Reshuffling in Soybean Markets following Chinese Tariffs

By Cortney Cowley

In 2018, China significantly increased tariffs on imports of several agricultural commodities from the United States, including a 25 percentage point rise in the tariff on soybeans. Higher tariffs on U.S. soybeans, considered to be a retaliation against earlier U.S. tariffs on Chinese exports, have disrupted international soybean markets. China has been the primary foreign destination for U.S. soybeans over the past decade, accounting for a majority of U.S. soybean exports. Moreover, U.S. production of soybeans has outpaced domestic consumption. In fact, domestic consumption has accounted for only half of total production during this period, underscoring the importance of exports for U.S. soybean markets.

A disruption in soybean markets could have broad implications for the U.S. agricultural sector. Soybeans are an important agricultural commodity in the United States, accounting for a majority of the growth in exports of bulk agricultural commodities and a growing share of crop production and farm revenues over the past two decades. Because tariffs targeted U.S. soybeans, demand for relatively cheaper soybeans from other countries has increased and caused some reshuffling in world soybean markets.

In this article, I examine the initial market responses and potential long-term implications of Chinese tariffs amid other supply and

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demand disruptions, such as severe weather in the United States and African swine fever in China. I find that although some U.S. soybean exports reshuffled to other trading partners, total exports of soybeans declined 21 and 14 percent relative to the previous five-year average in 2018 and 2019, respectively, following the implementation of tariffs. Despite the signing of a "phase one" trade deal in January 2020, tariffs could, in the longer term, lead to expanded production in and exports from other countries, a further reshuffling of global soybean exports, and reduced competitiveness for U.S. soybeans in world markets.

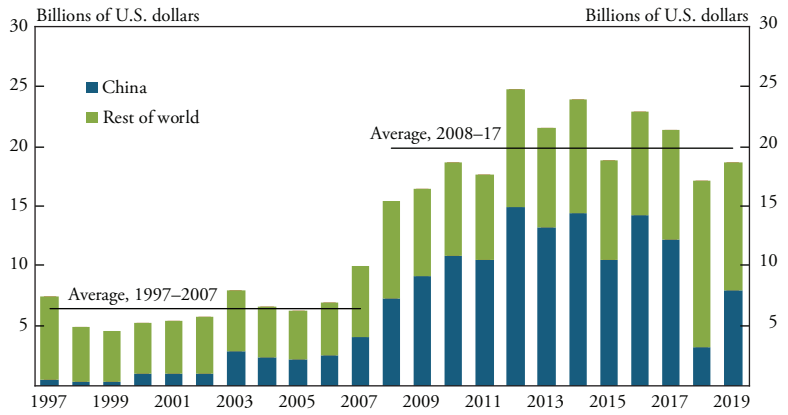
Section I outlines developments in U.S. agricultural trade with China leading up to the first round of soybean tariffs in 2018 as well as the timeline in which tariffs were implemented. Section II examines changes in the soybean industry following the implementation of tariffs. Section III reviews how other countries have responded following the U.S.-China trade dispute and argues that the long-term effects on U.S. agriculture could include reduced competitiveness in world markets and an extended period of low prices.

I. U.S. and China Soybean Trade Prior to Tariffs

Over the past two decades, the United States and China have developed a strong trade relationship in soybeans. In 1997, the United States exported less than $1 billion in soybeans to China, which represented only 5 percent of total soybean exports from the United States (Chart 1). International purchases of U.S. soybeans remained relatively flat through 2007. However, from 2007 to 2017, exports of U.S. soybeans more than tripled from their level in the previous decade as shipments to China grew rapidly. By 2017, the total value of U.S. soybean exports had reached $21.5 billion, and China accounted for a much larger share than in previous years.

Elevated demand for soybeans in China alongside limited Chinese production contributed to the growing trade relationship. Over the last 15 years, rising living standards, changing consumption patterns, and rapid expansion of livestock production and processing facilities have all helped drive a substantial increase in consumption and imports of soybeans in China (Gale, Hansen, and Jewison 2015; Gale, Valdes, and Ash 2019; Muhammed and Smith 2018). Livestock production in particular has increased demand for soybeans to crush into soybean meal,

Chart 1
U.S. Soybean Exports



Source: U.S. Department of Agriculture (USDA).

a high-protein component of animal feed (Gale, Hansen, and Jewison 2015; Muhammed and Smith 2018). However, China's soybean production has not scaled with its demand, and China has largely turned to imports from other countries. In fact, in 2017, imports accounted for 89 percent of total soybean consumption in China; one-third of these imports were from the United States.

As Chinese demand for soybeans has grown over the past two decades, so, too, has the U.S. soybean industry. In the United States, the share of acres harvested in soybeans grew substantially in the 1990s and 2000s and was above trend from 2014 to 2018. In 2017 and 2018, soybeans accounted for almost 30 percent of all harvested cropland in the United States. Prior to the trade dispute with China, soybeans accounted for a growing share of total bulk agricultural exports. In fact, from 2012 to 2017, soybeans accounted for almost 50 percent of bulk agricultural exports from the United States, up from around 25 percent in the early 2000s.

Accordingly, the U.S. trade relationship with China has become more important over the past decade, as the U.S. supply of soybeans has continued to outpace domestic demand. Historically, consumption of soybeans in the United States has accounted for 65 percent of production, on average. However, starting around 2007, when demand from China began to increase, U.S. production grew at a faster pace than domestic use. By 2017, only 50 percent of the soybeans produced in

the United States were consumed there. By comparison, the share of U.S. corn and wheat production consumed domestically has increased steadily over the last decade. In the case of soybeans, U.S. production grew in parallel with Chinese use, elevating the co-dependence of the United States and China in soybean markets. However, this growing dependence on China may have made U.S. soybean markets more vulnerable to disruptions associated with trade barriers, such as tariffs.

