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The Impact of 2018 Tariffs on U.S. Trade Values Across Relevant Categories

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Abstract
The Office of the United States Trade Representative, under the direction of President Donald Trump, has implemented protectionist tariffs to an extent not seen in the past several decades. This paper explores data from the U.S. Census Bureau to analyze how the values of U.S. imports and exports have differed from what would have been expected for 2018 in the absence of tariffs. This is done by using past years' data to create a predictive curve for 2018 trade values across several different product categories, which have been subject to tariffs. The general finding of this paper is that the U.S. trade deficit was smaller than predicted and that imports from China were lower than would have been expected without the tariffs. This finding is generally supported when looking at product categories. However, shrinking the trade deficit does not correlate with an improved domestic economy or improved welfare for U.S. consumers.

Keywords
trade, tariffs

Introduction

From the time he first hit the campaign trial in 2015, President Donald Trump has made it a priority to achieve better trade deals for the United States. Throughout his campaign, President Trump promised to renegotiate the North American Free Trade Agreement and reduce the trade deficit with China. Since taking office, President Trump has acted in various ways to achieve these goals. Notably, on the third day of his presidency in January 2017, he withdrew from the Trans Pacific Partnership; in October of 2018 NAFTA's replacement, the United States-Mexico-Canada Agreement, was finalized; he announced tariffs on steel and other products for all countries; and he implemented tariffs targeting China and other specific countries (Bown, Kolb). Many trade experts have criticized these decisions, stating that restricting trade would negatively impact the U.S. economy. However, given the ongoing nature of tariff implementation, the full economic impacts are still unclear.

President Trump appears to follow a philosophy of mercantilism, in that he believes that improving the U.S. terms of trade will result in a stronger economy. President Trump fears the additional loss of jobs to outsourcing and offshoring, which he correlates with a growing U.S. trade deficit. These beliefs have fueled his protectionist policies (Ahmed, Bick).

The return to protectionist policy under the Trump administration represented the largest implementation of tariffs by the U.S. since the 1930 Smoot-Hawley tariffs. The full effects of this unprecedented return to protectionism remain unknown due to the ongoing nature of the negotiations and tariff implementations. This paper represents an early quantification of the impacts of the Trump administration's trade war on the total value of trade for the U.S. in 2018.

Review of Literature

While past research has been conducted on tariffs more broadly, and on trade with China, the most recent tariffs implemented under President Trump have not yet been fully investigated. Previous research has considered the question of whether tariffs cause a marginal impact on trade volumes. Debaere and Mostasharic look into this question in their 2010 paper entitled "Do tariffs matter for the extensive margin of international trade? An empirical analysis." The paper considers the implications of tariffs and trade volumes between 1989 and 1999 for bilateral trade relationships between the U.S. and Mexico, China, and Canada. Debaere and Mostasharic find that the reduction in tariffs after World War II had a statistically significant effects on trade volumes and conclude that said reduction has contributed to trade growth (Debaere, Mostashari).

Previous research also considers U.S. trade relations specifically with China, which was the main target of the 2018 tariffs. Feenstra (1998) investigated the bilateral relationship and the determinants of the U.S. trade deficit with China. The early paper aimed to better quantify the U.S.-China trade deficit, as its exact value was uncertain at the time, and also to understand what caused the deficit to grow. The researchers concluded that the main contributors to the growing deficit were differing macroeconomic forces in the U.S. and China and the movement of production from the U.S. to East Asia (Feenstra, et al).

A later paper, from 2011, considers a similar topic — the gains and losses from trade retaliation between the U.S. and China. Dong and Whalley use numerical general equilibrium models of world trade to analyze the potential consequences of conflicts in bilateral trade relations. The paper finds that, in the case of a trade war between the U.S. and China, Europe and Japan would likely gain the most. Meanwhile, the conflict would hurt the U.S. if it loses markets,

but there may be an optimal tariff that would benefit the U.S. However, the paper concludes that such a level is unlikely and that American and Chinese markets would suffer under trade retaliation due to loss of exports, worsened terms of trade, and domestic adjustment costs (Dong and Whalley).

Most of the U.S. tariffs implemented on Chinese exports in 2018 were issued under Section 301 of the U.S. Trade Act of 1974 (other tariffs were imposed under other laws). In a 1996 paper, Puckett and Reynolds examine this law from an international legal perspective to evaluate whether it is legal under World Trade Organization rules. The paper states that Section 301 unfairly gives the U.S. the ability to unilaterally apply sanctions on any country that it perceives as imposing harm on U.S. exports. The paper suggests that if the WTO is to function at its peak and encourage maximum free trade, the U.S. must work within it and eliminate the Section 301 option (Puckett and Reynolds).

Looking at U.S. tariffs implemented under other laws, Ciuriak and Xiao (2018) quantify the impact of the Section 232 tariffs in their paper by using a Global Trade Analysis Project computable general equilibrium model, which integrates various accounts to provide a complete view of an economy. The results of their paper suggest that the steel and aluminum tariffs would restrict U.S. imports of the subjected goods and stimulate domestic production. However, the tariffs would also result in increased prices on the considered goods, which could undermine the global competitiveness of U.S. sectors that are dependent on steel and aluminum. The authors also note that, given the dynamic nature of the topic, the situation may change rapidly in the future (Ciuriak and Xiao).

A more comprehensive analysis of the trade war by Mary Amiti, Stephen J. Redding, and David Weinstein, focused on the impact of the Trump administration's trade policies on price

and welfare in the U.S. The paper finds that the U.S. experienced increases in the prices of intermediate and final goods in which the burden of the tariffs passed onto the domestic prices of goods. The paper concludes that the full weight of the tariffs fell onto the domestic consumer and resulted in a reduction of U.S. real income totaling $1.4 billion per month through the end of 2018. The authors also find similar impact on foreign countries which issued retaliatory tariffs on the U.S. (Amiti, et al).

Methods

Rationale for Selection

I look at a variety of categories of import and export data sourced from the U.S. Census Bureau. Both import and export data are analyzed in order to provide a more complete understanding of how tariffs impacted the flow of goods. Looking at exports demonstrates how the U.S. has been impacted by tariffs implemented by other countries. The analysis of imports provides some insight into how the other countries' producers have been affected by U.S. tariffs. Specifically, it could show whether tariffs caused U.S. consumers to source products from domestic producers due to increased costs from tariff-targeted countries, or whether instead U.S. consumers shifted from one tariff impacted country to a country that was not targeted by tariffs.

The data provided by the Census Bureau show values for imports, exports, and balance of trade. These baseline data are also adjusted in order to account for inflation and exchange rate fluctuation (U.S. Census Bureau). This adjustment by the Census Bureau does not take into account seasonal trends, on the product level, which I do in my analysis, but instead makes only minor changes to adjust for differences in valuation across the broader basket of goods. The Census Bureau defines imports as the Customs and Border Protection–appraised value of

merchandise, or the price paid for merchandise for export to the United States, excluding: import duties, freight, insurance, and other charges incurred. Exports are valued at the free alongside-ship value of merchandise at the U.S. port of export, which is based on the transaction price (including inland freight, insurance, and other charges incurred).

This analysis of imports and exports occurs across a range of categories. First, I look broadly at the U.S. balance of trade overall. This category compares the U.S. export and import volumes overall to what one would expect the 2018 export and import volumes to look like, absent tariffs — based on the model described below. I then also consider the balance of trade between the U.S. and China. Using the same analysis framework as for the overall balance of trade. China was selected because it was the main target of the U.S. trade war and faced the most tariffs with the most retaliation.

I then consider specific commodity categories. The same framework for analysis is used for agricultural products, automobiles, industrial supplies, and capital goods. Within these broader categories, I look individually at steel, aluminum, aircraft, and soy, all of which faced targeted tariffs. By looking at these specific categories of goods, I aim to demonstrate how tariffs have impacted the industries that, anecdotally, appear to face the greatest harm, based on news reports.

Framework of Analysis

I first analyze data from January 2013 to December 2017. This information is used to create an understanding of what a typical year of trade look like for the U.S., absent significant tariffs. By starting the analysis from this date, I am able to see the cyclical and seasonal trends that cargo volumes follow, which span across presidential administrations. This range of dates

allows me to analyze five years of trade data. The five years of data are used to create a predictive curve that demonstrates what one would have expected trade volumes to look like in 2018, had no new tariffs been introduced. I created a predictive curve by using a decomposition method to analyze the data, broken down across each category. Using this method, I find the seasonal index for each month and use that to deseasonalize the data across months. From these deseasonalized data, I find the overall trend year-over-year for each category. After quantifying the trends, I reseasonalize the data and create a predictive curve with the seasonal variations that forecasts the volumes in each category for 2018.

From this predictive curve I measure how different the actual 2018 trade volumes are from the predicted trade volumes. This method does allow for some error in the prediction model, as the predictive curve is not perfectly precise. However, this model also allows for a more detailed level of prediction than a simple average of the previous year's data, because it takes into account year-over-year trends.

During this process I also create a timeline that illustrates the key dates when tariffs have been announced and implemented. I created this timeline from a combination of news reports and official U.S. and foreign documentation of tariffs. It is important to note the difference between the announcement and actual implementation because, once a tariff has been announced, there may be a market reaction to the tariff before levies are collected. After discovering the differences in 2018, I compare when those differences occur to the timeline of tariff announcements and implementations.

Results and Analysis

Timeline of Tariff Announcements and Implementations

The first major tariffs announced under the Trump administration were safeguard tariffs imposed on $8.5 billion of solar energy cells at a 30 percent tariff rate and $1.8 billion of washing machines at a 20 percent rate for the first 1.2 million units, after which it rose to 50 percent (Swanson, Plumer). This announcement followed a year of rhetoric from President Trump about decreasing the trade deficit, specifically with China. These tariffs were encouraged by U.S. washing machine manufacturers who requested help in curbing washing machine imports from rivals in Korea, and by solar cell manufacturers who also expressed support for the solar tariffs stating that imports of cheap solar cells were putting their companies at risk (Swanson, Plumer). Despite these requests, trade economists worried that the levies could drive up prices for consumers and hurt other American businesses. Around the time of this announcement, President Trump also stated that he was considering tariffs on steel and aluminum (Swanson, Plumer).

In February, China began investigating U.S. imports of sorghum, and announced the possibility of tariffs on $1 billion of trade in the form of antidumping and countervailing duties. This investigation came as part of a search for retaliation against the washing machine and solar

cell tariffs. China chose to target the U.S. agriculture industry which relies heavily on exports to China (Bown, Kolb).

