China's Agricultural Imports under the Phase One Deal: Is Success Possible?

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Executive Summary

We examine China's committed agricultural purchases under the phase one trade deal and whether it can fulfill those commitments due to the COVID-19 pandemic. We review China's actual agricultural imports from the United States and other countries up to the first quarter of 2020 and analyze trade deal obligations China must still meet by the end of 2020. We use prior seasonal patterns and US-China price differentials to predict China's agricultural imports from the United States in 2020. We examine total agricultural and related products with special focus on corn, soybeans, cotton, sorghum, pork, and beef.

The data show China currently has an enormous market demand for agricultural imports, and, to date, has imported large quantities of pork, cotton, sorghum, and soybeans from the United States. However, China imports an even greater amount of agricultural products from other countries, which, in part, reflects a continued diversification away from US agricultural imports before and during the trade war. We predict China will import $18.60 billion in agricultural products from the United States in 2020, far behind the phase one target of $36.5 billion.

The first quarter of 2020 was a trying time for agricultural trade, especially for China, so there is still room for optimism, and we see several positive signs that China will accelerate its agricultural purchases. First, US-China price differentials of relevant commodities recently increased, providing a market signal for China to increase imports from the United States. Second, there are indications that, beginning in October, China plans to import large quantities of corn, as its domestic supply gap has widened. Third, China has announced its intention to purchase 20 million tons of corn, 10 million tons of soybeans, and one million tons of cotton for its national reserve. Fourth, China is short on animal protein due to the African Swine Fever outbreak, and thus is purchasing an increasing share from the United States. Fifth, China is making good progress meeting the regulatory and structural changes promised as part of the phase one deal, including updating lists of US facilities eligible to export distillers dried grains with solubles and beef and pork products lists. However, US-China trade prospects depend critically on COVID-19's impact on international logistics and China's political willingness to allow US imports to return to and exceed pre-trade-war levels. We provide a commodity specific estimate of what China will need to import from the US in the last three quarters if it is to meet the terms of the deal by the end of 2020.

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Introduction

On January 15, 2020, China and the United States signed the phase one trade agreement to deescalate a trade war that started in March, 2018. In 2020, the phase one trade agreement obligates China to purchase US agricultural products totaling $12.5 billion more than 2017 levels; and, in 2021, the obligation increases to $19.5 billion more than 2017 levels. The phase one deal uses a 2017 baseline level of $24 billion in agricultural and related products; and thus, China's obligations are $36.5 billion and $43.5 billion in US agricultural imports in 2020 and 2021, respectively.[1] Early termination of the deal due to COVID-19-related misunderstandings, a lack of data on market forces, or logistical issues that may slow early progress toward implementation would be unfortunate, as the deal is one of very few current reasons for optimism for US agriculture. Recently, when discussing the phase one deal, US and China trade representatives agreed that good progress is being made and they should enhance macroeconomic and public health cooperation to create a favorable atmosphere for trade deal implementation (Bermingham 2020).

