members’ Preferences with Sampling Weight

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Trade Level				Trade on Self		
Union Member	0.608** (0.095)	0.596** (0.107)	0.534** (0.117)	0.485** (0.126)	0.691** (0.097)	0.542** (0.149)	0.715** (0.172)	0.657** (0.184)
Post-Shift	0.122 (0.177)	-0.022 (0.210)	-0.064 (0.195)	-0.423 ⁺ (0.218)	-0.067 (0.187)	-0.199 (0.159)	-0.204 (0.147)	-0.294 ⁺ (0.151)
Post-Shift*Union Member	-0.636** (0.093)	-0.630** (0.110)	-0.670** (0.094)	-0.742** (0.063)	-0.309* (0.153)	-0.204 (0.183)	-0.185 (0.179)	-0.286* (0.115)
Demographic Controls	No	Yes	Yes	Yes	No	Yes	Yes	Yes
News Consumption	No	No	Yes	Yes	No	No	Yes	Yes
Party ID	No	No	Yes	Yes	No	No	Yes	Yes
Auto States	No	No	No	Yes	No	No	No	Yes
Observations	100	97	96	96	100	97	96	96

Marginal effects; Standard errors in parentheses; ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Demographic Controls: income, gender, race, age, education & marital status

News Consumption: A binary indicator taking a value of 1 if the respondent read a newspaper once a day or more.

Auto States: Michigan, Post-Shift*Michigan, Ohio, Post-Shift*Ohio

Table A12: Change in the Union’s Policy Position and Members’ Preferences with Individuals in Management Excluded

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Trade Level				Trade on Self		
Union Member	0.494** (0.130)	0.439** (0.152)	0.438** (0.163)	0.428* (0.186)	0.383** (0.143)	0.267 ⁺ (0.162)	0.390* (0.175)	0.343 ⁺ (0.191)
Post-Shift	0.018 (0.150)	-0.076 (0.163)	-0.153 (0.165)	-0.488** (0.178)	-0.065 (0.144)	-0.086 (0.156)	-0.106 (0.160)	0.040 (0.219)
Post-Shift*Union Member	-0.485** (0.102)	-0.495** (0.108)	-0.507** (0.108)	-0.588** (0.084)	-0.063 (0.232)	-0.022 (0.259)	0.039 (0.281)	0.134 (0.338)
Observations	84	82	81	81	84	82	81	81

Marginal effects; Standard errors in parentheses; ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Demographic Controls: income, gender, race, age, education & marital status

News Consumption: A binary indicator taking a value of 1 if the respondent read a newspaper once a day or more.

Auto States: Michigan, Post-Shift*Michigan, Ohio, Post-Shift*Ohio

8 Moderators of the Union Effect

8.1 Ideology as a Moderator

We examine the effect of union membership conditional on respondents' partisan preference. We interact a 7-point measure of partisan preference (7 as strong Democrat and 1 as strong Republican) with a binary indicator for union membership. The analyses in this section use the full sample, including private and public sector workers, because we are not exploring the differential effect of the RTW laws in these analyses. The results, presented in Table A13, show that the interactions among the strongly protectionist unions are positively signed across all the estimated models and are borderline significant. This is not conclusive evidence, but it suggests that Democratic-leaning individuals are more willing to embrace the union's message. As expected, we find a null effect among unions that are not strongly protectionist.