On March 1, the USTR announced upcoming tariffs on all steel and aluminum imports across all countries (25 percent rate on steel and 10 percent rate on aluminum). Many economists stated that these tariffs would do little to revitalize the U.S. steel industry while imposing harm on the rest of the economy. Additionally, U.S. allies expressed their discontent with the tariffs and appealed for exemptions under threat of retaliation. In the following weeks, the U.S. granted temporary exemptions to the European Union and to partners in the North American Free Trade Agreement. The tariffs were officially implemented on March 23 under Section 232 of U.S. trade law, which permits tariffs when they are necessary for national security purposes (McBride).

In April, China retaliated against the steel and aluminum tariffs and threatened additional tariffs on automobiles and agriculture. On April 17, China imposed the tariffs on U.S. sorghum and other goods at 15 to 25 percent rates, though these tariffs were later ended in May after negotiation. In reaction to China's actions, the U.S. threatened to impose tariffs on an additional $50 billion in Chinese goods (Bown, Kolb). Through June, the U.S. and China continued to go back and forth in their threats, increasing the number of goods targeted to a value of more than $200 billion. The first of these tariffs were implemented in both countries on July 6. In the U.S., this featured $34 billion worth of tariffs under Section 301 at a 25 percent rate (Dollar). After this implementation, the U.S. again threatened an additional $200 billion in tariffs on Chinese goods. In August, the U.S. and China continued to increase their tariff threats by releasing new lists of goods that would be subject to tariffs. On August 23, both countries implemented their second round of tariffs targeting $16 billion worth of goods at a 25 percent tariff rate on both sides. In September, the U.S. announced and implemented an additional $200 billion in tariffs

under Section 301 (Bown, Kolb). The tariffs were implemented at a 10 percent tariff rate with plans to increase that rate to 25 percent on January 1, 2019. The U.S. had a total of approximately $250 billion in tariffs on China, and Chinese tariffs on U.S. goods totaled nearly $110 billion with various rates on products ranging from 5 to 25 percent (Brew, et al).

The tariffs imposed under the Trump administration represent most the extensive trade protections since the 1930 Smoot-Hawley tariffs. China centered its tariffs on the U.S. agriculture and automobile sectors as well as on Boeing aircraft. Midwestern producers of soybeans and cars are among the most impacted by the tariffs. Meanwhile, the U.S. has focused its tariffs on the Chinese tech industry. However, many of these products are intermediate goods and therefore also have production components in other countries, which are then also affected by the tariffs. It is difficult to capture the full impact of the trade war due to these ripple effects. Finally, in December 2018, the U.S. and China announced a ceasefire in the trade war. Based on a verbal agreement, the U.S. would not implement the planned increase in tariff rate from 10 percent to 25 percent in January. Additionally, China indicated it would increase imports of U.S. agricultural products and decrease tariffs on U.S. automobiles (Behsudi, Palmer, & Restuccia). As negotiations have continued, the outcome of an agreement (if there is one at all) remains uncertain. The U.S. is primarily concerned with the issue of intellectual property rights, specifically concerning technology. China currently requires foreign companies to share valuable information with Chinese partners in order to have access to the Chinese market. The U.S. aims to end these requirements and expand U.S. companies' access to China.

Figure 1: Timeline of Tariff Announcements and Implementations

2018 Jul

July 1: Canada imposes tariffs on U.S. totaling $12.8 billion
July 6: First phases of U.S. and China tariffs are implemented on $34 billion goods
July 12: U.S. announces $200 billion more tariffs

2018 Aug

Aug. 1: Trump threatens to raise tariff rate from 10% to 25%
Aug. 3: China threatens $60 billion more in tariffs
Aug. 7/8: U.S. and China release revised tariff lists
Aug. 10: U.S. announces increased steel tariffs on Turkey
Aug. 23: U.S. and China imposes second tariff round each worth $16 billion at 25 percent

2018 Sep

Sept 15: US announces additional $200 billion in tariffs on China under Section 301
Sept. 24: US imposes the new Section 301 tariffs, total U.S. tariffs on China total $250 billion at 10 percent, China imposes $60 billion worth at 5-10 percent rates

2018 Oct

No new tariffs

2018 Nov

No new tariffs

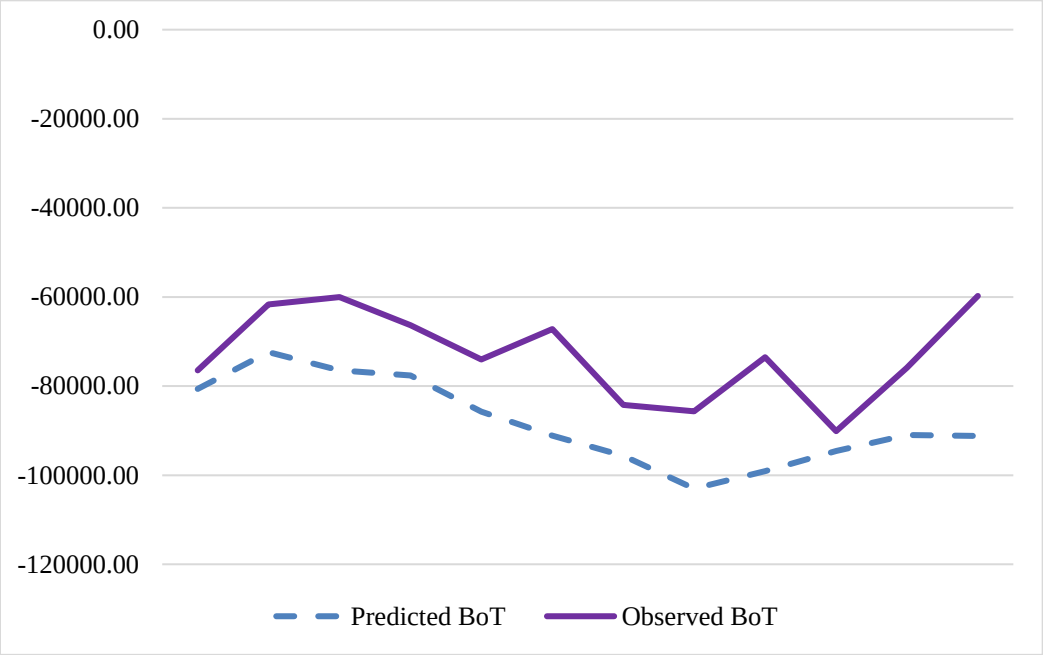
2018 Dec

Dec. 1: U.S. and China announce that tariff rate increase will be stalled by 90 days

Balance of Trade

The first measure considered, in Figure 2, is the overall U.S. balance of trade, taking into account all imports and exports of goods for each given month. Based on the comparison between the predictive curve and the observed month-by-month 2018 balance of trade, the U.S. had a smaller overall deficit than expected. Since the deficit of trade is less than expected, this suggests that the U.S. is exporting more and/or importing less than it would in a typical year, absent tariffs. Further analysis of said imports and exports in Figure 3 reveals that U.S. exports to other countries remained close to the predicted values, so that there is no significant difference between predicted and observed export values for the U.S. in 2018. This suggests that the U.S. as a whole did not have a significant decrease in exports as a result of tariffs. However, imports to the U.S. did falter slightly in 2018, as the observed import values fell consistently below the predicted values.

Figure 2: U.S. Predicted and Observed Balance of Trade
Values shown in millions of USD

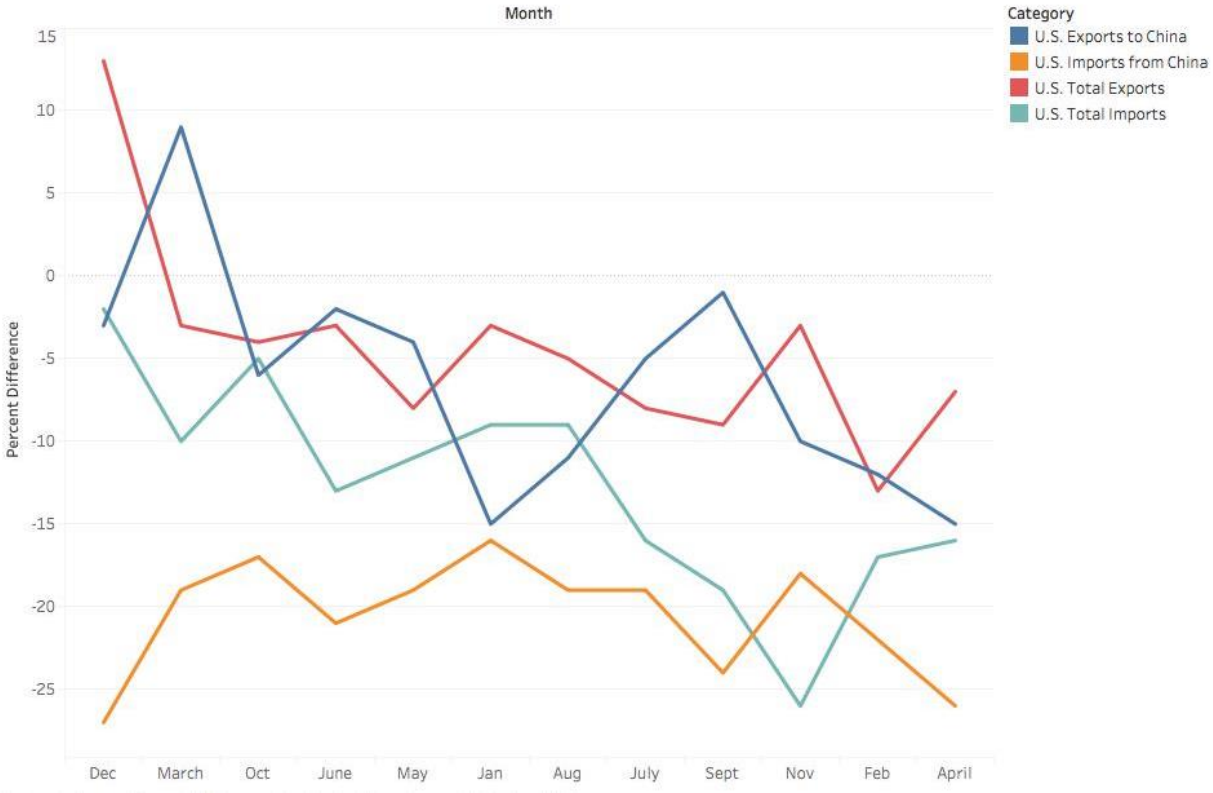


Trade with China

In consideration of U.S. trade with China specifically, the balance of trade reflects that of the U.S. overall in that the observed deficit is smaller than the predicted. This again suggests that either U.S. exports to China were higher than expected or imports from China were lower. U.S. exports to China were only slightly under what one would expect based on the predictive curve and do not differ in a significant manner. These differences are also shown in Figure 3. However, China's trade surplus with the U.S. grew by 17 percent, year-over-year, from 2017 to 2018, but that growth is lower than what would have been expected based on the predictive curve.

