

Policy Brief

Round 2: Trading Partners Respond

The Estimated Impacts of Tariffs on
Steel and Aluminum

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This *Policy Brief* updates our March 5 *Policy Brief* to examine the potential *net* impacts on U.S. jobs across all industries of retaliation threatened by U.S. trading partners in response to the imposition of U.S. steel and aluminum tariffs.

Summary

President Donald Trump March 8 signed Proclamations imposing tariffs of 25 percent on U.S. imports of steel and 10 percent on U.S. imports of aluminum from all countries except, for now, Canada and Mexico.¹ The Proclamations state the President may “if necessary” raise the tariffs on imports from the remaining countries to unspecified rates to reflect country exclusions. Several U.S. trading partners that remain subject to the duties are expected to seek compensation (referred to here as retaliation) for the negative impacts these tariffs will have on their exports to the United States.

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This *Brief* updates our March 5 *Policy Brief*,² which estimated the potential *net* impacts on U.S. jobs across all industries of the (then proposed) steel and aluminum tariffs applied to targeted steel and aluminum imports from all countries. We also break down the employment impacts by state.

We find that the tariffs coupled with retaliation would continue to have positive employment impacts on U.S. steel and aluminum producers, as well as a handful of other sectors able to attract capital and labor released from sectors that are harmed by the tariffs and retaliation. However, the tariffs and retaliation would harm workers in other sectors including manufacturers and others who use steel and aluminum. Those positive and negative impacts would ripple through the economy affecting workers in every sector. Briefly, we find:

- The tariffs and retaliation would increase U.S. steel employment and non-ferrous metals (primarily aluminum) employment by 26,346 jobs, but cost a net of 495,136 jobs throughout the rest of the economy, for a total net loss of nearly 470,000 jobs;
- Eighteen jobs would be lost for every steel/aluminum job gained;
- More than two thirds of the lost jobs would affect workers in production and low-skill jobs.
- Every state will experience a net loss of jobs.

**“Eighteen jobs
are lost for every
one gained.”**

Results

As shown in Table 1, despite the exemption (for now) of imports from Canada and Mexico, the tariffs on steel and aluminum imports coupled with retaliation from other affected U.S. trading partners would cause a net loss in U.S. employment. While employment increases in sectors making steel and aluminum, it declines in most of the rest of the U.S. economy. Eighteen jobs are lost for every one job gained.

Notable are the job losses in steel-consuming sectors, many of which are in manufacturing communities located in the Rust Belt and the South. Steel-consuming industries face employment declines of 97,190. Also notable are job losses in agriculture, a prime target of retaliation.

Table 1
Net Number of U.S. Jobs Impacted by
Steel and Aluminum Tariffs and Retaliation
(Number)

Primary agriculture*	-24,054
Primary energy	+1,479
Manufacturing	-3,883
Processed food	-6,009
Beverages and tobacco	-1,514
Petroleum and coal products	-58
Chemicals, rubber, plastics	+4,209
Iron and steel	+23,388
Non-ferrous metals	+2,959
Fabricated metals	-9,703
Motor vehicles and parts	-11,555
Other transportation	+1,393
Electronic equipment	-9,165
Other machinery	-566
Textiles	+384
Clothing	+39
Footwear, leather, footwear	+310
Wood, paper	-2,582
Other goods*	+4,588
Services	-442,333
Construction	-66,022
Air transport	-456
Water transport	-140
Other transport	-1,590
Trade and distribution	-132,108
Communications	-9,856
Financial services	-13,082
Insurance	-4,273
Business and professional services	-43,103
Personal and recreational services	-34,890
Other services	-136,814
TOTAL	-468,790

* Includes forestry products, minerals, and other manufactures.
Source: Authors' estimates.

Gains for steel/aluminum
+26,346

Net losses elsewhere
-495,136

Losses per steel/aluminum
job gained 18:1

Steel/Aluminum
Consumers:*
-97,190

Agriculture:
-24,054

*Other Services**:*
-376,310

* Beverages (and tobacco), petroleum/coal products, fabricated metals, motor vehicles and parts, other transportation, electronic equipment, other machinery, construction.