Based on the most recent USDA Foreign Agricultural Service Global Agricultural Trade System (GATS) data, in the first quarter of 2020, US exports of agricultural and related products to China reached $3.35 billion (USDA 2020a), which is 9.2% of the promised amount for 2020. However, the General Administration of Customs of China (GACC) reported $5.05 billion in US agricultural imports in the first quarter of 2020 (GACC 2020), which is 13.8% of the promised amount. While the inclusion of insurance, freight, and tariffs might cause the gap between the data reported by China and the United States, both data indicate that China is falling short of the targeted purchases. Considering that the global COVID-19 pandemic has slowed global demand, disrupted trade, and will continue to create additional disruptions, examining whether China can fulfill its phase one obligations is critical (Zhang and Tiong 2020).
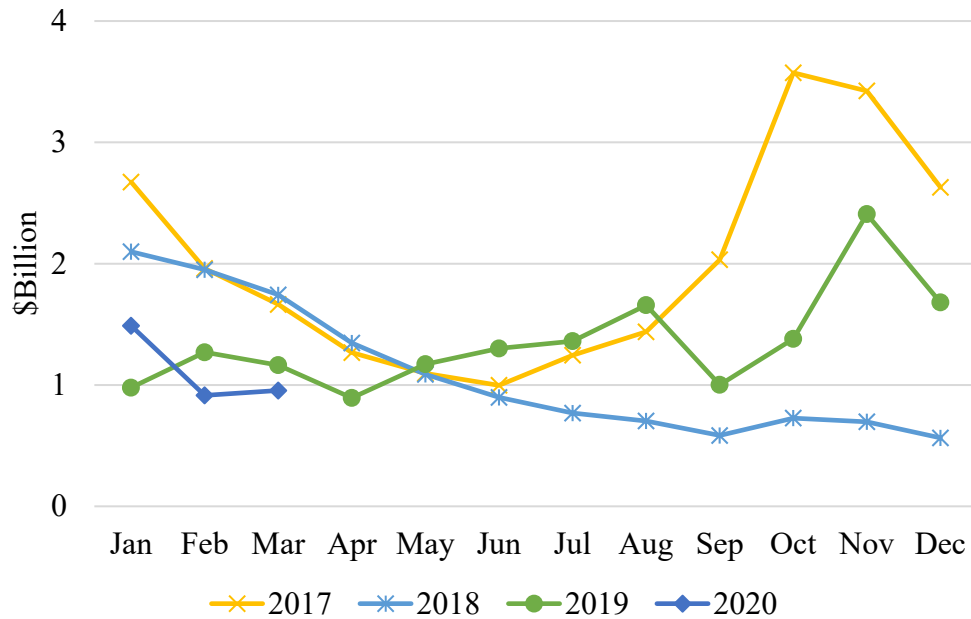
US Agricultural Exports to China

Figure 1 shows monthly US exports of agricultural and related products to China from January, 2017, to March, 2020 (USDA 2020a). While total US agricultural exports to China decreased from $24 billion in 2017 to $13 billion in 2018, they rebounded to $16 billion in 2019. In the first quarter of 2020, the United States exported $3.35 billion in agricultural products to China, about the same level as in the first quarter of 2019. There is a clear seasonal pattern—US agricultural product exports to China are high from September to March and low from April to August (see figure 2a). US soybean exports account for about 60% of all US agricultural exports, and the peak demand season for US soybeans is in the fall, which accounts for most of the seasonal pattern.

In 2017, the United States shipped 75% of its agricultural exports to China from September to March, and the remaining 25% shipped from April to August. The patterns from January to March, 2020, are in line with previous years, and we expect to see China purchase more agricultural products starting in August.

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[1] While the phase one trade agreement does not explicitly indicate the baseline trade value in 2017, it lists the specific category of agricultural goods in Annex 6.1.

Figure 1. Monthly US agricultural and related products exports to China, 2017–2020.