This suggests that, in the trade war, China faced a greater impact in terms of volume of goods passing between the two countries. This could be rooted in the greater value of imports that the U.S. was able to target in its tariff implementation.

Figure 3: U.S. Imports and Exports: Percent Difference of Observed from Predicted

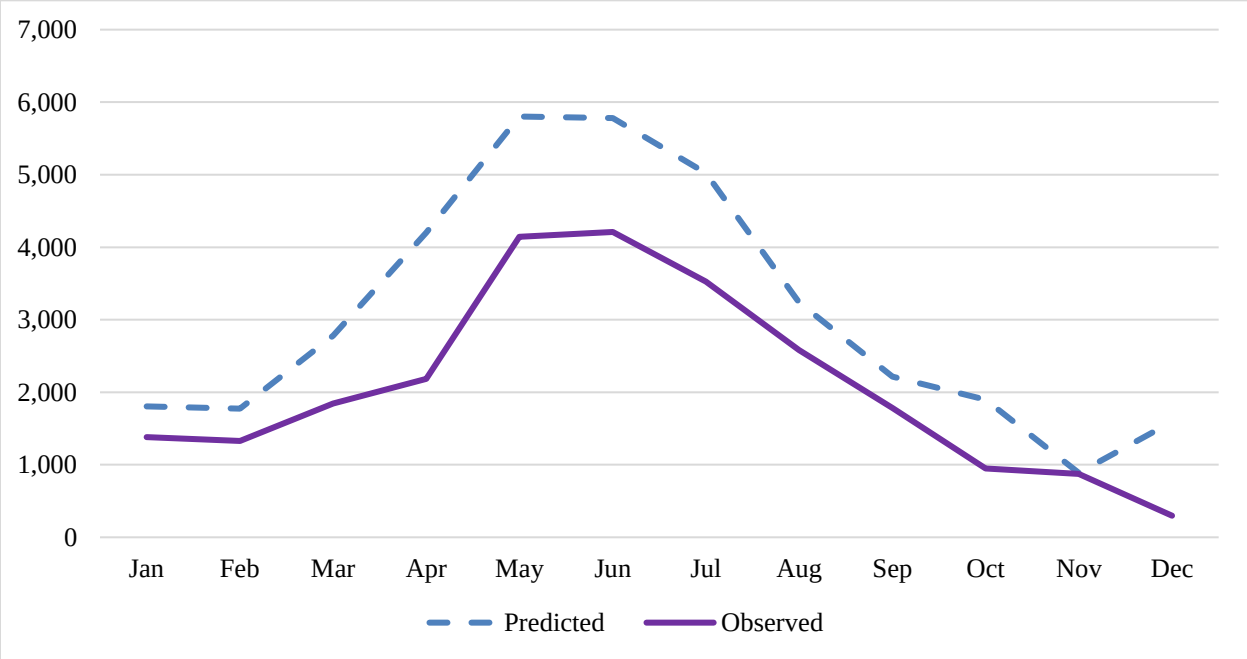


Trade in Specific Commodities

Looking at specific goods can provide additional insight above the baseline total trade of the U.S. or with a specific country. The tariffs implemented by China on the U.S. targeted a total of $110 billion worth of U.S. goods including a 25 percent tariff on 2,493 products (agricultural, products, foods, textiles, chemicals, metal products, machinery); 20 percent on 1,078 products (foods, paperboard, chemicals, works of art); 10 percent on 974 products (agricultural products, chemicals, glassware); and 5 percent on 662 products (chemicals, machinery, medical equipment) (Koty and Wong). However, in consideration of U.S. exports, only two of the categories of goods considered appeared to have lower than expected trade values. Aluminum and alumina had higher than expected export values and subject to both a 25 percent tariff from China and a U.S. tariff (Taxation Committee). The differences between predicted and observed export values are illustrated in Figure 5.

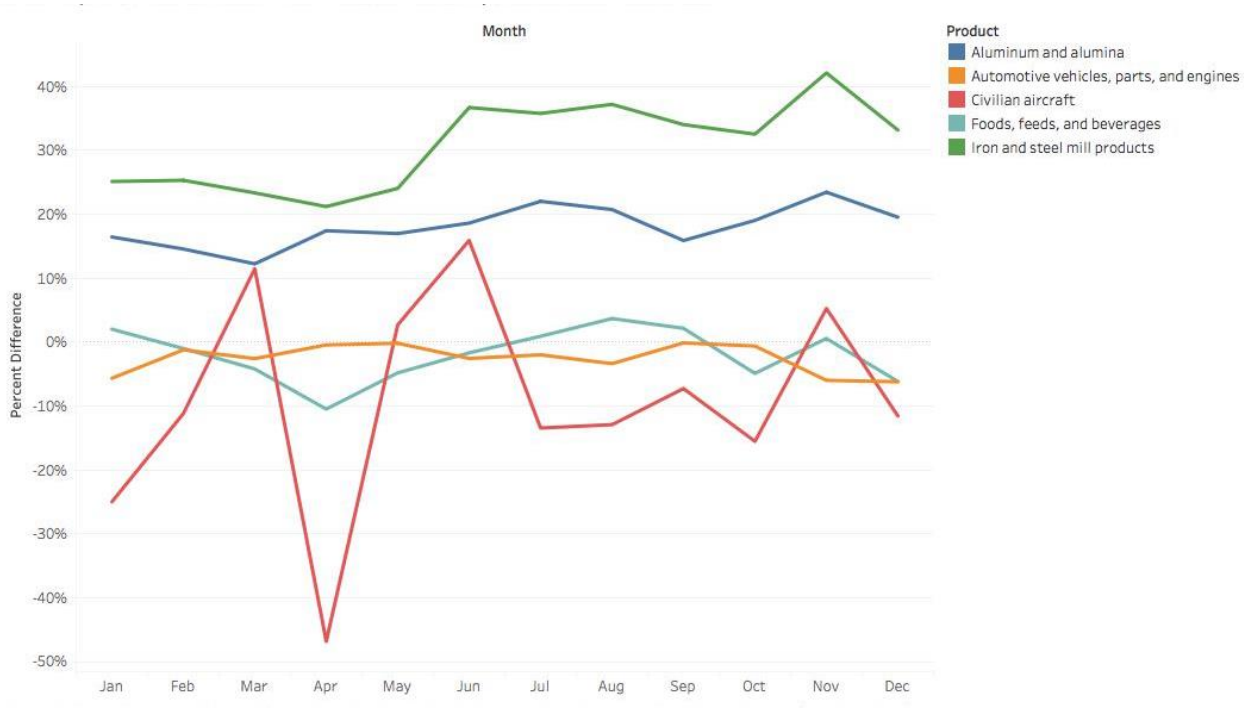
U.S. exports of soybeans were notably lower than predicted, as shown in Figure 4. China, the largest importer of soybeans, placed a 25 percent tariff on U.S. soybeans, which led to a drop in exports, with the largest gap from March to July. This tariff and resulting reduction accounts for one of the most visible impacts on U.S. citizens and producers. Soybean prices fell from the breakeven price for farmers, of $9.70 per bushel, to an average price of $9.28 per bushel, with prices reaching as low as $8.14 per bushel in September (Schroeder). The inability to sell soybean crops has caused crops to rot as farmers run out of storage for the excess product (Martin).

Figure 4: U.S. Exports of Soybeans
Values shown in millions of USD



Despite the highly visible image of rotting soybeans and distressed farmers, most categories of U.S. exports appear relatively unaffected by the trade war. For exports of automotive vehicles, parts, and engines, civilian aircraft, and foods, feeds, and beverages the observed values were generally similar to the predicted values, so that there appears to be no significant difference caused by the tariffs in those exports, as seen in Figure 5. Additionally, exports of iron and steel mill products were greater than the predicted values for 2018. These larger categories of goods remaining at or above predicted values follow what was seen in the broader category of U.S. exports (and exports to China), which appeared relatively unaffected by tariffs. Overall, in 2018 U.S. exports to China grew 0.7 percent from 2017 (Tan).

Figure 5: U.S. Exports: Percent Difference of Observed from Predicted



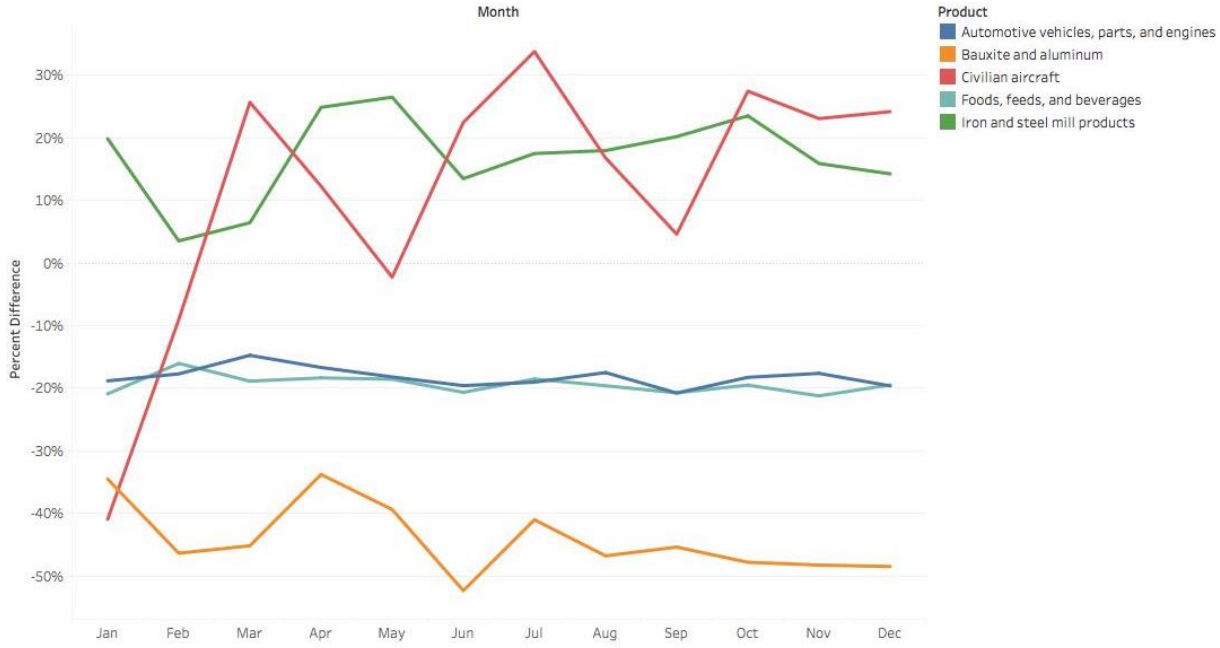
Looking at similar categories of imports to the U.S., the values of trade are lower than predicted for many categories of goods. The observed values of imports of automotive vehicles, parts, and engines, bauxite and aluminum, and foods, feeds, and beverages were all significantly lower than their predicted values for 2018, as seen in Figure 6. The U.S. had implemented tariffs on $250 billion worth of Chinese goods, out of the total $505 billion of imports from China (in 2017), meaning nearly 50 percent of goods that would typically enter the U.S. from China were subject to tariffs. These tariffs covered a wide range of categories, including consumer products, chemical and construction materials, textiles, tools, food and agricultural products, commercial electronic equipment, and vehicle/automotive parts (Koty and Wong). The majority of the U.S. tariffs were levied at a 10 percent rate (which was slated to increase to 25 percent on January 1, 2019, but that rate change was delayed due to progress in negotiations). A smaller number of tariffs were levied at 25 percent. The products covered under the U.S. tariffs were extensive but notably included many component parts for automobiles and several other industries, as well as tariffs on many agricultural products. As much as 95 percent of the goods targeted by the tariffs are intermediary goods, purchased by U.S. firms, not consumers (Rocca and Steil).