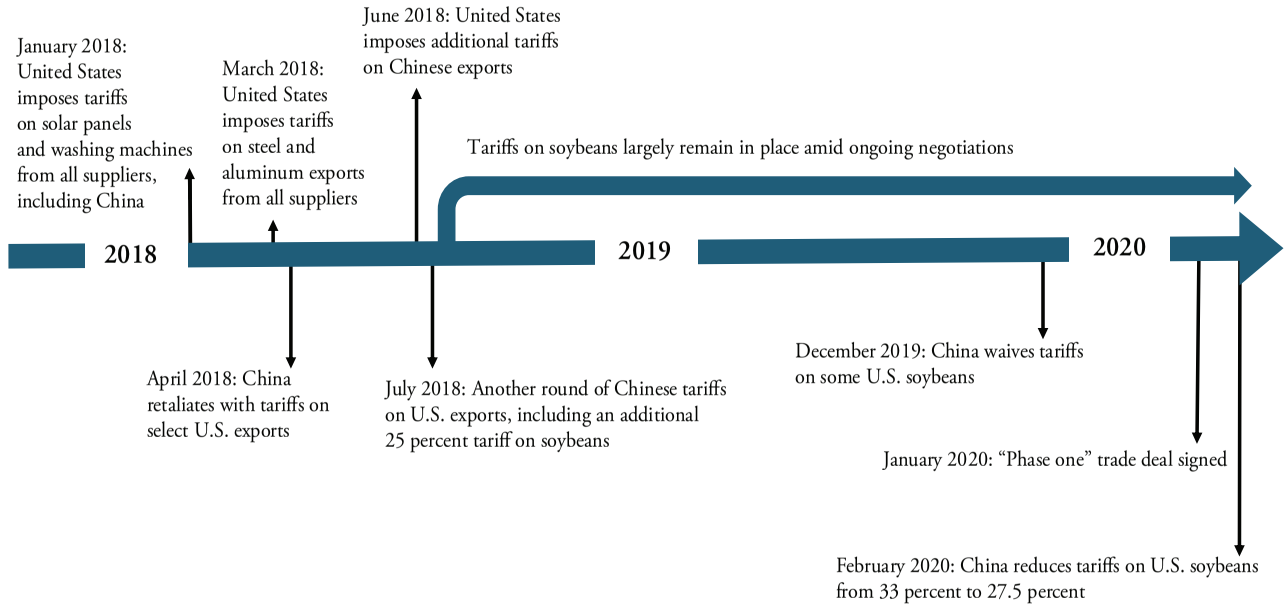
Trade relations with China began to worsen in 2018. Figure 1 shows a timeline of U.S. and Chinese tariffs that influenced soybean markets. In January 2018, the U.S. administration announced tariffs on solar panels and washing machines from all suppliers. Although the tariffs were not specific to China, China is the world's largest exporter of solar panels and accounted for the largest share of U.S. imports of finished washers. U.S. tariffs on steel and aluminum followed in March 2018 along with additional levies specifically targeted at China, raising concerns about the implications of a trade dispute for U.S. agricultural commodity markets.

Following the imposition of U.S. tariffs, China imposed retaliatory tariffs on April 2, 2018. This initial round of tariffs did not yet include soybeans but did include pork, fruit, and nuts. The United States announced another round of tariffs on June 15. Subsequently, on July 6, China retaliated by imposing tariffs of 25 percent on $34 billion of U.S. exports, including soybeans.

In theory, Chinese tariffs should lower the country's demand for U.S. soybeans. Tariffs essentially create an artificial increase in the cost of U.S. soybeans to Chinese importers. Given this higher cost, Chinese importers should purchase fewer soybeans from the United States, thereby depressing prices for U.S. soybeans while raising prices for Chinese consumers. As a result, the quantity of soybeans traded between the two countries should decline.

However, several intermediate steps follow the implementation of a tariff and could influence the magnitude of outcomes in U.S. markets. For example, the tariff is not directly applied to U.S. farmers, agribusinesses, or exporters but is instead applied to soybeans as they are purchased at the port of entry by Chinese importers. The Chinese importer who pays the tariff has the option of passing the costs on to the Chinese consumer or submitting a plea for tariff relief or exemptions to

Figure 1
Timeline of U.S. and Chinese Tariffs



the Chinese Ministry of Commerce. Moreover, soybean markets and commerce are structured differently in China than in the United States. For example, a large portion of soybeans are purchased by state-owned enterprises as opposed to publicly traded companies. As a result, the economic effects of the recent tariffs on soybean markets are challenging to estimate in practice.

II. Developments in the U.S. Soybean Industry following Tariffs from China

When China first threatened soybean tariffs in early 2018, analysts in the agricultural industry predicted relatively minor effects on the U.S. soybean industry due to the limited number of soybean exporters in the world and China's historically strong consumption growth (Zheng and others 2018; Muhammad and Smith 2018; Teheripour and Tyner 2018). In fact, the United States and Brazil export approximately 80 percent of the world's soybeans. However, analysts who predicted these minimal effects assumed soybean consumption would continue to grow at the same pace in China after the tariffs. This assumption did not hold. In 2018 and 2019, total consumption—a measure that includes food, feed, and industrial uses—in China fell below the previous 20-year trend and declined for the first time since 2003. China consumed 4 percent fewer soybeans in 2018 after consumption had increased at an average rate of 9 percent per year since 2000.

Factors influencing Chinese demand

Several factors unexpectedly reduced demand for soybeans in China, including African swine fever (ASF). The first case of ASF in China was confirmed in August 2018, shortly after the first round of tariffs were imposed on U.S. soybean exports (Shao and others 2018). Estimated losses to China's hog herd have been difficult to determine (Pan 2019). However, researchers at Iowa State University estimate a 14 percent decline in pork production in China as a result of ASF (Zhang and others 2019). Under this scenario, the volume of soybeans needed for hog feed would be reduced by 8 million metric tons.

