

The uneven effects of a reduction in import competition

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As more and more Chinese exporters enter the United States markets, the import competition has increased in the United States. In March 2018, in order to protect domestic economies, the United States raised its tariffs on Chinese exporters, and the trade war between the U.S. and China began. This trade protectionism policy is expected to reduce import competition faced by the U.S., thus improving domestic employment. Considering differences in employment across states, in this project, I study the uneven effects of the reduction in import competition following the trade war. Which states seem to experience a larger reduction in import competition? Are there any differences in the reduction across industries? As part of my analysis, I use the employment-weighted average reduction in import competition to measure the reduction in exposure to import competition in each state. And I find that California's import competition reduce the most, followed by Texas. Besides, the reduction is heterogeneous across different industries in the manufacturing sector. ¹

Analysis

Data and Methods

One key step in this project is to measure changes in exposure to import competition. Following [David et al. \(2013\)](#) and [Caliendo et al. \(2019\)](#), I evaluate the reduction in import competition through an employment-weighted average, as (1) shows.

$$\Delta IPW_{uit} = \sum_j \frac{L_{ijt}}{L_{ujt}} \frac{\Delta M_{ucjt}}{L_{it}} \quad (1)$$

where ΔIPW_{uit} is the change in imports per worker, L_{it} is the start of period total employment in state i in year t , j refers to industry, and u stands for a U.S.-related variable, ΔM_{ucjt} denotes the change in U.S. imports from China for industry j in year t . One advantage of this model is that each state's industry employment structure in year t is taken into account.

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¹In this report, for simplicity, I drop the data of American Samoa, Guam, the Northern Mariana Islands, Puerto Rico, the U.S. Virgin Islands, Alaska, and Hawaii. And I only use the data of the other 48 states and Washington, D.C.

In my report, I mainly use NAIC-2-digit and NAIC-3-digit codes proposed by the North American Industry Classification System (NAICS).² The United States International Trade Commission (USITC) provides the U.S. general imports from China of different NAICS commodities every year. And the United States Census Bureau provides annual employment data of different industries classified by NAICS codes on the national and state levels. To avoid the employment responses to the reduction in import competition, I use the employment data in 2018, before the trade war.

Results

Aggregate uneven effects

Figure 1 indicates the uneven effects of the reduction in import competition across all industries. It is obvious that California experiences the largest reduction in exposure to import competition, up to 79.5, much larger than other states. Texas' reduction in import competition is only less than California's and, up to 56.3, followed by Florida's, whose reduction in exposure is 45.2, and New York's, whose reduction in exposure is 43.9. In fact, the reduction in 75% of the states is lower than 17.3. Since California's reduction is much larger than other states, I change the range of the legend, with a maximum of 20, in order to show the uneven effects more clearly. Figure 2 illustrates larger effects in California, Texas, Florida, and the northeastern United States.

Heterogeneous uneven effects

Since the trade war mainly focuses on the manufacturing sector, this part analyzes whether there exist differences in reduction in import competition across different industries in the manufacturing sector. Following the NAICS, the manufacturing sector can be divided into three sub-sectors, with NAICS-2-digit codes 31, 32, and 33, respectively.³

Figure 3 reports the uneven effects in NAICS-31 industries, including food, beverages, leather, etc. For NAICS-31 products, California still experiences the largest reduction in exposure up to 7.5, while the third quartile of the U.S. is 1.4. What's more, by comparing the legend range of Figure 1 and Figure 3, we can find that the reduction of NAICS-31 industries is much lower than the aggregate reduction.

Figure 4 shows the uneven effects in NAICS-32 industries, including paper, chemicals, plastics, and so on. We can observe the strongest reduction in exposure in California and

²A detailed clarification of NAIC-2-digit and NAIC-3-digit codes' meanings can be found in Table 1 and Table 2.

³Descriptions about 31, 32, and 33 can be found in Table 1 and Table 2.

Texas, up to 6.9 and 6.3, respectively. The Great Lakes Region also benefit from a reduction in import competition. Besides, by comparing the legend range of Figure 1 and Figure 4, we can find that the reduction of NAICS-32 industries is also much lower than the aggregate reduction.