Table A13: Effect of Union Membership Conditional on Partisan Stance

Strongly Protectionist Unions									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Trade Levels			Trade on Self			Trade on US		
Union Member	0.089*	0.061	0.082	0.059 ⁺	-0.038	-0.029	0.121**	-0.007	0.007
	(0.038)	(0.077)	(0.080)	(0.034)	(0.058)	(0.061)	(0.037)	(0.065)	(0.069)
Party ID	0.006	0.005	0.047	0.008	0.004	0.036	0.008	0.003	0.062
	(0.006)	(0.006)	(0.041)	(0.005)	(0.005)	(0.034)	(0.005)	(0.006)	(0.038)
Union Member * Party ID		0.006	0.001		0.023 ⁺	0.020		0.028*	0.024 ⁺
		(0.016)	(0.016)		(0.013)	(0.014)		(0.014)	(0.014)
Full Interactions	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1588	1588	1588	1588	1588	1588	1588	1588	1588
Not Strongly Protectionist Unions									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Trade Levels			Trade on Self			Trade on US		
Union Member	-0.020	0.266*	0.266*	-0.027	0.028	0.003	-0.035	0.040	0.022
	(0.051)	(0.132)	(0.132)	(0.040)	(0.108)	(0.101)	(0.043)	(0.116)	(0.114)
Party ID	-0.009 ⁺	-0.007	-0.055	0.001	0.001	-0.066*	0.004	0.005	-0.087*
	(0.005)	(0.005)	(0.039)	(0.004)	(0.004)	(0.031)	(0.005)	(0.005)	(0.035)
Union Member * Party ID		-0.056*	-0.054*		-0.012	-0.007		-0.017	-0.012
		(0.024)	(0.023)		(0.020)	(0.020)		(0.021)	(0.022)
Full Interactions	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1778	1778	1778	1778	1778	1778	1778	1778	1778

Marginal effects; Standard errors in parentheses; ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

All models include fixed effects for *Industry* as well as *Controls* (income, gender, race, age, education, and marital status).

Full Interactions include the demographic controls interacted with partisan stance.

8.2 Economic Knowledge as a Moderator

We also examine the union effect conditional on economic knowledge. We measure economic knowledge with a binary indicator denoting whether the respondent had taken a college-level economics class. We interact this measure with a union membership indicator. The results, presented in Table A14, show that the signs of the interaction terms are not consistent across different outcomes. Among union members, economic knowledge is associated with more support for trade level expansion and less negative views on the impact of trade on the US, yet with more negative views on the impact of trade on oneself. Moreover, the estimated effects are well below statistical significance and substantively small across the models. The results thus provide very limited evidence to suggest that prior economic knowledge is an important moderator of the union effect.

Table A14: Effect of Union Membership Conditional on Economic Knowledge

Strongly Protectionist Unions									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Trade Levels			Trade on Self			Trade on US		
Union Member	0.079*	0.082 ⁺	0.082 ⁺	0.054	0.053	0.061	0.111**	0.116**	0.121**
	(0.037)	(0.045)	(0.045)	(0.033)	(0.039)	(0.040)	(0.036)	(0.043)	(0.044)
College Economics Course	-0.104**	-0.103**	-0.100	-0.073**	-0.074**	-0.237	-0.088**	-0.086**	-0.311*
	(0.028)	(0.029)	(0.170)	(0.024)	(0.025)	(0.147)	(0.026)	(0.027)	(0.158)
Union Members		-0.010	-0.007		0.004	-0.001		-0.013	-0.014
* College Economics Course		(0.072)	(0.073)		(0.064)	(0.064)		(0.064)	(0.064)
Full Interactions	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1614	1614	1614	1614	1614	1614	1614	1614	1614
Not Strongly Protectionist Unions									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Trade Levels			Trade on Self			Trade on US		
Union Member	-0.018	0.021	0.030	-0.016	0.020	0.031	-0.025	0.024	0.035
	(0.051)	(0.066)	(0.067)	(0.041)	(0.055)	(0.057)	(0.044)	(0.061)	(0.062)
College Economics Course	-0.036	-0.032	-0.027	0.006	0.010	0.015	-0.001	0.005	0.093
	(0.025)	(0.025)	(0.164)	(0.020)	(0.021)	(0.130)	(0.022)	(0.022)	(0.136)
Union Member		-0.106	-0.118		-0.097	-0.109*		-0.128*	-0.139**
* College Economics Course		(0.090)	(0.087)		(0.060)	(0.051)		(0.058)	(0.051)
Full Interactions	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1810	1810	1810	1810	1810	1810	1810	1810	1810

Marginal effects; Standard errors in parentheses; ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

All models include fixed effects for *Industry* as well as *Controls* (income, gender, race, age, education, and marital status).

Full Interactions include the demographic controls interacted with *College Economics Course*.

8.3 Economic Success of the Union as a Moderator

We test whether the more economically successful unions are more effective in shaping their members' views. We measure the union's success using union's spending power (total spending per capita in the previous year, logged)². We use the spending power and the protectionism score of the union to examine whether its economic success is a strong moderator of its influence on the members' views. We find some support for this conjecture. Table A15 shows that the interaction term is positive and statistically significant with respect to the perceived impact of trade on self and on the US, but is substantively small and not statistically significant with respect to the trade levels question.