Updated feed standards may also have lowered demand for soybean imports in China. In October 2018, the China Feed Industry Association published new standards for swine and poultry feed (Zhang and

others 2019). The new feed standards lowered crude protein levels by 1.5 and 1 percent for swine and poultry feed, respectively (Sun, Pan, and Chiang 2018). According to China's Ministry of Agriculture, the new standards could reduce China's annual soybean use by 14 million metric tons (Ministry of Agriculture of the People's Republic of China 2018).

In total, the combination of ASF and lower protein requirements for animal feed may have reduced Chinese demand for soybeans by 22 million metric tons. Falling U.S. exports to China provide evidence for this reduction in demand. In 2018, U.S. soybean exports to China fell to 8.2 million metric tons, roughly 22 million metric tons less than the prior four-year average. At the same time, China's imports of soybeans from the rest of the world were increasing, particularly imports from Brazil.

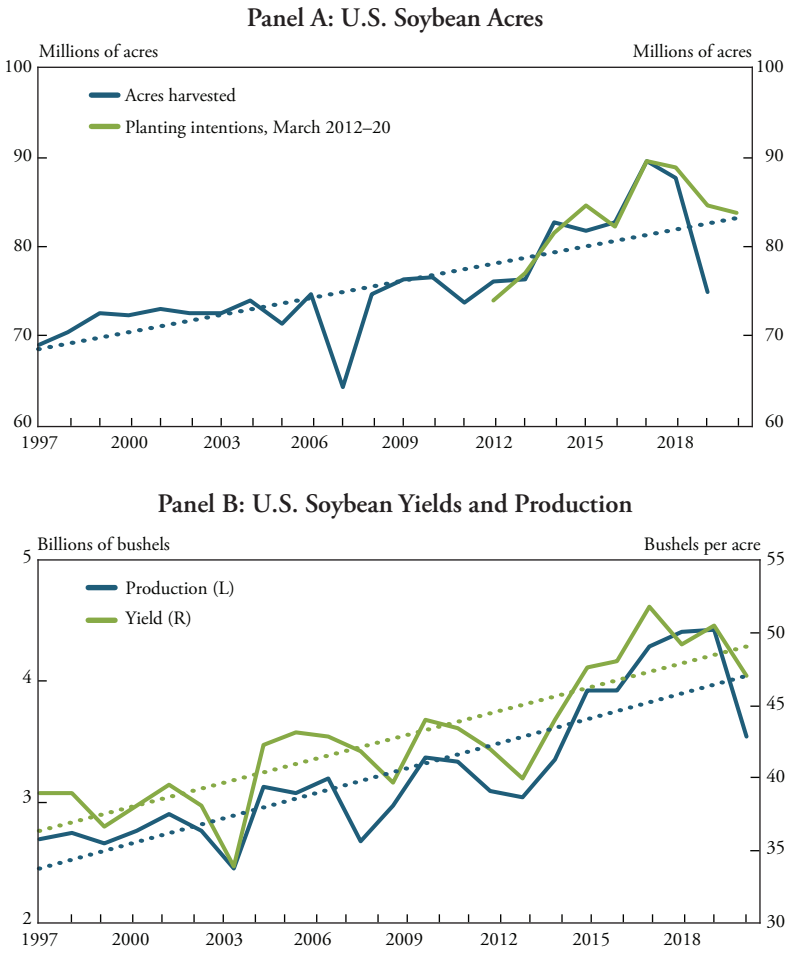
Factors influencing U.S. supply

Alongside reduced demand from China, several factors could have contributed to elevated supplies in the United States, intensifying the influence of tariffs on U.S. soybean markets (Grant and others 2019). In 2018, U.S. production of soybeans was at a record high. Panel A of Chart 2 shows that in 2018, the number of acres of soybeans harvested in the United States was the second highest on record. In fact, soybean acres reached parity with corn acres for the first time since 1984. In addition, Panel B of Chart 2 shows that soybean yields have been on an increasing trend since the 1960s. In 2018, yields were above trend for the fourth consecutive year. The combination of a record-high number of harvested acres and above-trend yields resulted in unprecedented soybean production in the United States in 2018.

Government policy may also have contributed to larger supplies of soybeans in the middle of the trade dispute. In 2018, the U.S. Department of Agriculture (USDA) implemented the Market Facilitation Program (MFP) to provide direct payments to farmers to "offset some of the adverse effects of retaliatory tariffs from China" (USDA 2018). These payments, which were applied to farmers' production, amounted to $1.65 per bushel of soybeans. Prospects for positive profit margins improved for soybean farmers with the implementation of MFP payments. In fact, in 2018, government payments accounted for approximately 20 percent of U.S. farm income. Although the MFP was renewed in 2019, payments that year were made based on a pre-specified

Chart 2

U.S. Soybean Production



Source: USDA.

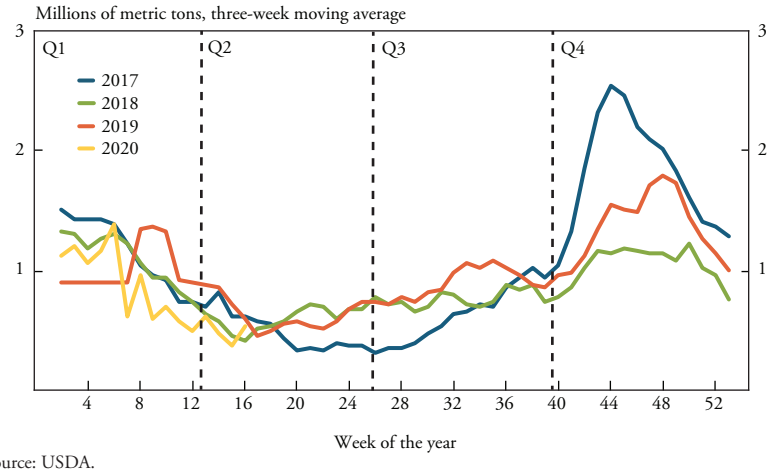
county rate and the number of total acres planted in MFP-eligible crops (USDA 2019). In 2019, trade relief payments increased net farm income by about 14 percent (Glauber 2019 and author's calculations). Agricultural lenders have also indicated that MFP payments have provided support for farm finances and agricultural credit conditions. For example, nearly 90 percent of agricultural lenders surveyed in the Tenth Federal Reserve District reported that trade relief payments have provided at least moderate support to farm income and loan repayment (Kauffman and Kreitman 2020).