The lower than expected import values suggest that the U.S. tariffs imposed on China and other countries had a significant impact on foreign producers' willingness or ability to export to the U.S. This finding also correlates with earlier findings in total imports to the U.S. and imports from China, which suggested that those imports were lower than a typical year.

Civilian aircraft, as well as iron and steel mill products differed from the other goods in that both had higher than expected import values. The U.S. did not specifically levy tariffs directly on foreign aircraft and China is not a major producer (Office of the United States Trade Representative). However, the U.S. did implement tariffs on steel — not only on China, but more

broadly on most countries, save a few exemptions. Despite these tariffs, the domestic steel industry is not thriving, as steel prices have fallen back to pre-tariff levels, employment is stagnant, and the stock values of publicly traded steel companies are plummeting (Rocca and Steil).

Figure 6: U.S. Imports: Percent Difference of Observed from Predicted



Conclusions

In sum, these finding suggest that the U.S. was not greatly impacted by the implementation of tariffs by foreign countries, as U.S. exports did not fall below the predicted values for 2018, both more broadly and across most goods. However, some specifically targeted products, like soybeans, were negatively affected. On the opposite side, imports coming to the U.S. were significantly lower than expected, notably from China and across many categories of goods. This suggests that the tariffs imposed by the U.S. posed a significant barrier to foreign producers who were unwilling or unable to export as large a quantity as expected to the U.S. (or unable to export at all).

However, while the U.S. reduced its trade deficit by decreasing imports and maintaining exports, this does not translate into improved economic status. This brand of mercantilism, which was President Trump's goal with the trade war, has other negative consequences for the U.S. economy and its citizens, which extend beyond the scope of simple export and import values. For instance, with reference to Amiti, Redding, and Weinstein's paper, the burden of the U.S. tariffs appears to fall entirely on the U.S. consumer. Additionally, since most of the products subject to U.S. tariffs are intermediate goods, U.S. companies face higher production costs, which can result in higher prices for the consumer. For policymakers, it is vital to understand this difference between the impact tariffs have on the domestic consumer/U.S. economy and the impact on total trade values. This paper, in combination with other research on the impact of the 2018 trade war, suggests that improving the overall terms of trade for a country does not necessarily lead to improved economic status.

Further research will be required to understand how the 2018 trade war impacted the U.S. economy as a whole. This paper can only conclude that tariffs levied by foreign countries did not significantly impact the value of U.S. exports, but the tariffs implemented by the U.S. did negatively impact the value of imports entering the U.S.

Appendix

Table A1: Predicted vs. Observed U.S. Total Balance of Trade
Values shown in millions of USD

Month	Predicted BoT	Observed BoT	Percent Difference
Jan	-80,608	-76,447	-5%
Feb	-72,386	-61,709	-17%
March	-76,507	-60,036	-27%
April	-77,631	-66,372	-17%
May	-85,748	-74,024	-16%
June	-91,113	-67,195	-36%
July	-95,634	-84,251	-14%
August	-103,004	-85,669	-20%
September	-99,123	-73,518	-35%
October	-94,577	-90,117	-5%

November	-90,968	-75,924	-20%
December	-91,189	-59,769	-53%

Table A2: Predicted vs. Observed U.S. Exports
Values shown in millions of USD

Month	Predicted	Observed	Percent Difference
Jan	129,120	125,329	-3%
Feb	144,329	128,098	-13%
March	153,094	149,083	-3%
April	147,823	137,710	-7%
May	156,679	144,538	-8%
June	149,636	145,110	-3%
July	144,056	133,457	-8%
Aug	146,771	139,637	-5%
Sept	152,124	139,284	-9%
Oct	140,539	146,919	4%
Nov	188,061	140,428	-34%
Dec	178,817	205,116	13%

Table A3: Predicted vs. Observed U.S. Imports
Values shown in millions of USD

Month	Predicted	Observed	Percent Difference
Jan	219,892	201,776	-9%
Feb	221,879	189,807	-17%
March	230,959	209,119	-10%
April	236,329	204,081	-16%
May	243,462	218,562	-11%
June	239,611	212,305	-13%
July	251,578	217,708	-16%
Aug	244,985	225,307	-9%
Sept	253,369	212,801	-19%
Oct	249,536	237,036	-5%

Nov	271,719	216,353	-26%
Dec	270,950	264,885	-2%

Table A:4 U.S.-China Balance of Trade
Values shown in millions of USD

Month	Observed	Predicted	Percent Difference
Jan	-35,953	-37,539	4%
Feb	-29,262	-31,541	7%
March	-25,875	-31,768	19%
April	-27,962	-34,550	19%
May	-33,187	-38,297	13%
June	-33,484	-39,902	16%
July	-36,834	-43,207	15%
Aug	-38,570	-47,537	19%
Sept	-40,243	-47,626	16%
Oct	-43,102	-45,677	6%
Nov	-37,861	-45,768	17%
Dec	-36,831	-45,860	20%

Table A5: U.S. Exports to China
Values shown in millions of USD

Month	Predicted	Observed	Percent Difference
Jan	11,327	9,835	-15%
Feb	10,960	9,806	-12%
March	11,261	12,382	9%
April	11,831	10,268	-15%
May	11,028	10,611	-4%
June	11,322	11,116	-2%
July	10,725	10,262	-5%
Aug	10,285	9,294	-11%
Sept	9,881	9,789	-1%

Oct	9,723	9,131	-6%
Nov	9,492	8,665	-10%
Dec	9,441	9,183	-3%

Table A6: U.S. Imports from China
Values shown in millions of USD

Month	Predicted	Observed	Percent Difference
Jan	53,235	45,788	-16%
Feb	47,581	39,068	-22%
March	45,457	38,257	-19%
April	48,033	38,230	-26%
May	52,312	43,797	-19%
June	54,096	44,599	-21%
July	55,981	47,096	-19%
Aug	57,172	47,864	-19%
Sept	61,874	50,032	-24%
Oct	61,032	52,233	-17%
Nov	55,038	46,526	-18%
Dec	58,643	46,013	-27%

Table A7: U.S. Exports of Various Goods
Values shown in millions of USD

Product	Month	Predicted	Observed	Percent Difference
Aluminum and alumina	Jan	582	696	16%
Aluminum and alumina	Feb	629	736	15%
Aluminum and alumina	Mar	646	736	12%
Aluminum and alumina	Apr	658	797	17%
Aluminum and alumina	May	631	760	17%
Aluminum and alumina	Jun	601	738	19%
Aluminum and alumina	Jul	566	726	22%
Aluminum and alumina	Aug	549	692	21%

Aluminum and alumina	Sep	572	680	16%
Aluminum and alumina	Oct	570	704	19%
Aluminum and alumina	Nov	568	742	23%
Aluminum and alumina	Dec	587	730	20%
Automotive vehicles, parts, and engines	Jan	14,688	13,901	-6%
Automotive vehicles, parts, and engines	Feb	15,006	14,825	-1%
Automotive vehicles, parts, and engines	Mar	14,548	14,180	-3%
Automotive vehicles, parts, and engines	Apr	13,981	13,919	0%
Automotive vehicles, parts, and engines	May	13,584	13,558	0%
Automotive vehicles, parts, and engines	Jun	13,180	12,850	-3%
Automotive vehicles, parts, and engines	Jul	13,330	13,068	-2%
Automotive vehicles, parts, and engines	Aug	13,212	12,780	-3%
Automotive vehicles, parts, and engines	Sep	12,966	12,948	0%
Automotive vehicles, parts, and engines	Oct	12,806	12,727	-1%
Automotive vehicles, parts, and engines	Nov	13,075	12,336	-6%
Automotive vehicles, parts, and engines	Dec	13,079	12,314	-6%
Civilian aircraft	Jan	4,701	3,761	-25%
Civilian aircraft	Feb	4,434	3,988	-11%
Civilian aircraft	Mar	5,246	5,926	11%
Civilian aircraft	Apr	4,919	3,350	-47%
Civilian aircraft	May	5,101	5,242	3%
Civilian aircraft	Jun	4,233	5,033	16%
Civilian aircraft	Jul	3,931	3,465	-13%
Civilian aircraft	Aug	4,495	3,981	-13%
Civilian aircraft	Sep	5,535	5,160	-7%
Civilian aircraft	Oct	5,606	4,852	-16%
Civilian aircraft	Nov	5,543	5,849	5%
Civilian aircraft	Dec	5,457	4,891	-12%
Foods, feeds, and beverages	Jan	10,522	10,737	2%
Foods, feeds, and beverages	Feb	10,855	10,746	-1%
Foods, feeds, and beverages	Mar	12,323	11,825	-4%
Foods, feeds, and beverages	Apr	13,715	12,414	-10%
Foods, feeds, and beverages	May	14,776	14,097	-5%
Foods, feeds, and beverages	Jun	14,300	14,063	-2%
Foods, feeds, and beverages	Jul	13,056	13,175	1%
Foods, feeds, and beverages	Aug	11,586	12,028	4%
Foods, feeds, and beverages	Sep	10,773	11,010	2%
Foods, feeds, and beverages	Oct	10,847	10,340	-5%
Foods, feeds, and beverages	Nov	10,388	10,446	1%