Table A15: Union's Protectionism Stance and Members' View on Trade

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Trade Levels			Trade on Self			Trade on US		
Union Protectionism Score	0.010**	-0.032	-0.043	0.011***	-0.097***	-0.100***	0.010**	-0.065*	-0.071*
	(0.005)	(0.035)	(0.038)	(0.004)	(0.031)	(0.035)	(0.004)	(0.034)	(0.037)
Union Spending	-0.012	-0.090	-0.089	0.010	-0.192***	-0.193**	0.016	-0.124*	-0.131*
	(0.035)	(0.073)	(0.084)	(0.031)	(0.066)	(0.075)	(0.033)	(0.070)	(0.079)
Protectionism Score * Union Spending		0.008	0.009		0.020***	0.020***		0.014**	0.014**
		(0.006)	(0.007)		(0.006)	(0.006)		(0.006)	(0.007)
Demographic Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Party ID	No	No	Yes	No	No	Yes	No	No	Yes
Observations	244	244	226	244	244	220	244	244	226

Marginal effects; Standard errors in parentheses; + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Demographic Controls: income, gender, race, age, education & marital status

²Data are from www.unionfacts.com.

9 Additional Information on the Analysis of Auto Sector Workers

This section provides additional information on the analysis of how the United Auto Workers' changing stance on trade policy affected the preferences of the workers.

9.1 Changes in the United States - Korea Free Trade Agreement

The United States and the Republic of Korea initially signed the free trade agreement on June 30, 2007, but later reached a new agreement that entailed revised provisions for the automotive sector on December 3, 2010. Below, we briefly describe the key revisions in the agreement.³ Note that these revisions are highly technical in nature. We therefore contend that it is unlikely that the workers would read and understand these changes without the information communicated by their union.

- **Tariffs:** For motor vehicles principally designed for the transport of persons, the United States shall keep duties at the base rate during years one through four, and eliminate duties effective January 1 of year five. Korea will reduce duties to four percent *ad valorem* on the date KORUS enters into force and eliminate duties effective January 1 of year five.
- **Safety Standards:** “Korea shall provide that an originating motor vehicles of the United States produced by a manufacturer that sold no more than 25,000 originating motor vehicles in the territory of Korea during the previous calendar year shall be deemed to comply with Korean Motor Vehicle Safety Standards if the manufacturer certifies that the motor vehicle complies with U.S. Federal Motor Vehicle Safety Standards.”
- **Motor Vehicle Safeguards:** “Neither Party may apply a safeguard measure for a period exceeding two years, except that the period may be extended by up to two years if the competent authorities of the importing Party determine [...] that the measure continues to be necessary to prevent or remedy serious injury and to facilitate adjustment and that there is evidence that the industry is adjusting, provided that the total period of application of a safeguard measure, including the period of initial application and any extension thereof, shall not exceed four years.”

³The full legal texts are available here: <https://ustr.gov/trade-agreements/free-trade-agreements/korus-fta/legal-texts-reflecting-december-3-2010-agreement>.

- **Environmental Standards:** “With regard to Korea’s new automobile fuel economy and greenhouse gas emissions regulation, [...] Korea will provide that, from 2012 to 2015, a manufacture that sold up to 4500 motor vehicles in the territory of Korea in calendar year 2009 shall be deemed to comply with the target level set forth in the regulations if either the average fuel economy or the average CO_2 emissions level for the vehicles the manufacturer sold in the territory of Korea during the relevant calendar year meets a target level that is 19 percent more lenient than the relevant target level provided in the regulation that would otherwise be applicable to that manufacturer.”