US Weekly Exports of Key Agricultural Commodities to China
The aggregate patterns illustrated in figure 1 may mask great heterogeneity of specific commodities. Figures 2a–2f show the patterns of US weekly exports for corn, soybeans, cotton, sorghum, pork, and beef for the 2017/18 marketing year until April 30, 2020, the most recent week for which USDA weekly export sales data were available (USDA 2020b).
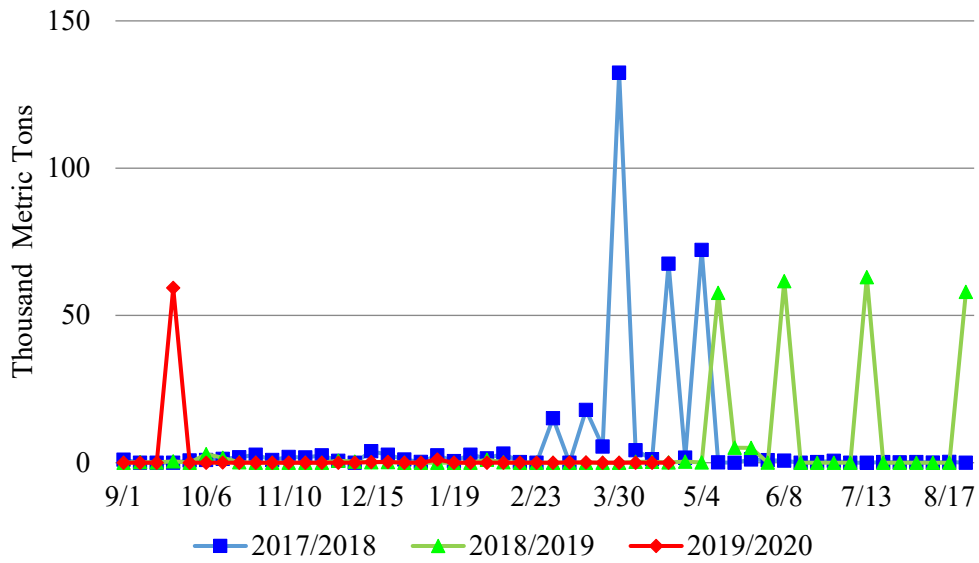
Figure 2a. US weekly corn exports to China, 2017–2020.
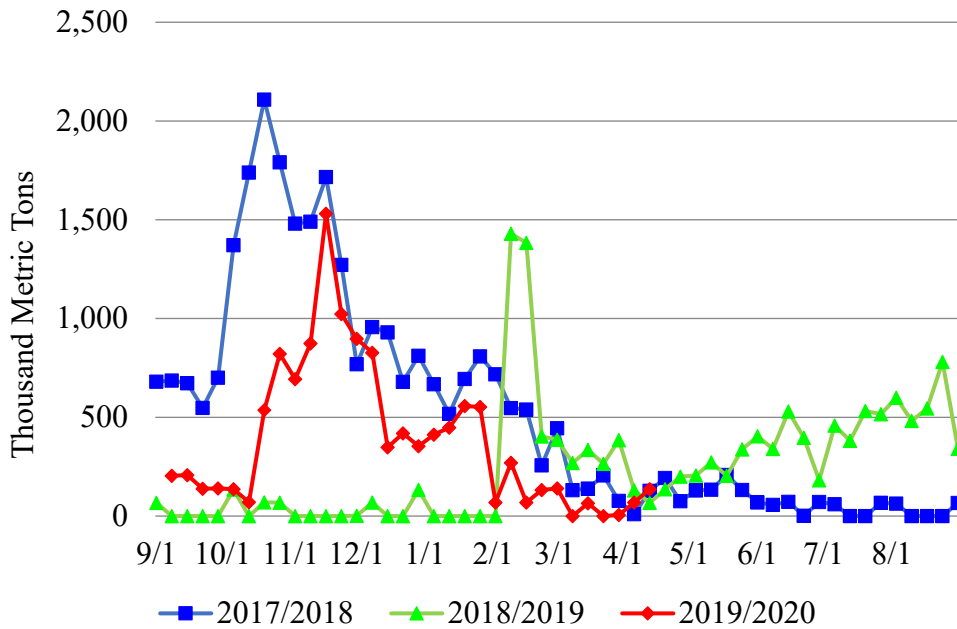
Figure 2b. US weekly soybean exports to China, 2017–2020.

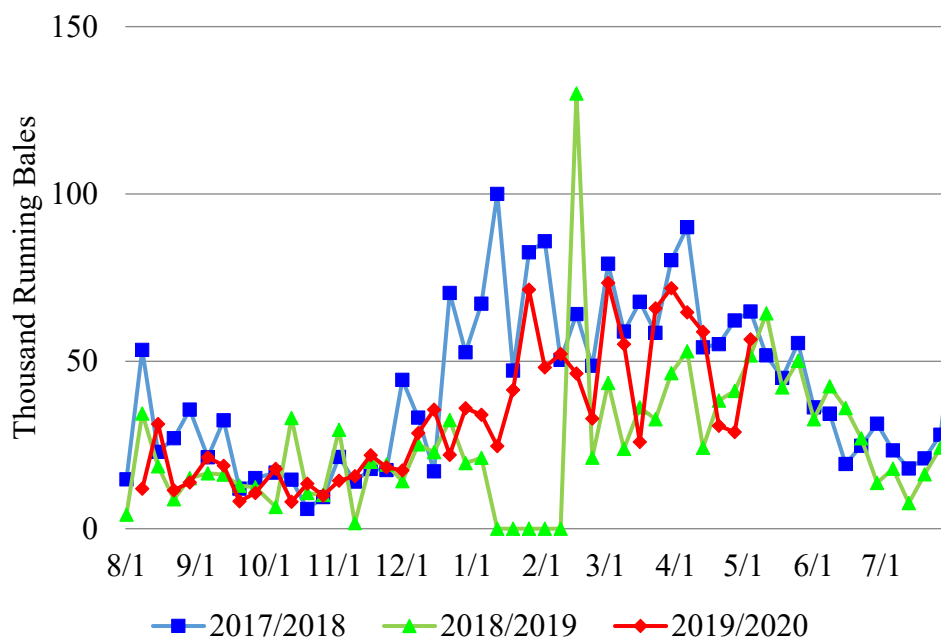In the 2017/18 marketing year, China imported 80% of its US corn from April to August, as figure 2a shows. Although China has not started importing large quantities of US corn in 2020,