Although trade relief payments may have had a material effect on producer profit margins and net farm income, it is unclear how and to what extent these payments may have affected producers' planting decisions in 2019 (Westhoff, Davids, and Soon 2019). According to Hitchner, Menzie, and Meyer (2019), in March 2019, producers had planned to plant 5 percent fewer soybeans than the previous year due to high inventories, low prices, and uncertainty surrounding trade. Despite the slight pullback, acres intended for soybeans remained higher than in all years prior to the trade dispute except 2017, suggesting the trade relief payments may have supported soybean plantings. If trade relief payments had a positive effect on producers' decisions to plant soybeans, they may also have contributed to larger supplies of soybeans in 2019.

Partly offsetting these supply effects, severe weather across a large portion of U.S. farmland reduced soybean production in 2019. Throughout planting, growing, and harvesting seasons, a large portion of the Midwest experienced severe weather, including flooding and abnormally cold temperatures. Significant flooding in the spring in the United States contributed to a dramatic increase in prevented planting—the failure to plant an insured crop by the final planting date designated in a farmer's crop insurance policy.[1] According to the USDA Risk Management Association, severe weather prevented farmers from planting 19.6 million acres of crops in 2019, 23 percent of which were intended for soybeans. Acres planted in soybeans declined in aggregate and in all states that reported soybean production in 2019. Without weather constraints, soybean supplies may have been much larger.

Chart 3

U.S. Soybean Exports as of April 20, 2020



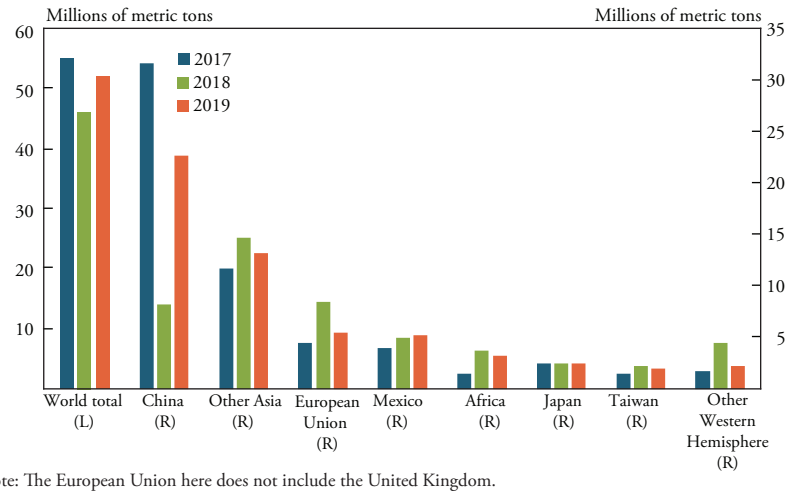
Source: USDA.

Cumulative influence on U.S. soybean markets

Amid reduced demand from China and large supplies of U.S. soybeans in 2018 and 2019, American soybean exports declined notably following the implementation of Chinese tariffs. Chart 3 shows that weekly shipments in the second and third quarters of 2018 and 2019 were near or above 2017 levels. However, a large majority of U.S. agricultural commodities are sold in the fourth quarter, which is when China typically imports U.S. crop commodities. Exports were flat in the fourth quarter of 2018, and total soybean shipments declined 16 percent in aggregate that year. Fourth-quarter sales continued to lag in 2019 but received some support after China implemented tariff-free quotas and the U.S. government announced the potential for the first phase of a trade agreement. Although exports increased slightly in 2019 compared with 2018, they were still 5 percent below 2017 levels.

A majority of the decline in U.S. soybean exports was attributed to a reduction in purchases from China. Despite prior expectations of reshuffling in international markets, an increase in U.S. sales to other countries was not able to offset the decline in exports to China in 2018. Chart 4 shows that post-tariff trade reshuffling yielded only minor increases in exports to other countries relative to pre-tariff exports. Although exports to the European Union, Africa, and trading partners in the Western

Chart 4
Reshuffling of U.S. Soybean Exports



Note: The European Union here does not include the United Kingdom.
Source: USDA.