9.2 Trade-Related Discussion among the United Auto Workers Members

Our analysis of the effect of the United Auto Workers (UAW)’ stance on the preferences of workers focuses on the idea of a ‘top-down’ influence: the union communicated the meaning of the changes in KORUS to its members. However, the findings could also be consistent with a ‘bottom up’ story: members changed their preferences and pressured the union leadership to change its policy stance as well. As noted in the paper, this is unlikely given the highly technical nature of the changes made to the revised agreement. We provide additional qualitative evidence against the bottom up explanation, by examining the online discussion among the UAW members regarding the trade agreement . One active online discussion forum among the UAW members was the union’s Facebook page that had 72,986 subscribers. We examined the reactions of the members toward the union’s statement announcing its change in support for the KORUS Agreement. As presented in Figure A4, the majority of the comments on the union’s announcement are very negative, while the remaining few responses are not quite relevant. For sure, this forum may not be representative of entire membership of the union. Yet this limited evidence is clearly consistent with the thrust of our claim that the views of the members on the agreement were unlikely to have been the cause of the union’s change in stance.



UAW International Union

December 7, 2010 ·

UAW: UAW statement on the proposed U.S.-Korea Free Trade Agreement
<http://tinyurl.com/25d9ncb>

Like Comment Share



Rich Ratliff How is making jobs in Korea saving ours? America has lost TOO MANY jobs already!

December 7, 2010 at 12:37am · Like · 2



Allan Paschal & they will be dumping more korean pieces of crap autos on us

December 7, 2010 at 12:57am · Like · 1



Michael C. Harrod How is it that these countries put tax and tariffs on our products coming into their country and we have to just say bring it in we will buy it. No to this and everyone needs to tell their elected official that we want all this to stop! I have when are you going to do it to?

December 7, 2010 at 12:57am · Like · 1



Todd Jordan Yo, ho, haul together,
hoist the colors high.
Heave ho,... See More

December 7, 2010 at 1:03am · Like



John Harris Rich is right. How can one assume that getting a couple more thousand cars into S. Korea(an impoverished country where the majority can't afford said cars) get more jobs here? The reason Ford backed this plan up so adamantly was to allow the future tra... See More

December 7, 2010 at 1:04am · Like · 1



Allan Paschal I know several yrs ago we couldn't export American vehicles to korea

December 7, 2010 at 1:06am · Like



John Smith Burying the EFCA in committee was bad enough, but we definitely don't need another "free trade" agreement.

December 7, 2010 at 1:26am · Like



Michael C. Harrod All we need as a country is more jobs to be gone. NO TO THESE TRADE DEALS FOR THE NEXT 10 yrs. Also remove the ones we have. We need to invest in this country and make things here!

December 7, 2010 at 6:17am · Like · 2



Tony Tombrillo Jr. This agreement will be like all the rest that came before it. I wonder if we have any jobs left to give away? Thanks for selling out the UAW workers!

December 8, 2010 at 11:16am · Like



Teri Crial Norris This is all someone's sick idea of a joke..... or maybe we've become the punchline.....

Bob King -- what the hell are you doing?
Obama -- what the hell are you doing?

December 9, 2010 at 10:36am · Like



Tracey Purvis Hey thanks King! Maybe your bleeding heart for workers around the world can come back full circle when all of us UAW members here in the US are reduced to poverty and left with nothing!!! The health and safety in our plants have back slid! Our wages are back sliding, our benefits are going down! Are you blind!! We are working longer harder and for less!!! Great job Bob!!! You can't be this stupid can you??

December 10, 2010 at 6:01am · Like



Kurt Houghteling oh good they didnt remove it

December 10, 2010 at 11:41pm · Like



Ralph Lyke President Bob King is, in fact, fighting for our members and retirees. We have to be on the forefront of these trade agreements that already have eliminated enough UAW jobs.

It's time to pitch in a write our U.S. Representative and two Senators to ensure that this Korea Free Trade Agreement is fair.

December 13, 2010 at 3:28am · Like

Figure A4: Discussion on the Free Trade Agreement at the UAW Facebook Page

10 Unobservable Selection and Bounding of the Treatment Effect

Our empirical analyses demonstrate that the effect associated with union membership on the policy preferences of its members cannot be accounted for by a self-sorting (i.e. selection) mechanism. Nonetheless, the evidence does not eliminate the possibility that other unobservable factors account for at least some, if not most of the so-called ‘union effect’. Thus, we estimate a lower bound of the treatment in a condition where other unobservables may account for some of the estimated effect.