** Services sectors shown in the Table except for construction.

Services sectors are hit the hardest for several reasons. First, as the largest component of the U.S. economy, services are key inputs into the output of every U.S. sector, so as manufacturing, agriculture and energy output decline, so too do services output and related jobs. Second, consumers reduced spending when they are hit by higher costs (of a new car, a new washing machine, etc.) and, for many, lost wages from unemployment. As a result, households pull back on spending; services like education, entertainment and even healthcare are on the front lines of the spending reduction impacts, with additional attendant job losses.

We are also able to disaggregate the employment effects by skill level. High-skilled jobs (managers, professionals, technicians and related workers) account for 31 percent of the net job losses. Low-skilled workers (production workers, machine operators, office workers, administrative workers, sales/shops staff, and farm workers) bear the brunt of the tariffs, accounting for 69 percent of the total job losses.

Finally, Table 2 shows that every U.S. state will experience a net loss of jobs as a result of the steel and aluminum tariffs and retaliation. Heaviest hit are California, Texas and New York. But noteworthy are large net employment losses in the states in which the steel and aluminum sector figures prominently: Illinois (-17,950), Indiana (-7,282), Michigan (-14,021), Ohio (-15,718), Pennsylvania (-16,535) and Wisconsin (-8,964).



Table 2**Employment Impact of Steel and Aluminum Tariffs, Plus Retaliation, by State**

	Steel, Aluminum	Other Sectors	Total Impact		Steel, Aluminum	Other Sectors	Total Impact
Alabama	+1,291	-7,129	-5,837	Montana	+11	-1,886	-1,875
Alaska	+2	-1,173	-1,171	Nebraska	+83	-3,607	-3,524
Arizona	+165	-8,991	-8,826	Nevada	+37	-4,307	-4,270
Arkansas	+627	-4,473	-3,847	New Hampshire	+138	-2,291	-2,153
California	+1,217	-57,679	-56,462	New Jersey	+213	-12,775	-12,562
Colorado	+182	-9,193	-9,011	New Mexico	+14	-2,886	-2,872
Connecticut	+209	-5,701	-5,492	New York	+399	-30,073	-29,675
Delaware	+23	-1,445	-1,421	North Carolina	+531	-15,051	-14,520
Dist. of Col.	+2	-2,070	-2,068	North Dakota	+8	-1,618	-1,610
Florida	+256	-29,238	-28,982	Ohio	+2,851	-18,569	-15,718
Georgia	+316	-15,014	-14,698	Oklahoma	+266	-5,854	-5,588
Hawaii	+2	-2,427	-2,425	Oregon	+556	-6,429	-5,873
Idaho	+49	-2,715	-2,666	Pennsylvania	+2,743	-19,278	-16,535
Illinois	+1,514	-19,464	-17,950	Rhode Island	+61	-1,534	-1,474
Indiana	+3,413	-10,695	-7,282	South Carolina	+399	-7,190	-6,791
Iowa	+291	-5,846	-5,555	South Dakota	+24	-1,710	-1,686
Kansas	+114	-4,888	-4,774	Tennessee	+591	-10,816	-10,225
Kentucky	+596	-7,267	-6,671	Texas	+1,555	-41,719	-40,164
Louisiana	+302	-6,949	-6,648	Utah	+210	-4,789	-4,579
Maine	+11	-2,206	-2,195	Vermont	+11	-1,198	-1,186
Maryland	+100	-9,154	-9,054	Virginia	+304	-13,005	-12,701
Massachusetts	+167	-11,601	-11,434	Washington	+318	-11,853	-11,535
Michigan	+1,658	-15,678	-14,021	West Virginia	+239	-2,282	-2,043
Minnesota	+420	-9,512	-9,092	Wisconsin	+1,054	-10,018	-8,964
Mississippi	+307	-4,263	-3,956	Wyoming	+3	-1,038	-1,035
Missouri	+309	-9,991	-9,682	TOTAL	+26,346	-495,136	-468,790

Source: Authors' estimates.

Conclusion

Steel and aluminum tariffs and associated retaliation by U.S. trading partners would reverberate throughout the U.S. economy in ways that will, on balance, reduce U.S. employment. While U.S. steel and aluminum jobs would increase, those gains would come at a high cost to workers in other sectors of the economy.