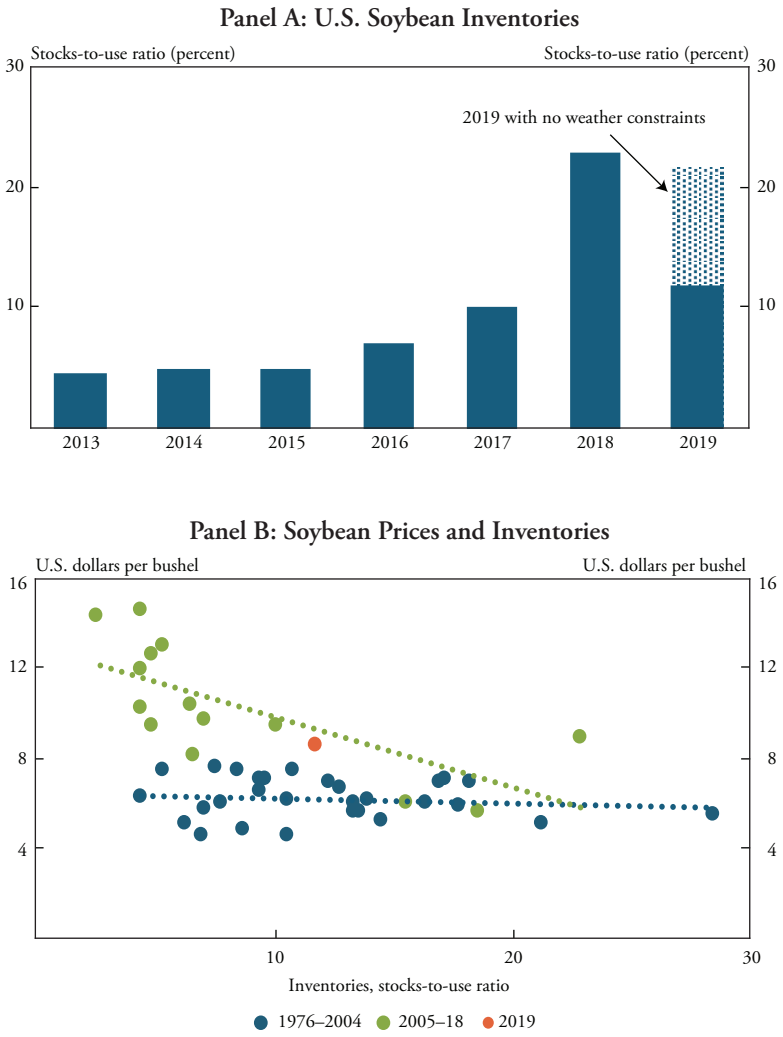
Hemisphere increased from 2017 to 2018, the demand from other countries was not enough to offset reduced demand from China.

Reduced demand for exports to China, combined with strong production in the United States, contributed to a 130 percent increase in U.S. soybean inventories in 2018. Panel A of Chart 5 shows that from 2013 to 2017, soybean inventories—as measured by the stocks-to-use ratio—increased modestly each year. But in 2018, inventories increased dramatically due in part to lower demand from China (Adjemian and others 2019). Inventories are an important indicator of supply and demand fundamentals because they are inversely correlated with prices. Panel B of Chart 5 shows that this inverse relationship appears to have strengthened over time due to the increase in biofuel production and the rapid expansion of Chinese soybean imports (Irwin and Good 2016). From 2005 to 2018, the correlation coefficient between soybean prices and inventories was –0.5, suggesting that a 1 percent increase in inventories was accompanied by a 0.5 percent decline in prices.

Alongside large inventories and uncertainty surrounding tariffs, soybean prices remained below pre-tariff levels through the second half of 2018 and all of 2019. Although soybeans were not included in China's first round of retaliatory tariffs, prices in the United States began to decline in

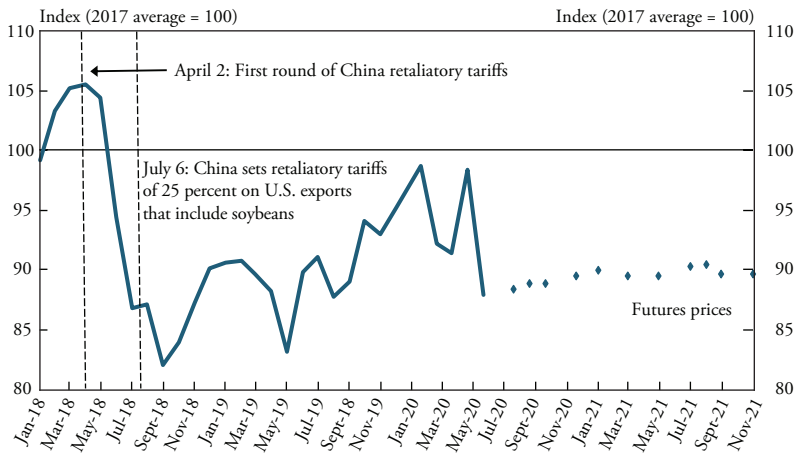
Chart 5

U.S. Soybean Market Fundamentals



Sources: USDA, *Wall Street Journal* (Haver Analytics), and author's calculations.

Chart 6
U.S. Soybean Prices



Sources: *Wall Street Journal* (Haver Analytics) and CME Group.

April 2018, as the prospect of a trade dispute with China in the midst of large expected soybean supplies likely weighed on market expectations (Chart 6). China deployed tariffs of 25 percent in July, and by September 2018, U.S. domestic prices had fallen 20 percent. Although prices rebounded slightly later in the year and continued to improve in the second half of 2019, they never surpassed their 2017 average. In addition, futures prices remain below pre-tariff levels, possibly hinting that the effects of the tariffs on U.S. soybean markets, in addition to negative effects from COVID-19, could linger.

III. Long-Term Implications and Global Response to the U.S.-China Trade Dispute

In the longer term, tariffs from China could make the United States less competitive in world markets. Evidence from previous trade disputes, economic theory, comparisons of factors that drive comparative advantage, and global market dynamics suggest that even if the tariffs were removed, the U.S.-China trade relationship and U.S. soybean markets may be permanently altered (Choe, Hammer, and Montgomery 2019; Zhou and others 2018).

Evidence from previous trade disputes

The 1980 grain embargo provides an historical example of how short-term trade disruptions can have long-term effects. In January 1980, President Jimmy Carter imposed an embargo restricting exports of grain to the Soviet Union (Ghoshal 1981). In the 1970s, international purchases of U.S. grains increased by about 15 percent per year, on average. However, the grain embargo in 1980 contributed to a decline in grain exports (USDA 1986). In response to the embargo, the Soviet Union altered trade flows by replacing U.S. grain with the same or substitute commodities from other sources. The United States lost market share throughout the 1980s. At the time, this was attributed more to world economic conditions—a rising U.S. dollar, a global recession, and high interest rates—than to the embargo (USDA 1986). However, the quantity of U.S. corn and wheat traded in international markets has never exceeded pre-embargo levels (Zulauf and others 2018). In contrast, grain exports from the rest of the world have increased, particularly in the last decade. Furthermore, the U.S. share of corn and wheat in world markets has declined steadily over time. Prior to the grain embargo, the United States comprised 84 percent of world corn exports and 50 percent of world wheat exports. Since the embargo was lifted in April 1981, the U.S. share of world corn and wheat shipments has fallen to 28 and 14 percent, respectively. Although it is difficult to disentangle the effects of the embargo from the global economic conditions of the 1970s and 1980s, evidence does suggest that trade disputes, particularly in the midst of weak economic conditions, can have longer-term effects on markets for agricultural commodities. Thus, the example of the Soviet grain embargo hints that the trade dispute with China could have long-lasting implications.