We do so using the method pioneered by Altonji, Elder, and Taber (2005) and recently developed in Oster (2014), which estimates the bounds of a treatment effect based on coefficient movements after inclusion of controls. The logic of this approach is straightforward: If we assume that selection on observables is proportional to selection on unobservables, we can examine how much coefficients change with the inclusion of observables and form an understanding of the sensitivity of a coefficient to unobservables. If the coefficient moves little after the inclusion of controls, this suggests that the coefficient is robust to unobservables. Yet, this movement must be scaled by movements in the R-squared because an uninformative control does not change the coefficient in a significant manner, but also adds little to the model’s explanatory power.

More specifically, the method advanced in Oster (2014) shows that we can identify the bounded set of the treatment effect using the regression values from uncontrolled and controlled regressions and assumptions about: (i) $\bar{\delta}$, the proportional selection between observables and unobservables related to the treatment and (ii) R_{max} , the R-squared of the full regression with the treatment, observable controls and unobservable controls. The $\bar{\delta}$ captures the relative importance of the index of observed and unobserved variables in explaining the treatment. The bound $\bar{\delta} = 1$ means that the unobservables are as important as the observables. This is considered an appropriate upper bound because “researchers typically focus their data collection efforts (or their choice of regression controls) on the controls they believe *ex ante* are the most important” (Oster 2014: 11). It is thus quite unlikely that unobservables are more important than the whole set of observable controls that are relevant to the treatment. Regarding R_{max} , it is necessarily bounded between \bar{R} , the R-squared of the controlled regression, and 1. The simulated results suggest that the upper bound of $\min\{2.2\bar{R}, 1\}$ is an appropriate assumption to make. We therefore calculated the lower bound of the “union effect” assuming $\bar{\delta} = 1$ and $2.2\bar{R}$.

Following these assumptions, we estimate linear regressions for all three dependent vari-

ables.⁴ In the first stage we estimate the model when only including the indicator of union membership; in the second stage we estimate the model with the full set of controls.⁵ We then use the R-squared values to calculate the identified set of union treatment effects. As before, we estimate the models separately for workers in industries represented by highly protectionist unions and for workers in less protectionist industries.

Table A16: Identification of Lower Bound of Treatment Effect

	Baseline Effect (S.E.) [R^2]	Controlled Effect (S.E.) [R^2]	Identified Set
Strongly Protectionist Unions			
Trade Level	0.115 (.034) [.007]	0.095 (.035) [.059]	[0.069, 0.095]
Trade on Self	0.073 (.030) [.004]	0.063 (.031) [.044]	[0.049, 0.063]
Trade on US	0.126 (.032) [.010]	0.124 (.033) [.045]	[0.121, 0.124]
Not Strongly Protectionist Unions			
Trade Level	0.058 (.055) [.001]	-0.006 (.054) [.108]	[-0.008, -0.006]
Trade on Self	0.033 (.048) [.000]	-0.015 (.047) [.061]	[-0.015, -0.007]
Trade on US	0.042 (.040) [.000]	-0.030 (.050) [.087]	[-0.112, -0.030]

Table A16 summarizes the results. The identified set shows the lower and upper bounds of the union treatment effect. The lower bound refers to the treatment effect when we assume that the unobservables are as important as the observables in explaining the impact of union membership on trade attitudes. The upper bound denotes the union treatment effect when we assume that there is no selection on unobservables. Among protectionist unions, the results show that the lower bound of the union effect is both positive and sizable for all three dependent variables. For example, in the case of support for reduction in trade levels, the lower bound is 0.069, which means that union members are about 7 percentage points more likely to support a reduction of trade than non-members, even when we assume that the unobservables are as important as the observables. This represents about a 37% increase from the baseline rate. Crucially, in all three dependent variables, even the lower bound of the estimated union effect is sizable, representing at least 72% of the upper bound estimate. This indicates that selection on unobservables accounts, at most, to a quarter of the estimated effect. Finally, in the bottom three rows, which show the estimation results

⁴The estimation procedure requires a linear regression model. Similar to Altonji, Elder, and Taber (2005: 176), we estimate linear regression models by assuming that the unobservable selection bias in a probit model is close to the bias in an OLS model.

⁵Controls include income, gender, race, age education, marital status, and the fixed effects for industry and state.

for the less protectionist unions, the finding is very different: the union effect is either not robust to selection on unobservables or substantively very close to zero.