

Kutam, Matthew; Roth, Jonathan

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May 2024

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Matthew Kutam¹, Jonathan Roth¹

¹Brown University, Providence/USA

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A Comment on “The Effects of Import Competition on Unionization” *

Matthew Kutam

Jonathan Roth

April 19, 2024

Abstract

We replicate the primary results from [Ahlquist and Downey \(2023, AD\)](#), who examine the effects of Chinese import competition on both industry- and state-level unionization in the US. We are able to directly replicate the main results in AD Tables 1 and 2. We consider two main extensions. First, we consider a version of the industry-level analysis that uses log union share instead of the level. We again find a significant negative effect on union share, although the effect on log union share explains a larger fraction of the total drop between 1990 and 2014. Second, for the state-level results, we segment the manufacturing employment share into unionized and non-unionized manufacturing. We find that at the state level, the impacts of import exposure are concentrated entirely in non-union manufacturing. The estimated impact on union manufacturing employment is actually positive, but small and statistically insignificant. This is contrast with the results at the industry level where the effects are negative for both union and non-union manufacturing and larger in magnitude for union manufacturing.

1 Introduction

[Ahlquist and Downey \(2023, henceforth AD\)](#) study the import of import competition with China on unionization in the US. They use two plausibly exogenous sources of variation in import exposure from [Autor, Dorn and Hanson \(2013\)](#) and [Pierce and Schott \(2016\)](#). They find that manufacturing industries with higher exposure to imports from China have lower employment in both union and non-union jobs, although the change in log employment is larger for union employment. However, the change in union member share is relatively small. At the state level, they find that while employment in manufacturing decreases with higher import exposure, the share of the population working in unionized manufacturing actually *increases*.

We conduct both a *direct replication* to see if we can reproduce the results in AD, and explore some natural extensions and robustness checks. We focus on AD’s Table 1, which shows the main results at the industry level, and Table 2, which shows the results on employment at the state level. In terms of direct replication,

*Authors: Matthew Kutam: Brown University. Email: matthew_kutam@brown.edu.
Jonathan Roth: Brown University. Email: jonathan_roth@brown.edu.

we were able to exactly reproduce the results in the two tables using the provided replication code. One important note is that we used the processed data provided by AD, but did not replicate the production of the processed data from the original sources owing to time constraints.

In terms of robustness, for the industry-level results we consider an alternative specification that uses the log of union share rather than the level, matching the log specification used for employment. We estimate that a 1SD increase in import exposure corresponds to a 24 log point reduction in union share, which is about one-fourth of the overall change in log unionization. By contrast, the effect in levels is only about one-tenth the overall change. We further note that the average industry had a change of 2.2 SDs of exposure between 1990 and 2014. Thus, the effect of the average change in exposure on log unionization corresponds to about half the overall change between 1990 and 2014.

For the state-level results, we disaggregate the impacts on manufacturing employment by union and non-union manufacturing. Interestingly, we find that nearly all of the decrease in manufacturing employment caused by import exposure at the state level is concentrated in *non-union* manufacturing rather than union manufacturing (-1.5 vs 0.05 pp). The effect on union manufacturing is not statistically different from zero. This is in contrast to the results in AD Table 1 at the industry level, where the change in log-employment is larger in unionized manufacturing than non-union.

2 Direct Replication

2.1 Table 1

We were able to exactly reproduce AD Table 1 by running the replication file “Programs/data-analysis/T1_TA04_TA06.do”. Note that this code uses the created data file “Data-Created/dsA_wide.dta”. Owing to time constraints, we did not replicate the production of this file from the raw data.

2.2 Table 2

We were also able to exactly reproduce AD Table 2 by running the replication file “Programs/data-analysis/T2_T3_FA6_FA7_TA07_TA08_TA12_TA20.do”. Note that this code uses the created data file “Data-Created/dsB.dta”. Owing to time constraints, we did not replicate the production of this file from the raw data.

3 Robustness Checks

3.1 Table 1

Columns (1)-(3) of AD Table 1 show the changes in the log of total employment, union employment, and non-union employment. In contrast, columns (4)-(6) show the impact on the *level* of the union member share (in percentage points). We explored re-running the analysis in columns (4)-(6) using the change in the log of the union member share, to match the logs specification in the earlier columns, with results shown in our Table 1. Column (1) replicates column (4) of AD Table 1. Column (2) shows analogous results replacing the change in union share with the

	(1)	(2)	(3)
	Union	log(Union)	log(Union)
nexposure	-0.014***	-0.246***	-0.278***
	(0.005)	(0.062)	(0.064)
	[0.007]	[0.000]	[0.000]
N	64.000	64.000	64.000
r2	0.861	0.352	0.379

Table 1: Import Effects on Manufacturing Industry-level Unionization, in logs vs. levels.