Competition in world soybean markets

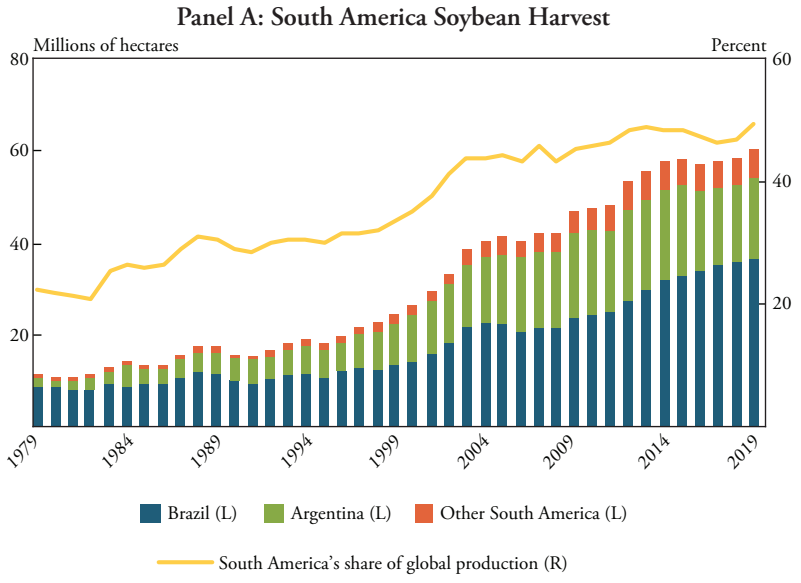
In addition to historical evidence, economic theory suggests the trade dispute may depress the competitiveness of U.S. soybean exports for years to come. One factor that could influence U.S. competitiveness in world markets moving forward is comparative advantage. A country has comparative advantage at producing a good or commodity if it can produce it at a lower opportunity cost than other countries. Due to comparative advantage, land-intensive countries tend to export

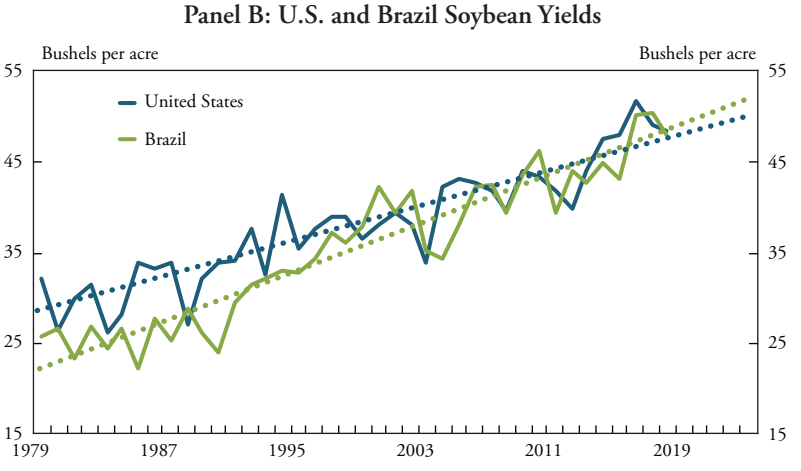
land-intensive products (Reed 2001). The United States, Brazil, and Argentina, for example, have large endowments of land and therefore comparative advantages in growing and exporting commodity crops. Compared with Brazil and Argentina, however, the United States appears to have fewer opportunities for expansion: the South American countries have greater endowments of land suitable for producing soybeans with higher protein levels (Stratfor 2018). After leveling off in 2017, harvested acres of soybeans in South America increased in 2018 and 2019 (Chart 7, Panel A). In 2019, soybean acres reached historically high levels in Brazil, Argentina, and in the rest of South America. The most recent data indicate that South America now accounts for half of all global acres harvested in soybeans. In addition, although soybean yields in Brazil have historically lagged soybean yields in the United States, they have increased at a faster pace over time (Chart 7, Panel B). Although trend yields for soybeans in the United States were higher than in Brazil from 1979 to 2013, Brazilian productivity has since caught up with U.S. productivity.

Alongside an abundance of land, Brazil has invested substantially in transportation infrastructure, which could give the country some additional advantages. Commodity crops are low-unit-value, high-demand products, so high-volume transport such as railways and barges are typically more economically efficient and ensure more competitive prices. Historically, Brazil has had relatively high transportation costs compared with the United States and Argentina because the country has used less efficient means, such as trucks and roadways, to travel long distances (Guan and others 2019). At the end of the 1980s, more than 75 percent of grain and seed cargo in Brazil was transported on the road, compared with 40 percent for the United States (Friend and Lima 2011). In addition, more than half of Brazil's soybean production is located in the large, landlocked state of Mato Grosso, making high-volume transport to ports difficult and expensive (Stratfor 2018). However, beginning in the 1990s, the privatization and deregulation of railways and ports and elimination of export controls contributed to more investment in infrastructure and lower transportation costs. Over the last five years, Brazil has also begun construction of port terminals in the northern Amazon region, allowing for more efficient access to the Atlantic Ocean and the Panama Canal.

Chart 7

Soybean Production in South America





Source: USDA.