Figure 5 demonstrates the uneven effects in NAICS-33 industries, including machinery, computer & electronics, transportation, etc. This figure shows that similar to the uneven effects of NAICS-31 and NAICS-32, California is the most heavily affected by the reduction in importation competition, up to 52.8, followed by Texas whose reduction is 35.7. By comparing the legend range of Figure 3, Figure 4, and Figure 5, it can be uncovered that NAICS-33 industries, with larger values of reduction in exposure, are expected to be more responsive to the trade protection policy. Moreover, the third quartile in NAICS-33 industries is 14.2, and the reduction in import competition in California is much larger than in other states. This is because computer and electronic products are the most heavily influenced industry in the trade war, and in the U.S., computer and electronic products manufacturing mainly concentrates in Silicon Valley, California.

Figure 6 displays differences in the histograms distribution of NAICS-31, NAICS-32, and NAICS-33 industries. Figure 6(a) reveals that NAICS-31 industries are less responsive to the trade war than NAICS-32 industries, while these two sub-sectors are much less heavily impacted by the trade war than NAICS-33 industries, according to Figure 6(a) and Figure 6(b). This provides further verification for previous analysis based on maps.

Conclusions and directions for future research

In this report, I analyze the uneven effects of a reduction in import competition across states and three sub-sectors in the manufacturing sector, following the trade war between the U.S. and China. I discover that California is most heavily affected in all three sub-sectors. Texas is always the second most heavily affected state, especially in NAICS-32 and NAICS-33 industries. The Great Lakes Region is also relatively heavily shocked in NAICS-32 and NAICS-33 industries, following California and Texas. Besides, among the three sub-sectors, trade protection has much larger effects on NAICS-33 than the other two sub-sectors. Future research could examine the results of these uneven effects across states and industries, for example, how this trade policy affects employment, how the labor force flows across states and industries, and so on.

References

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H. David, D. Dorn, and G. H. Hanson. The china syndrome: Local labor market effects of import competition in the united states. *American economic review*, 103(6):2121–68, 2013.

Appendix

A Figures

Figure 1: Aggregate uneven effects (Without changing the legend)

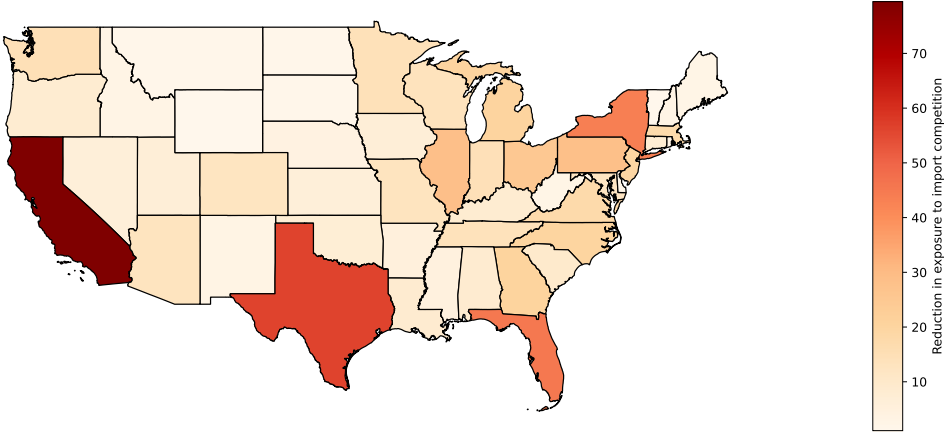


Figure 2: Aggregate uneven effects (With changing the legend)