Foods, feeds, and beverages	Dec	10,192	9600	-6%
Iron and steel mill products	Jan	618	825	25%
Iron and steel mill products	Feb	645	864	25%
Iron and steel mill products	Mar	639	833	23%
Iron and steel mill products	Apr	705	895	21%
Iron and steel mill products	May	636	837	24%
Iron and steel mill products	Jun	572	904	37%
Iron and steel mill products	Jul	452	704	36%
Iron and steel mill products	Aug	425	677	37%
Iron and steel mill products	Sep	438	663	34%
Iron and steel mill products	Oct	445	659	33%
Iron and steel mill products	Nov	401	692	42%
Iron and steel mill products	Dec	439	657	33%
Soybeans	Jan	1,807	1381	-31%
Soybeans	Feb	1,775	1328	-34%
Soybeans	Mar	2,782	1845	-51%
Soybeans	Apr	4,203	2185	-92%
Soybeans	May	5,802	4142	-40%
Soybeans	Jun	5,783	4210	-37%
Soybeans	Jul	5,022	3528	-42%
Soybeans	Aug	3,237	2581	-25%
Soybeans	Sep	2,214	1785	-24%
Soybeans	Oct	1,896	948	-100%
Soybeans	Nov	889	875	-2%
Soybeans	Dec	1,594	298	-435%

Table A8: U.S. Imports of Various Goods
Values shown in millions of USD

Product	Month	Predicted	Observed	Percent Difference
Automotive vehicles, parts, and engines	Jan	36,732	30,913	-19%
Automotive vehicles, parts, and engines	Feb	36,593	31,088	-18%
Automotive vehicles, parts, and engines	Mar	35,915	31,301	-15%
Automotive vehicles, parts, and engines	Apr	35,008	30,003	-17%
Automotive vehicles, parts, and engines	May	35,138	29,728	-18%
Automotive vehicles, parts, and engines	Jun	36,129	30,211	-20%
Automotive vehicles, parts, and engines	Jul	36,553	30,710	-19%
Automotive vehicles, parts, and engines	Aug	37,261	31,711	-18%
Automotive vehicles, parts, and engines	Sep	37,568	31,107	-21%

Automotive vehicles, parts, and engines	Oct	37,653	31,839	-18%
Automotive vehicles, parts, and engines	Nov	37,738	32,083	-18%
Automotive vehicles, parts, and engines	Dec	38,440	32,133	-20%
Bauxite and aluminum	Jan	1,959	1,456	-35%
Bauxite and aluminum	Feb	2,013	1,375	-46%
Bauxite and aluminum	Mar	2,075	1,429	-45%
Bauxite and aluminum	Apr	1,987	1,485	-34%
Bauxite and aluminum	May	1,943	1,394	-39%
Bauxite and aluminum	Jun	1,904	1,250	-52%
Bauxite and aluminum	Jul	1,990	1,411	-41%
Bauxite and aluminum	Aug	1,946	1,326	-47%
Bauxite and aluminum	Sep	1,961	1,349	-45%
Bauxite and aluminum	Oct	1,970	1,333	-48%
Bauxite and aluminum	Nov	1,979	1,335	-48%
Bauxite and aluminum	Dec	1,977	1,331	-48%
Civilian aircraft	Jan	651	462	-41%
Civilian aircraft	Feb	994	912	-9%
Civilian aircraft	Mar	1,051	1,414	26%
Civilian aircraft	Apr	961	1,096	12%
Civilian aircraft	May	995	973	-2%
Civilian aircraft	Jun	922	1,190	22%
Civilian aircraft	Jul	682	1,031	34%
Civilian aircraft	Aug	647	778	17%
Civilian aircraft	Sep	725	760	5%
Civilian aircraft	Oct	722	996	27%
Civilian aircraft	Nov	720	936	23%
Civilian aircraft	Dec	1,054	1,390	24%
Foods, feeds, and beverages	Jan	14,353	11,871	-21%
Foods, feeds, and beverages	Feb	14,671	12,643	-16%
Foods, feeds, and beverages	Mar	14,534	12,227	-19%
Foods, feeds, and beverages	Apr	14,526	12,274	-18%
Foods, feeds, and beverages	May	14,675	12,378	-19%
Foods, feeds, and beverages	Jun	14,690	12,175	-21%
Foods, feeds, and beverages	Jul	14,745	12,440	-19%
Foods, feeds, and beverages	Aug	14,717	12,305	-20%
Foods, feeds, and beverages	Sep	14,662	12,143	-21%
Foods, feeds, and beverages	Oct	14,697	12,299	-20%
Foods, feeds, and beverages	Nov	14,733	12,153	-21%
Foods, feeds, and beverages	Dec	15,034	12,583	-19%

Iron and steel mill products	Jan	1,202	1,501	20%
Iron and steel mill products	Feb	1,477	1,531	4%
Iron and steel mill products	Mar	1,695	1,812	6%
Iron and steel mill products	Apr	1,543	2,054	25%
Iron and steel mill products	May	1,337	1,820	27%
Iron and steel mill products	Jun	1,279	1,479	13%
Iron and steel mill products	Jul	1,400	1,697	18%
Iron and steel mill products	Aug	1,452	1,770	18%
Iron and steel mill products	Sep	1,364	1,710	20%
Iron and steel mill products	Oct	1,359	1,778	24%
Iron and steel mill products	Nov	1,355	1,611	16%
Iron and steel mill products	Dec	1,182	1,379	14%