Comparing transportation costs between locations in the United States and Brazil shows that given the improvements to Brazilian infrastructure, tariffs have made U.S. soybeans less price-competitive. Chart 8 shows that, historically, soybean producers in Iowa have had relatively higher production costs but substantially lower transportation costs than soybean producers in key Brazilian provinces, such as Mato Grosso and Goiás. However, recent investments in infrastructure in Brazil have caused notable reductions in transportation costs, particularly from Mato Grosso. Despite these improvements, total costs in Iowa would be similar to Mato Grosso without tariffs. With the addition of tariffs, soybeans produced in Iowa become more expensive.

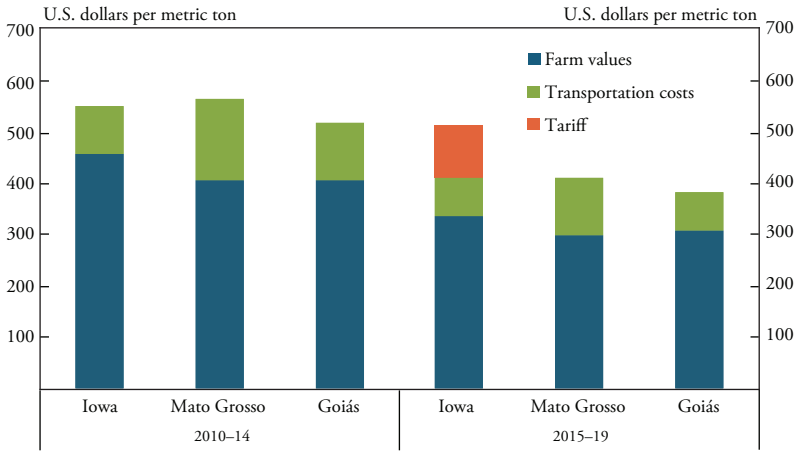
U.S. farmers were already facing more competitive global markets before the trade dispute with China began, and tariffs may have made it even more difficult to regain market share. For example, Panel A of Chart 9 shows that until 2013, the United States (blue line) was the leading exporter of soybeans. In 2014, however, the value of U.S. soybean exports began to weaken, and Brazil (green line) took over as the leading exporter. One way to assess the competitiveness of U.S. soybeans is by examining its normalized revealed comparative advantage (NRCA), an index that compares the ratio of soybean exports to total exports in the United States to the same ratio in other countries (Traill and Gomes da Silva 1996; Yu, Cai, and Leung 2009; Crespi and Chen 2019). An NRCA greater than zero indicates that a country has a comparative advantage. Panel B shows the associated NRCA indexes for major soybean exporters. Although the index for the United States remains above zero, it has been lower than the index for Brazil since 2014, indicating that U.S. soybeans have been relatively less competitive in global markets in recent years. Following tariffs in 2018, Brazil's comparative advantage over the United States widened substantially.

Other market factors

Several other market factors have weighed on U.S. soybean exports during the trade dispute. One such factor reducing the price competitiveness of U.S. soybeans is the strength of the U.S. dollar. In 2018 and 2019, the U.S. dollar appreciated relative to the Chinese yuan, the Brazilian real, and the trade-weighted average of all other world currencies. Furthermore, U.S. currency rose 6 percent relative to the Chinese yuan at the end of 2019 in the midst of the coronavirus outbreak in China.

Chart 8

Costs of Transporting Soybeans from the United States and Brazil to China



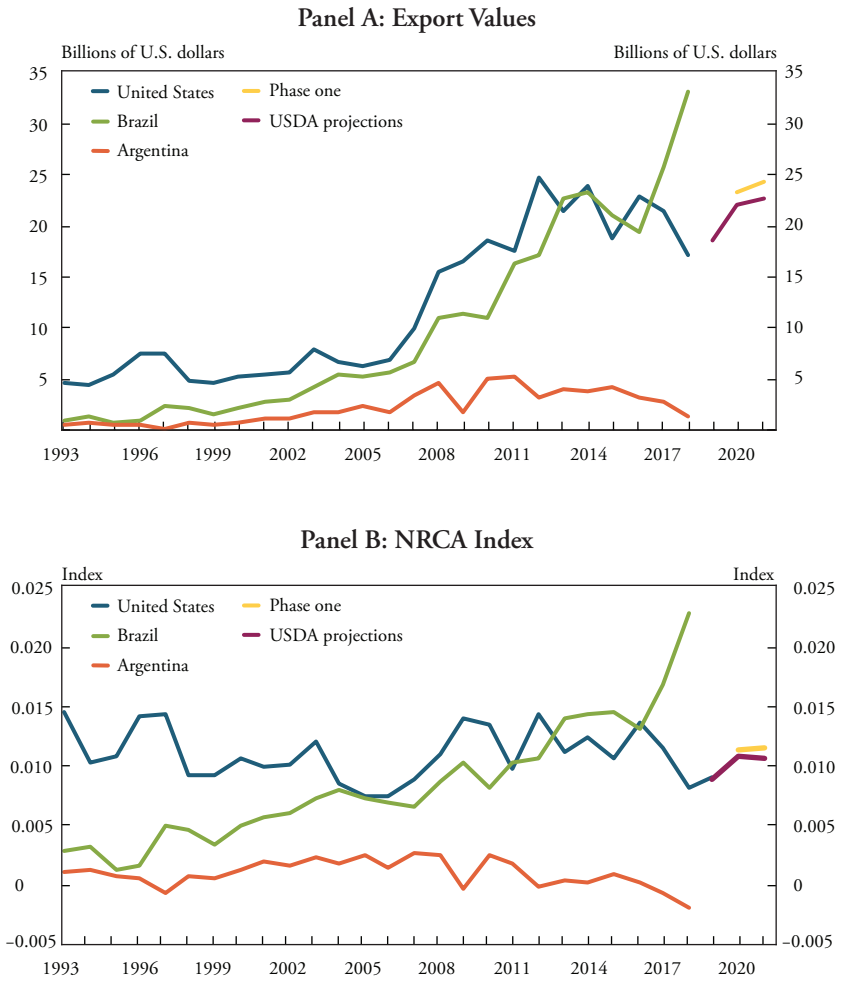
Notes: Transportation costs are the costs to ship from the farm to Shanghai, China. Data in this chart are based on the assumptions that Iowa soybeans are shipped to China through the U.S. Gulf, soybeans grown in Mato Grosso are shipped from the port in Santos, Brazil, and soybeans originating in Goiás are shipped via Paranaguá, Brazil. The total price, or landed cost, for a buyer in China would equal the farm value plus the transportation costs.
Source: USDA.