Endnotes

1. Presidential Proclamation on Adjusting Imports of Steel into the United States, March 8, 2018, <https://www.whitehouse.gov/presidential-actions/presidential-proclamation-adjusting-imports-steel-united-states/>; Presidential Proclamation on Adjusting Imports of Aluminum into the United States, March 8, 2018, <https://www.whitehouse.gov/presidential-actions/presidential-proclamation-adjusting-imports-aluminum-united-states/>.
2. The Trade Partnership. "Does Import Protection Save Jobs? The Estimated Impacts of Proposed Tariffs on Imports of U.S. Steel and Aluminum," Policy Brief, March 5, 2018, <http://tradepartnership.com/reports/does-import-protection-save-jobs-the-estimated-impacts-of-proposed-tariffs-on-imports-of-u-s-steel-and-aluminum-2018/>.

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Methodology

We base our analysis on the Global Trade Analysis Project (GTAP) database. The GTAP database covers international trade and economy-wide inter-industry relationships and national income accounts, as well as tariffs, some nontariff barriers and other taxes. This includes value-chain related linkages across industries and borders. These data are included in a computer-based model of production and trade known as a “computable general equilibrium” (CGE) model. **This is the same model used by the Commerce Department to arrive at the tariff rates it argues will yield increases in U.S. steel production sufficient to bring the industry to 80 percent capacity utilization.**

While our model incorporates the GTAPv10 database, we have updated the data from the 2014 benchmark year to better reflect the U.S. economy in 2016. The base year for our analysis of the imposition of steel and aluminum tariffs is 2016.

We focused on the impacts of imposing the tariffs and retaliation on the U.S. workforce. For the analysis conducted here, we treat wages as “sticky,” meaning changes in demand for labor (positive or negative) are first reflected in changes in employment rather than changes in wages. This is appropriate for an examination of the immediate impacts of the tariffs on workers. We also examined the employment impacts on workers in different occupation/skill categories in the United States, and across the states.

It is important to emphasize that our employment impact estimates are net. They take into account potential increases as well as decreases in employment as demand increases in some cases for U.S. products, and declines in others. These changes arise not only from the direct impacts of the re-imposition of tariffs, but also the indirect impacts of changes in supply and demand for goods and services generally across the economy. For example, you will see that some sectors that you might not think would benefit from steel tariffs – textiles, for example – show employment increases. This is because declines in production in other sectors releases labor and capital that can now be used more productively in other sectors, like textiles. So output and related employment rises there.

We applied a 25 percent tariff to U.S. imports of the steel products detailed in the Commerce Department’s steel national security report, and a 10 percent tariff to U.S. imports of the aluminum products detailed in the Commerce Department’s aluminum national security report, excluding imports from Canada, Mexico and

What is covered?

The affected **steel** products fall into one of five categories: (1) carbon and alloy flat products (e.g., sheet, strip, plate); (2) carbon and alloy long products (e.g., bars, rails, rods and beams); (3) carbon and alloy pipe and tube (includes some stainless); (4) carbon and alloy semi-finished products (e.g., slab, ingots, blooms, billets); and (5) stainless products (flat, long, pipe and tube, and semifinished). See U.S. Department of Commerce, Bureau of Industry and Security, Office of Technology Evaluation, “The Effect of Imports of Steel on the National Security,” an Investigation Conducted Under Section 232 of the Trade Expansion Act of 1962, as Amended, January 11, 2018, https://www.commerce.gov/sites/commerce.gov/files/the_effect_of_imports_of_steel_on_the_national_security_-_with_redactions_-_20180111.pdf.