Figure A1: U.S. Total Exports
Values shown in millions of USD

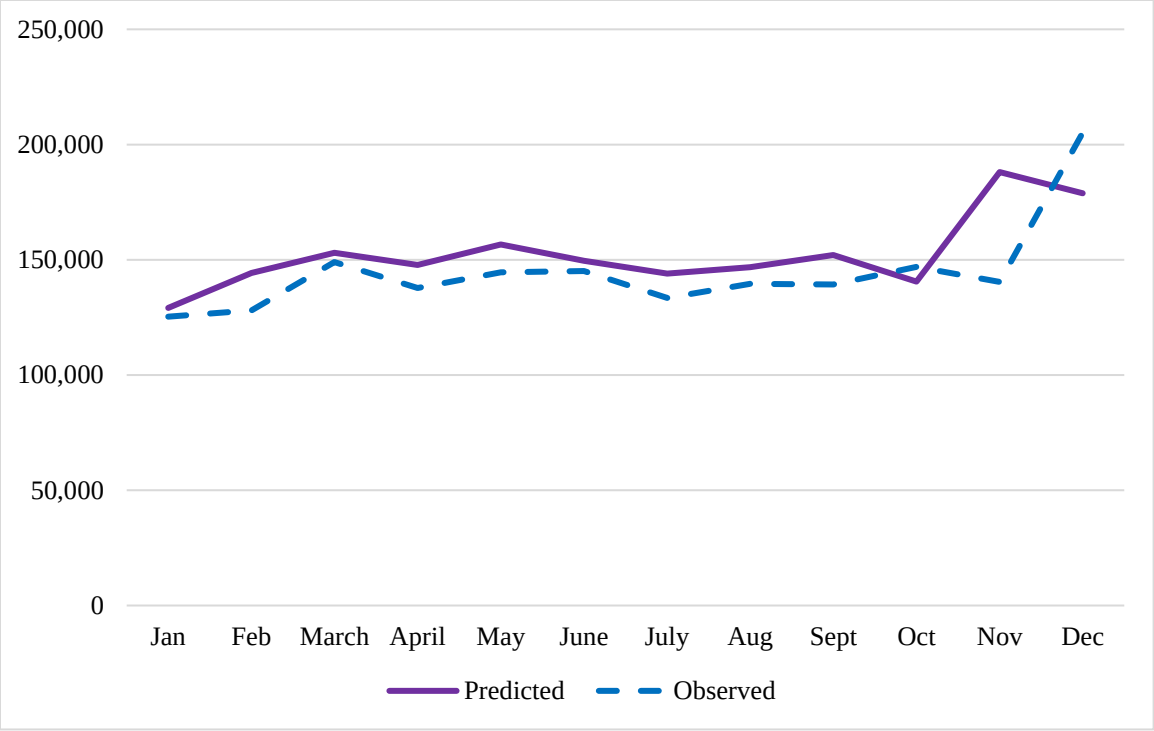


Figure A2: U.S. Total Imports
Values shown in millions of USD

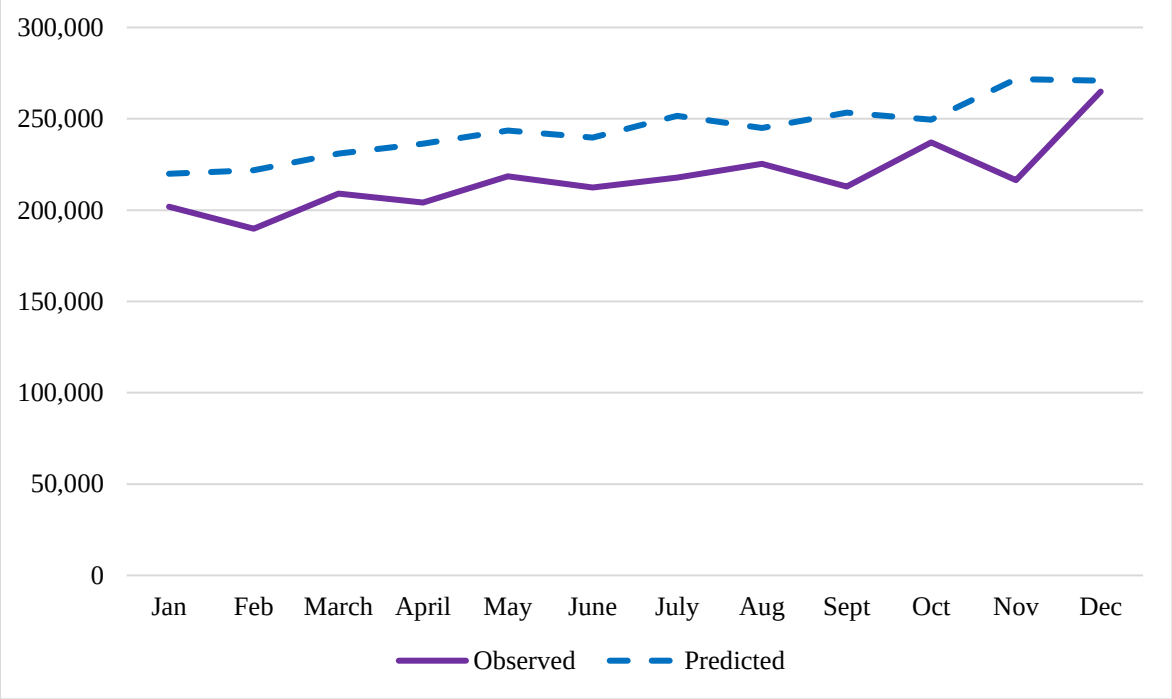


Figure A3: U.S. Exports to China
Values shown in millions of USD

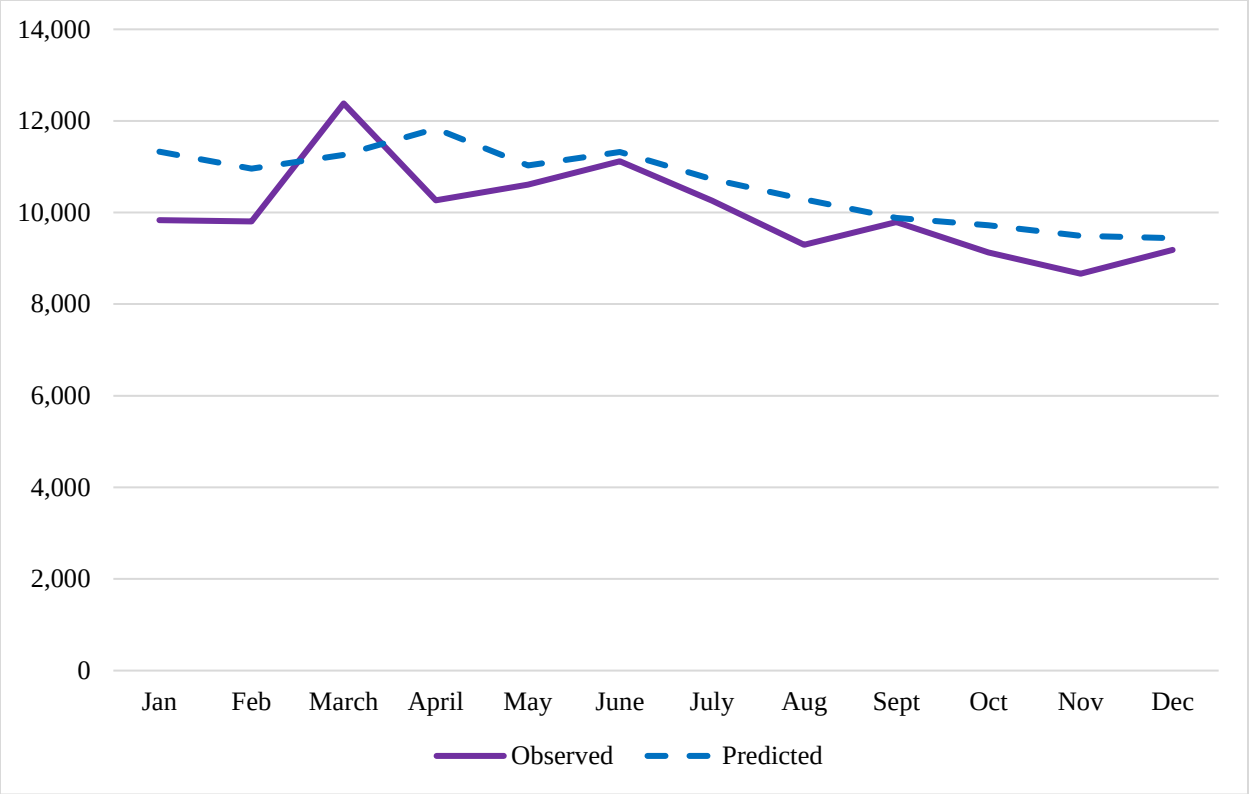


Figure A4: U.S. Imports from China
Values shown in millions of USD

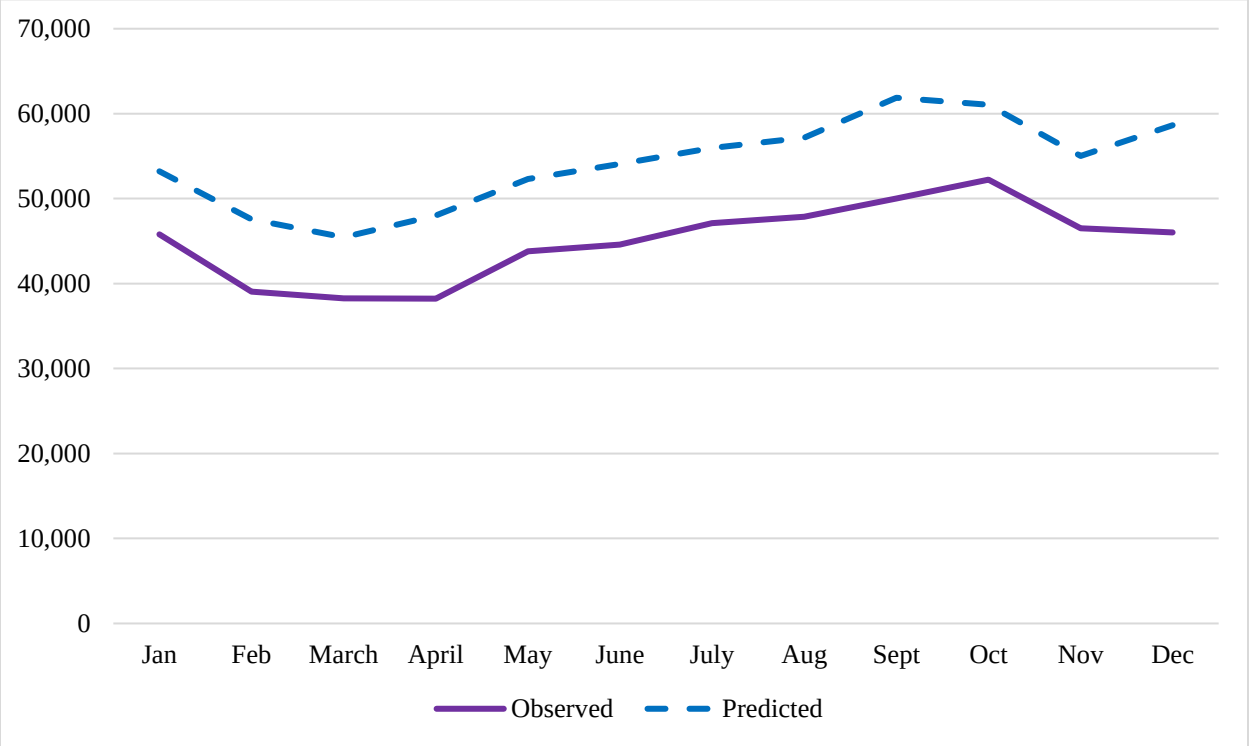


Figure A5: U.S. Exports of Aluminum

Values shown in millions of USD

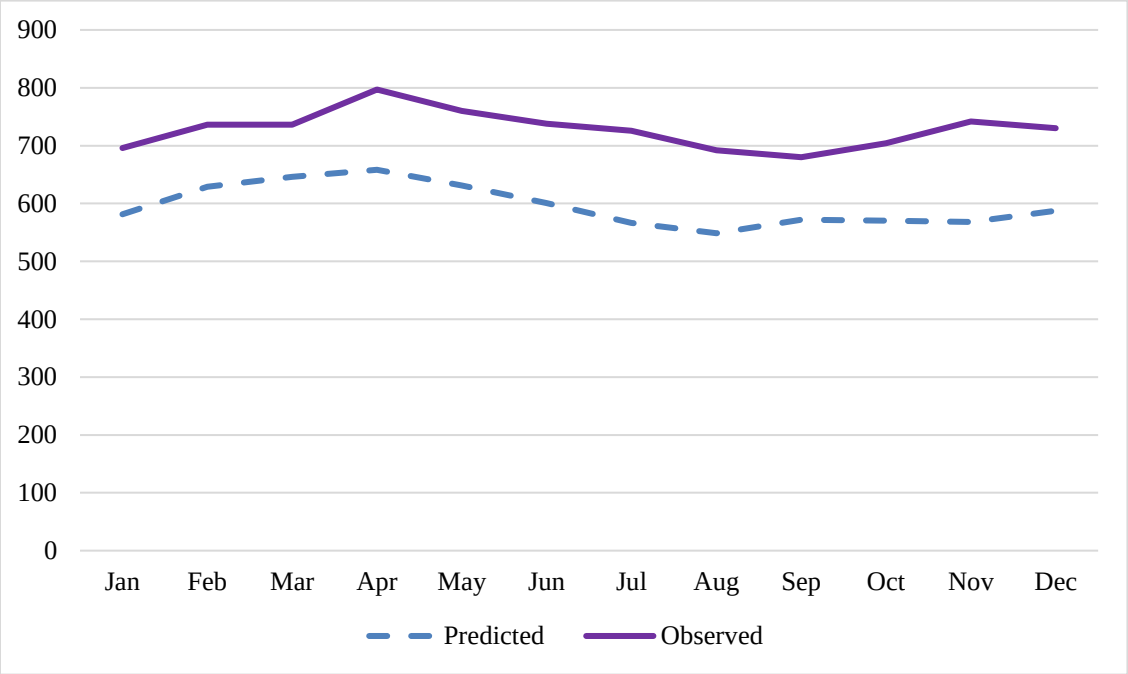


Figure A6: U.S. Exports of Automotive Vehicles, Parts, and Engines
Values shown in millions of USD