The coronavirus outbreak has generated concerns about disruptions to the Chinese and global economies that have weakened global growth and further strengthened the dollar. A stronger dollar, particularly in a trade environment where tariffs remain in place, would further increase the costs of U.S. soybeans in Chinese and world markets, contributing to lower demand for U.S. products.

The United States also has a slight quality disadvantage in soybeans, which may make overcoming tariffs more difficult in the long term. Brazilian soybeans have historically had higher protein contents than U.S. soybeans, which is important for buyers interested in processing soybeans for animal feed (Mano 2019). For example, Chinese export contracts have quality requirements that specify a protein content of 34 percent. In 2019, the average protein content of beans in the United States was 34.1 percent, while protein content in Brazil was 36.8 percent (William, Dahl, and Hertsgaard 2019; Mano 2019; Naeve and Miller-Garvin 2019; USSEC 2006). Given both tariffs and China's lower overall soybean import needs due to ASF, Chinese buyers can be more selective about purchases, which may make the cheaper, higher-protein soybeans from Brazil more competitive.

Chart 9

Export Values and Indices of Comparative Advantage for Soybeans



Sources: USDA, United Nations, Office of the U.S. Trade Representative, and author's calculations.

Going forward, a trade deal between the United States and China could alleviate some concerns about the long-term implications of tariffs. On January 15, 2020, the United States and China signed "phase one" of a trade agreement that would significantly increase the value of U.S. agricultural exports to China. Using the 2017 baseline of $23.8 billion in agricultural purchases, the phase one trade agreement includes a commitment from China to import an extra $12.5 billion of agricultural products from the United States in 2020 and an extra $19.5 billion in 2021.

However, developments in soybean prices immediately following the signing of the trade deal indicate the deal may not be as supportive as the U.S. agricultural industry hoped. Soybean prices declined 3 percent in the day following the signing and tariffs remained intact. Moreover, the phase one agreement contains no strong enforcement mechanisms to ensure China follows through on its commitments. In fact, China's representatives indicated that purchases for agricultural products, including soybeans, would be "based on market conditions," which have been less favorable for U.S. agricultural commodities (Plume and Polansek 2020). For example, Brazil remains more price-competitive in world soybean markets and is expected to harvest a record crop in 2020. Furthermore, the coronavirus outbreak could make it more difficult for China to fulfill its commitments. In January and February 2020, weekly outstanding orders of soybeans were 60 percent lower than in the same weeks in 2019, on average. In addition, the phase one deal is only for two years (2020 and 2021), which may not be enough to unwind the adverse effects associated with tariffs.

Even if China were to fulfill its commitments for U.S. soybean purchases, the United States could still remain at a disadvantage to Brazil. Panels A and B of Chart 9 show projections based on data from the USDA (purple lines) for U.S. soybean export values and comparative advantage alongside my estimates of the effects of the phase one trade deal (yellow lines). According to my calculations, even with the addition of the phase one trade deal, the United States could not reach Brazil's recent levels of export values or comparative advantage in global soybean markets. For all agricultural exports, the USDA's projections are slightly below commitments specified in the trade deal. Specifically,

the USDA expects total agricultural exports to China to equal $14 billion in 2020, which would fall short of the $36 billion in commitments China made in the phase one trade deal. The USDA's estimates could increase if concerns around coronavirus decline and if orders increase from China. However, lingering tariffs, the strength of the dollar, and declining competitiveness are key headwinds in the longer-term outlook for U.S. soybean markets.

Conclusion

Prior to 2018, the United States and China had developed a strong trade relationship for soybeans. The United States is one of the world's largest producers of soybeans and is highly dependent on exports. Similarly, China is one of the world's largest consumers of soybeans and is very dependent on imports. However, following the implementation of retaliatory tariffs, U.S soybean exports to China declined, and importers in China sourced more lower-cost soybeans from other countries, primarily Brazil. Although U.S. exports of soybeans increased to all other trading partners, the increase in exports to other countries could not overcome the decline in exports to China. Therefore, inventories increased dramatically in 2018, leading to a sharp decline in U.S. soybean prices.

Although Chinese tariffs on U.S. soybeans initially disrupted markets and created widespread uncertainty, additional supply and demand factors have also contributed to a reshuffling in soybean markets. In 2018 and 2019, the effects of the tariffs were intensified by reduced demand for soybeans in China following an outbreak of African swine fever and the implementation of new feed standards. On the other hand, reduced demand from China was somewhat offset by severe weather in the United States in 2019, which reduced supplies.

The implementation of the phase one trade agreement may provide some support to U.S. soybean markets; however, China is committed to purchasing U.S. agricultural commodities only if market conditions are favorable. Given that tariffs remain in place, and COVID-19 has contributed to a decline in global economic activity and an increase in the value of the U.S. dollar, markets will likely continue to favor Brazil.

If Brazil strengthens its comparative advantage by expanding production and further improving its infrastructure, the United States may see its share of global exports fall further, creating greater financial difficulties for U.S. soybean farmers in the longer term.

Endnote

[1]Producers affected by adverse weather conditions such as flooding and hurricanes can elect to enroll their acres in prevented plant and receive government insurance payments. If a producer is unable to plant, they can collect prevented plant payments on the acres left unplanted.

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