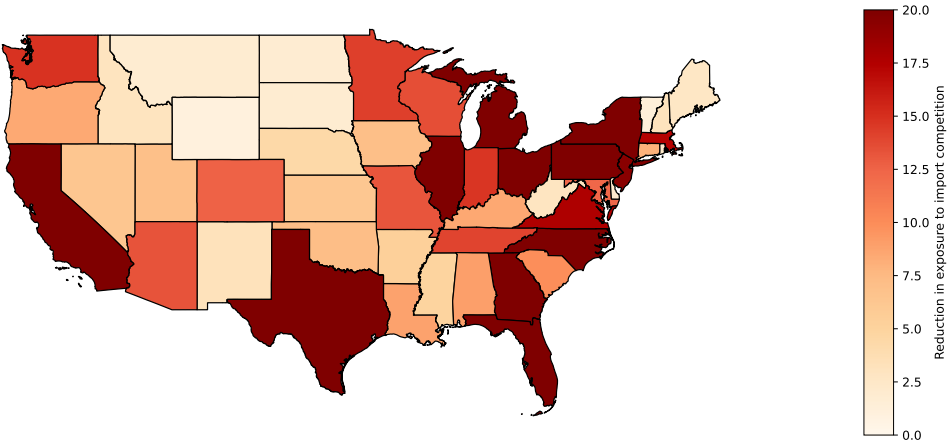


Figure 3: Uneven effects in NAICS-31 industries

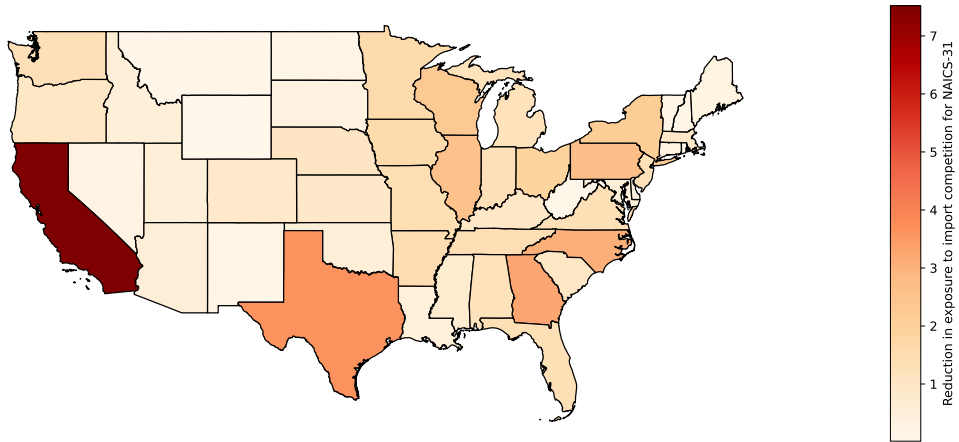


Figure 4: Uneven effects in NAICS-32 industries

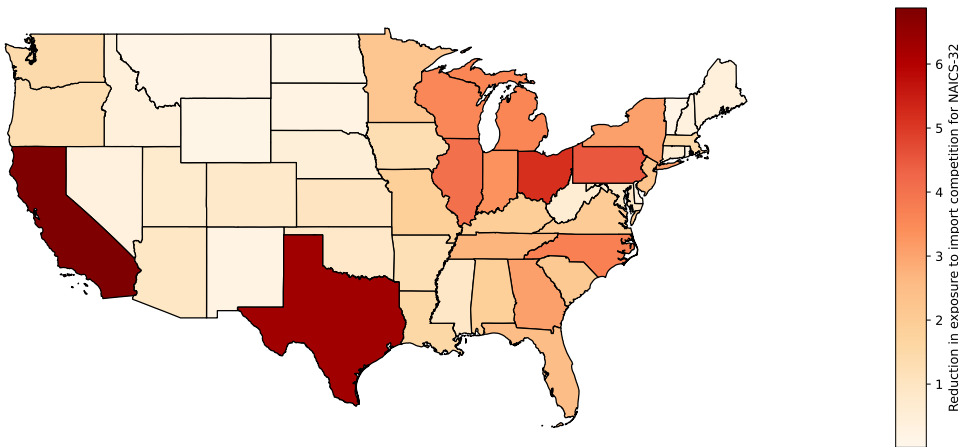


Figure 5: Uneven effects in NAICS-33 industries

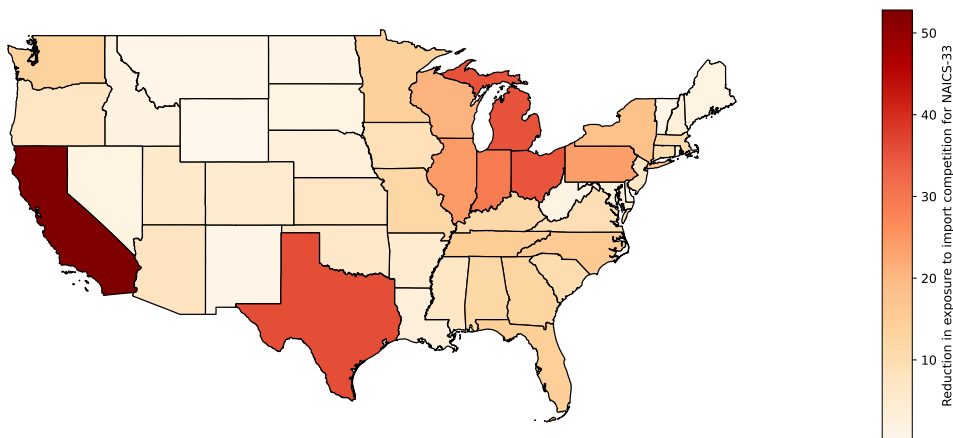
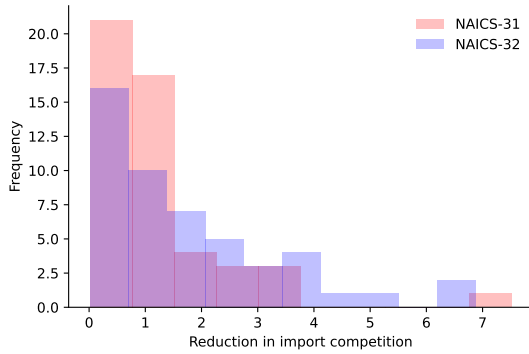
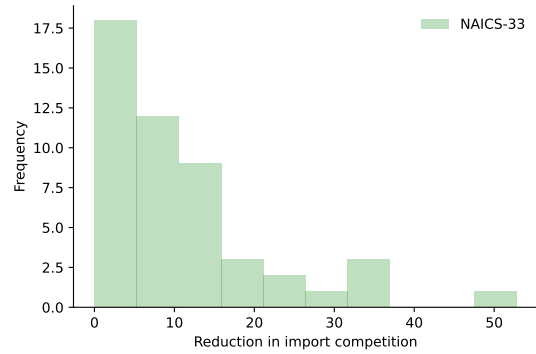


Figure 6: Histograms of different industries in the manufacturing sector



(a) NAICS-31 and NAICS-32



(b) NAICS-33

B Tables

Table 1: NAICS 2-digit codes and descriptions

NAIC Number	Description
11	Agriculture and livestock products
21	Oil, gas, minerals and ores
31	Manufacturing, part 1
32	Manufacturing, part 2
33	Manufacturing, part 3
91	Waste and scrap
93	Used or second-hand merchandise
98	Goods returned (exports for Canada only)
99	Other special classification provisions

Table 2: NAICS 3-digit codes and descriptions

NAIC Number	Description
111	Agricultural products
112	Livestock & livestock products
113	Forestry products, nesoi
114	Fish, fresh/chilled/frozen & other marine products
211	Oil & gas
212	Minerals & ores
311	Food & kindred products
312	Beverages & tobacco products
313	Textiles & fabrics
314	Textile mill products
315	Apparel & accessories
316	Leather & allied products
321	Wood products
322	Paper
323	Printed matter and related products, nesoi
324	Petroleum & coal products
325	Chemicals
326	Plastics & rubber products
327	Nonmetallic mineral products
331	Primary metal mfg
332	Fabricated metal products, nesoi
333	Machinery, except electrical
334	Computer & electronic products
335	Electrical equipment, appliances & components
336	Transportation equipment
337	Furniture & fixtures
339	Miscellaneous manufactured commodities
910	Waste and scrap
930	Used or second-hand merchandise
980	Goods returned (exports for Canada only)
990	Other special classification provisions