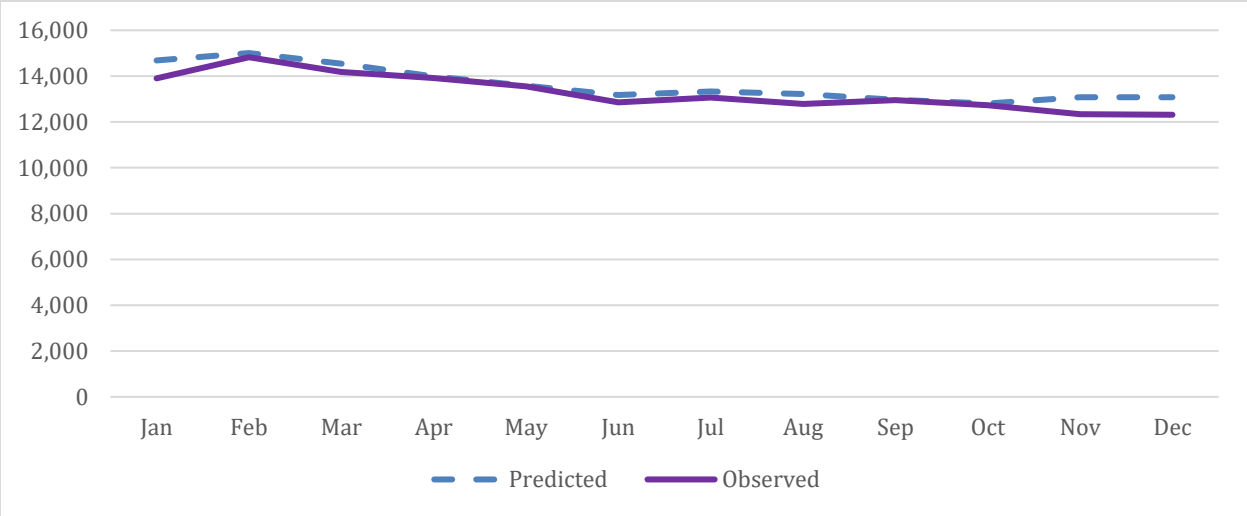


Figure A7: U.S. Exports of Civilian Aircraft

Values shown in millions of USD

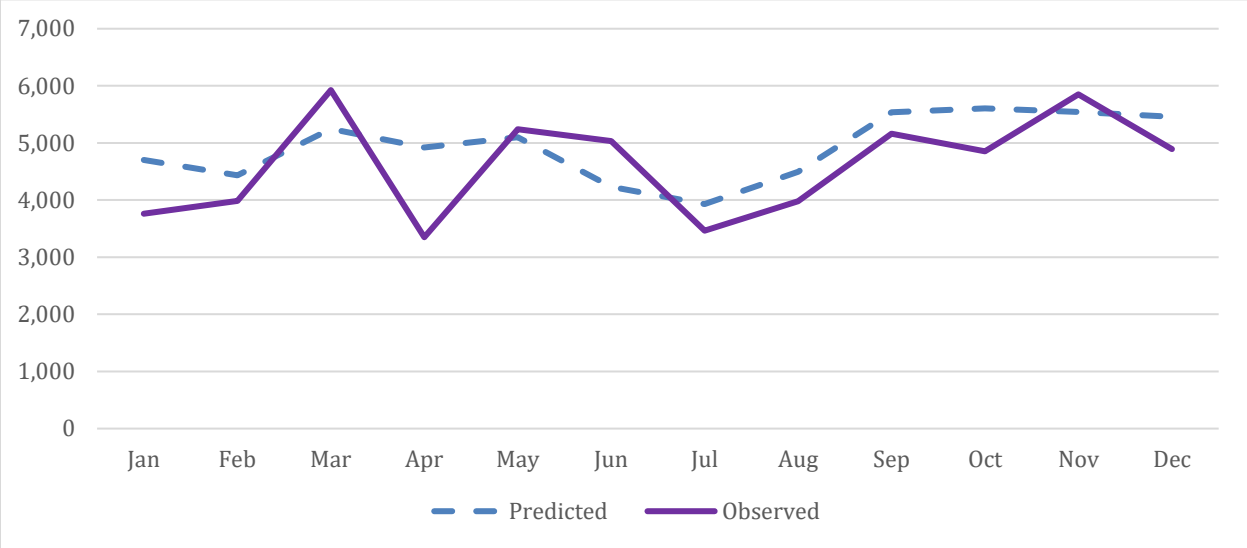


Figure A8: U.S. Exports of Foods, Feeds, and Beverages
Values shown in millions of USD

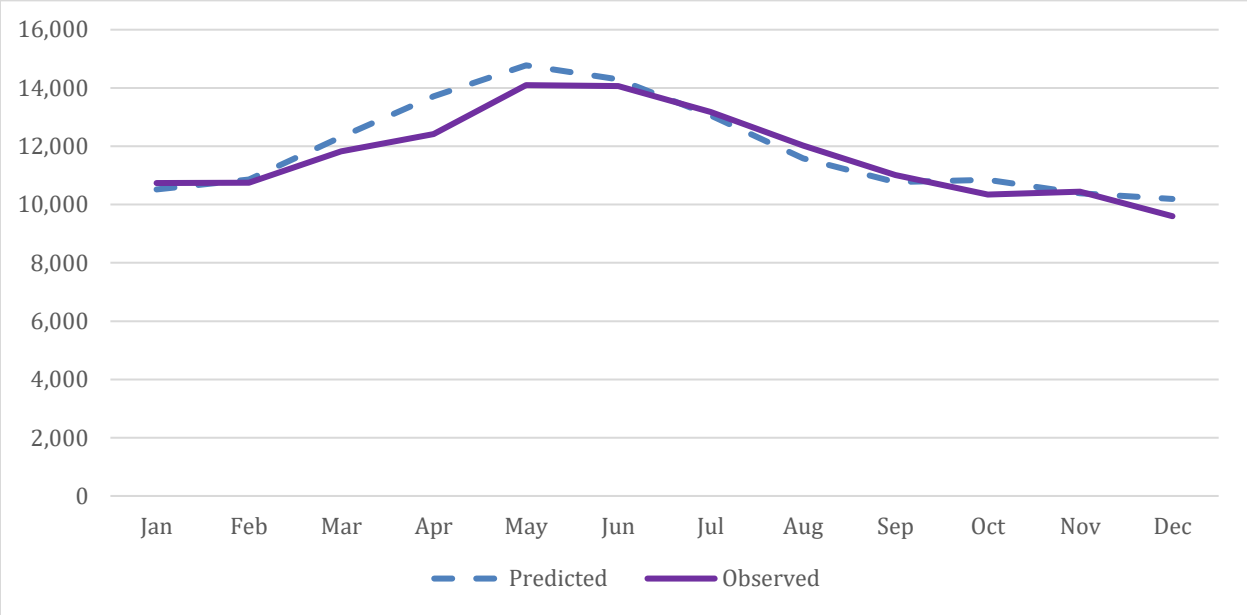


Figure A9: U.S. Exports of Iron and Steel Mill Products
Values shown in millions of USD

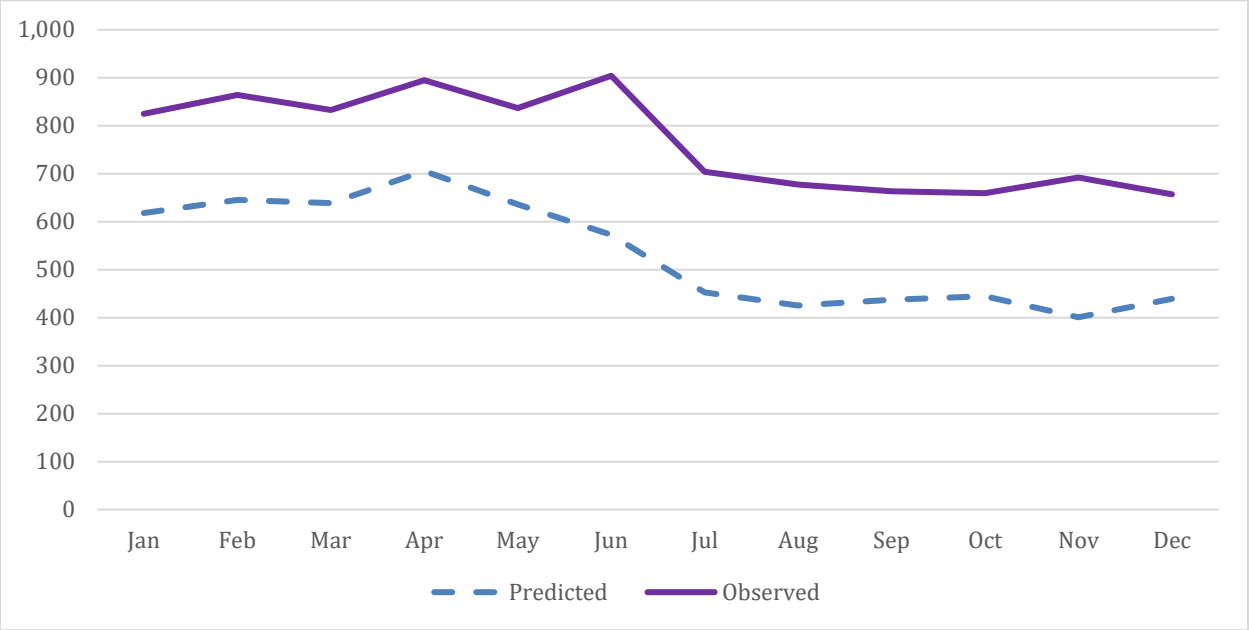


Figure A10: U.S. Imports of Automotive Vehicles, Parts, and Engines
Values shown in millions of USD