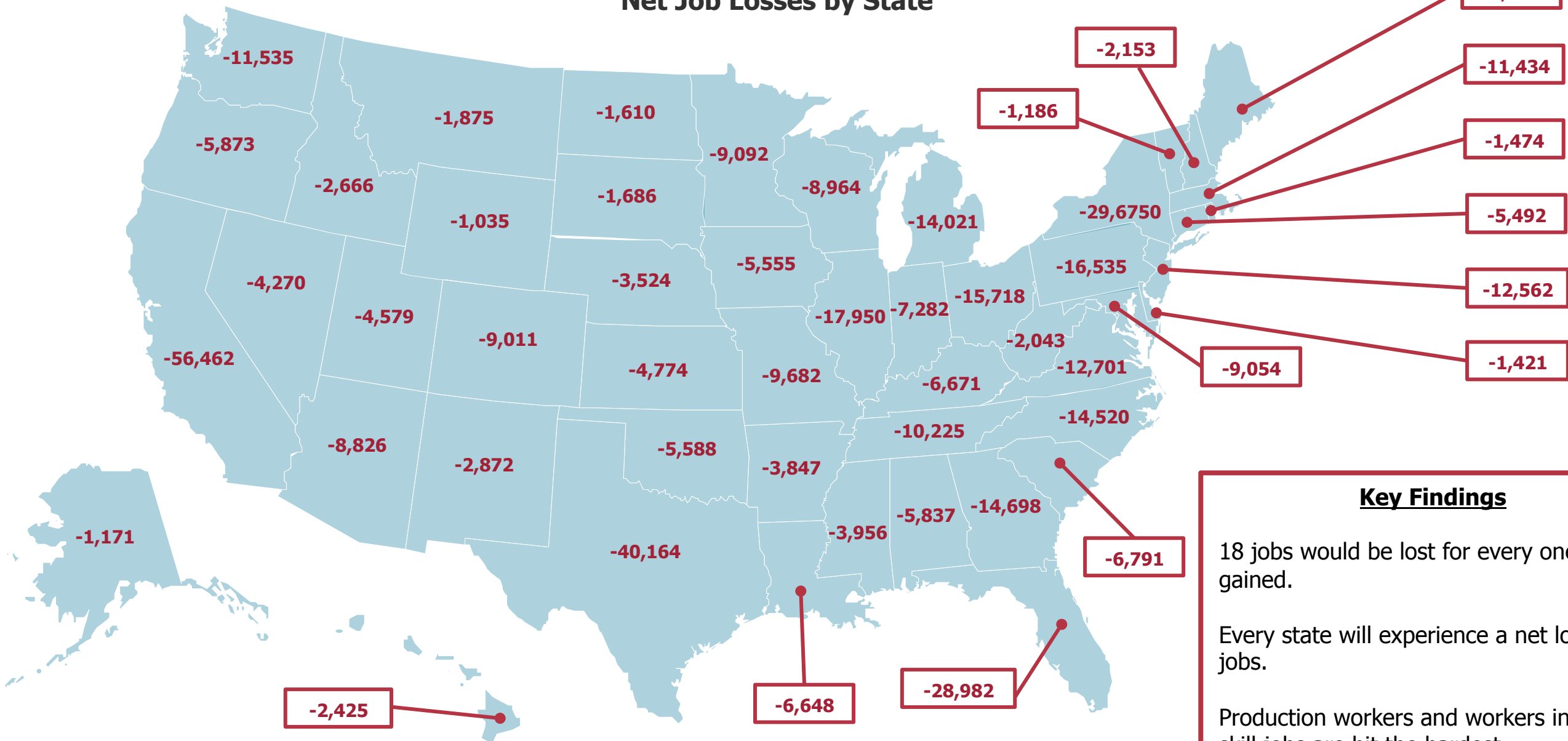
The affected **aluminum** products are: (1) unwrought aluminum; (2) aluminum castings and forgings; (3) aluminum plate, sheet, strip, and foil (flat rolled products); (4) aluminum wire; (5) aluminum bars, rods and profiles; and (6) aluminum tubes and pipes; and (7) aluminum tube and pipe fittings. See U.S. Department of Commerce, Bureau of Industry and Security, Office of Technology Evaluation, “The Effect of Imports of Aluminum on the National Security,” an Investigation Conducted Under Section 232 of the Trade Expansion Act of 1962, as Amended, January 11, 2018, p. 7, https://www.commerce.gov/sites/commerce.gov/files/the_effect_of_imports_of_steel_on_the_national_security_-_with_redactions_-_20180111.pdf.

Australia. We excluded Australia in addition to Canada and Mexico because at the time of this writing, it appeared likely that imports from Australia will be excluded from the tariffs.

Our retaliation scenario involved further restricting U.S. exports to countries/areas that account for over 90 percent of affected imports: the European Union, Korea, Brazil, Japan, China, Russia, Turkey, Taiwan, India, Vietnam and South Africa. We limited product coverage for retaliation to U.S. exports of primary agriculture, processed foods, beverages and tobacco, clothing, vehicles and electronics (drawing heavily for product coverage from the retaliation list threatened by the European Union). Clearly, a different set of countries choosing to retaliate, and imposing retaliation on a different basket of goods, will yield results different than those presented in this *Policy Brief*.

Impact of Steel and Aluminum Tariffs, Plus Retaliation

Net Job Losses by State



Key Findings

18 jobs would be lost for every one gained.

Every state will experience a net loss of jobs.

Production workers and workers in low-skill jobs are hit the hardest.