Note: Column (1) depicts the effect on the change in the level of union share, matching column (4) of AD Table 1. Column (2) is analogous to column (1), but uses the change in log union share as the outcome. Column (3) again uses the change in log union share as the outcome, but controls for log union membership in 1990 instead of the level. Standard errors in parentheses; p -values in brackets.

log of change in union share as the outcome. Column (3) is analogous to column (2) except it controls for the log of 1990 union density instead of the level, with similar results to column (2).

Focusing on column (2), we see that a 1SD increase in exposure to import competition is estimated to reduce the union share by 24 log points. For comparison, the average change in log union share over the time period (weighted by 1990 employment) is a decrease of 103 log points. Thus, a 1SD increase in exposure corresponds to about one-fourth of the total change in log union share.¹ By contrast, column (4) of AD Table 1 estimates an impact of -1.4 percentage points, compared with an average change of -13.2 pp, i.e. about 1/10th of the total.

We note further that the *average* change in exposure between 1990 and 2014 is 2.2 SDs. In fact, only 6 of the 64 observations have a change in exposure less than or equal to 1. It thus may be more natural to benchmark the overall decline relative to the *average* change of 2.2 SD rather than that of 1 SD. Doing so, we would find that the average change in exposure would account for about half the overall change in log union ratio.

We also note that the denominator used in the union share measure is slightly different from the total employment measure used in column (1) of AD Table 1. We initially expected that the effect on the log of union share would be the difference between the effect on the log of union employment and the effect on the log of total employment. This is because if

$$union_share = \frac{union_emp}{total_emp},$$

then

$$\log(union_share) = \log(union_emp) - \log(total_emp).$$

However, it turns out that the union share variable is actually calculated as

$$union_share = \frac{union_emp}{union_emp + covered_emp + non_union_emp}$$

¹Note that $\exp(-0.24) \approx 0.79$ and $\exp(-1.02) = 0.36$, so when converted to percentages, the change from a 1SD increase in exposure corresponds to $0.21/0.64 \approx 0.33$ of the total.

(see “Data-construction/F01_dsA.do”), and the sum of union employment, covered employment, and non-covered employment does not exactly match the total employment outcome used. However, the differences are not particularly large: we estimate a coefficient of -0.246, whereas differencing the estimates in columns (1) and (2) of AD Table 1 yields -0.256.

3.2 Table 2

Column (4) of AD Table 2 reports impacts of import exposure on the share of the working population employed in manufacturing. In contrast to Table 1, the table does not distinguish between union and non-union employment in manufacturing.

We extended the analysis in AD Table 2 to disaggregate by union and non-union manufacturing employment. Our Table 2 shows the results. Columns (1)-(4) replicate columns (1)-(4) of AD Table 2. Column (5) shows results for non-union manufacturing, and column (6) shows union manufacturing. Interestingly, nearly all of the effect is concentrated in non-union manufacturing (-1.524 vs 0.045), and the union manufacturing impact is not statistically different from zero. This is in contrast to the results in AD Table 1, where the impact on union manufacturing is larger. It is not clear what exactly is driving these differences, as the analysis differs in several ways, including: (a) the unit of observation is a state rather than an industry, (b) the outcome is employment as a share of the population, rather than log employment, and (c) the analysis here contains no controls, whereas the analysis in Table 1 controls for baseline union share.^{2,3}

	(1)	(2)	(3)	(4)	(5)	(6)
	Nonemp	Nonman., nonunion	Nonman., union	Manuf.	Manuf., nonunion	Manuf., union
exposure	0.721** (0.300) [0.020]	0.434 (0.270) [0.114]	0.324*** (0.119) [0.009]	-1.479*** (0.252) [0.000]	-1.524*** (0.303) [0.000]	0.045 (0.153) [0.771]
N	51.000	51.000	51.000	51.000	51.000	51.000
r2	0.134	0.044	0.140	0.492	0.463	0.001

Table 2: Replication of AD Table 2 and Disaggregation by Union and Non-Union Manufacturing

Note: Columns (1)-(4) replicate AD Table 2. The outcome variable is the share of the working population in each category: Non-employment, non-union non-manufacturing employment, non-union manufacturing employment, and manufacturing employment. Columns (5) and (6) extend the analysis to the share of the population working in non-union manufacturing and union manufacturing. Standard errors in parentheses; *p*-values in brackets.

We note that the analysis at the industry-level controls for union share in 1990. If one assumes that industry-level exposure is as good as random conditional on union share in 1990, which would motivate this control strategy, then as noted in [Borusyak and Hull \(2023\)](#), shift-share estimates at the state-level should control for an industry-weighted average of union share in 1990. We attempted to construct

²For further context, the average percentage share in non-union manufacturing drops from 9.9 to 6.6 pp between 1990 and 2014, while the share of union manufacturing drops from 2.3 to 0.7 pp.

³In a private correspondence, AD point out that our finding could potentially be explained by an ensuing finding from AD Table 3: that manufacturing effects are much larger in low unionization, right-to-work states.

such controls, but were not able to complete the data construction in the allotted time.

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