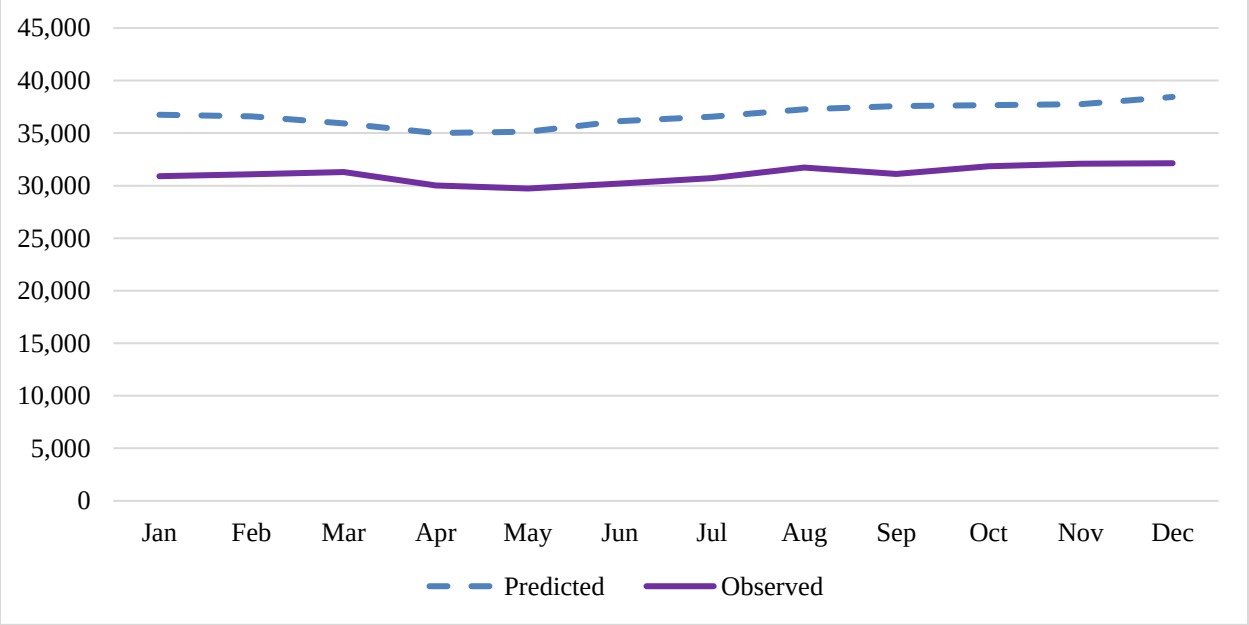


Figure A11: U.S. Imports of Bauxite and Aluminum
Values shown in millions of USD

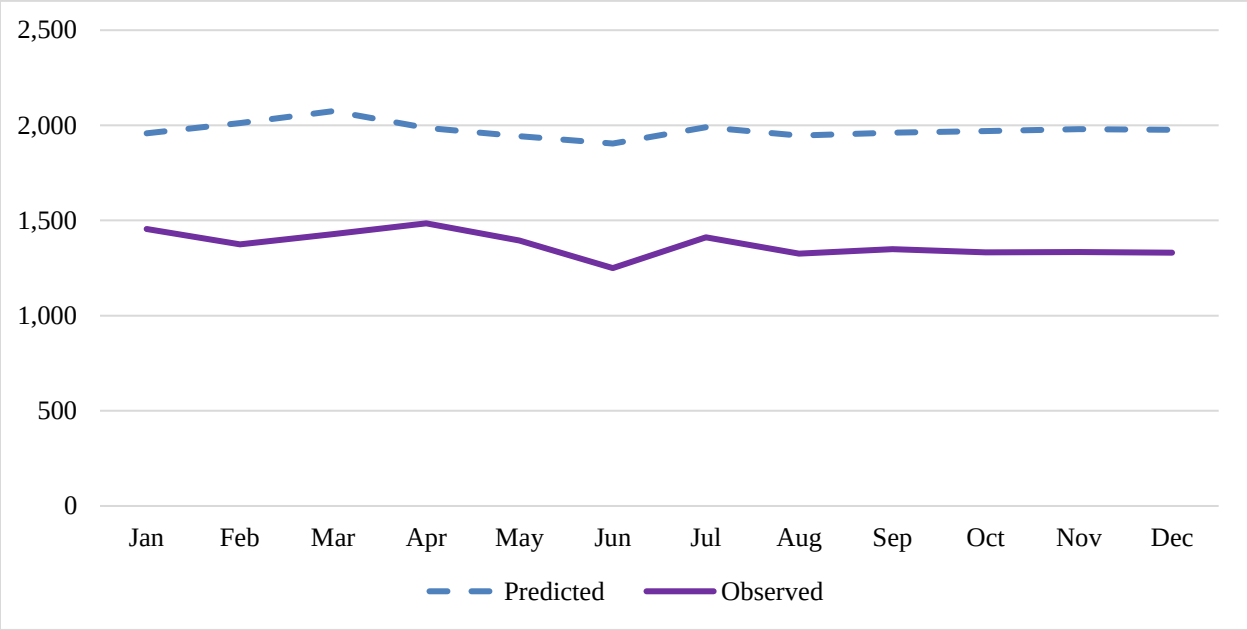


Figure A12: U.S. Imports of Civilian Aircraft
Values shown in millions of USD

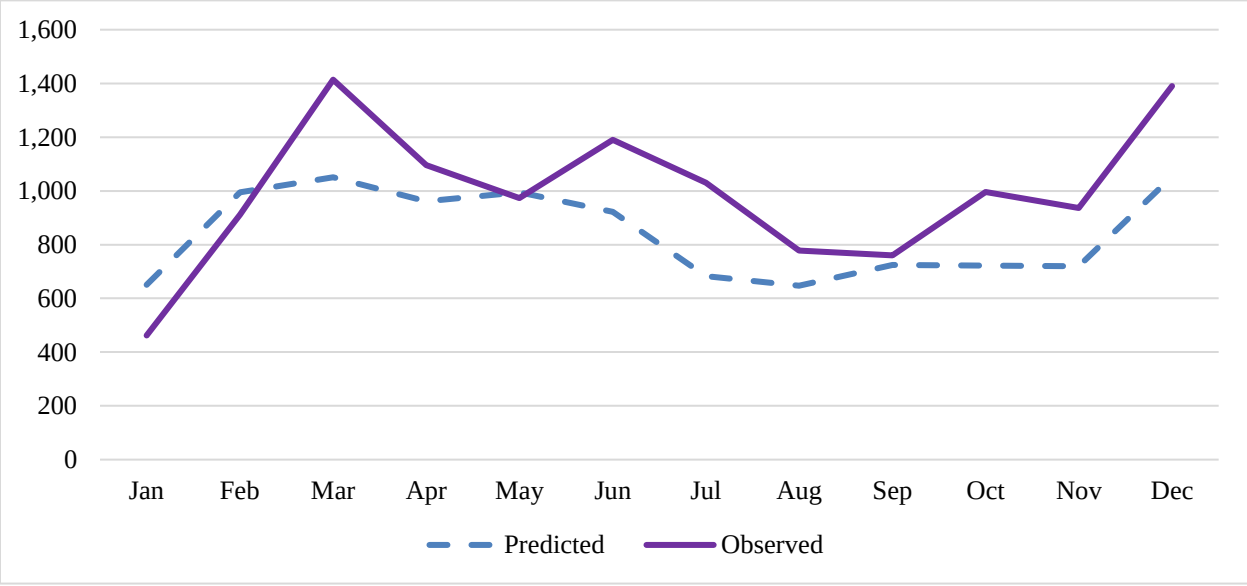


Figure A13: U.S. Imports of Foods, Feeds, and Beverages
Values shown in millions of USD

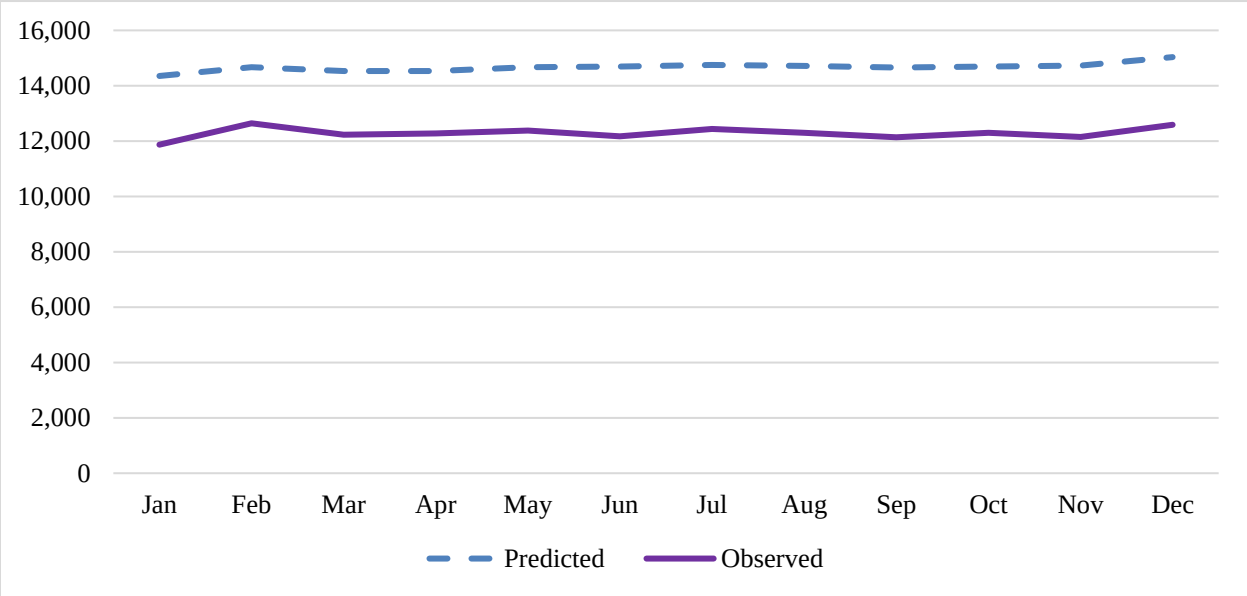
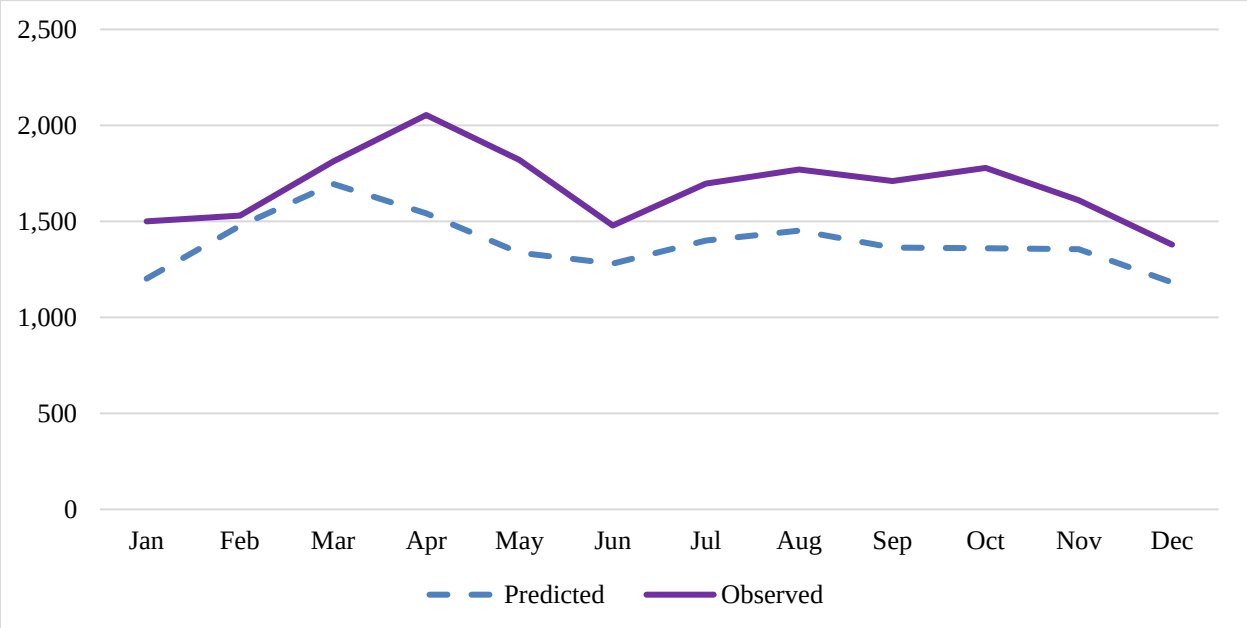


Figure A14: U.S. Imports of Iron and Steel Mill Products
Values shown in millions of USD



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