it anticipates adding 10 million tons of soybeans, 20 million tons of corn, and one million tons of cotton to state reserves to help protect against supply chain disruptions caused by the COVID-19 pandemic and to fulfill obligations to purchase US crops (Reuters 2020a). According to the China National Grain and Oils Information Center, China is also likely to boost corn imports to at least seven million tons starting in October 2020.

Figure 2b shows that, in the 2017/18 marketing year, China imported 96% of its soybeans from September to April. In the current 2019/20 marketing year, China has not begun importing large quantities of US soybeans; however, historical patterns indicate large imports of soybeans will begin in September, and China also plans to import 10 million tons of soybeans for its national reserve.

Notably, the latest World Agricultural Supply and Demand Estimates (WASDE) report forecasts 2020 US soybean exports at 2.05 billion bushels, about the same as in 2017 (USDA 2020c). However, the WASDE report does not account for the impact of the phase one trade deal and could potentially underestimate 2020 US soybean exports. If we assume China fulfills its phase one commitments and proportionally increases US soybean imports with the trade target, it would import 1.77 billion bushels of US soybeans, an increase of 0.61 billion bushels from the 2017 baseline. If we further assume US soybean exports to countries other than China remain at 2017 levels, then we anticipate 2020 US soybean exports at 2.63 billion bushels.

Figure 2c. US weekly cotton exports to China, 2017–2020.
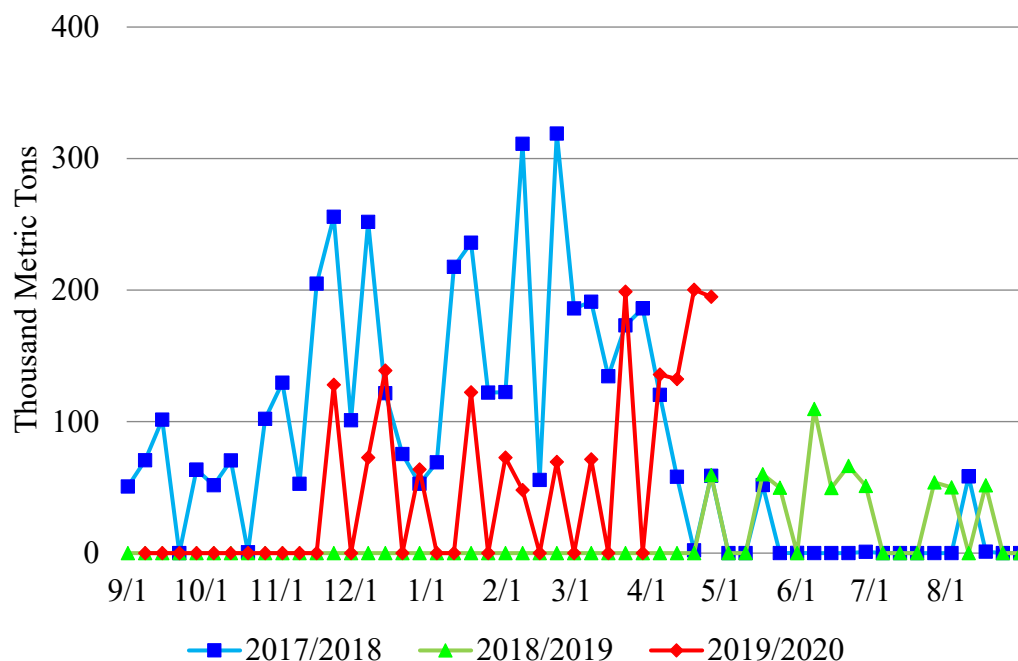
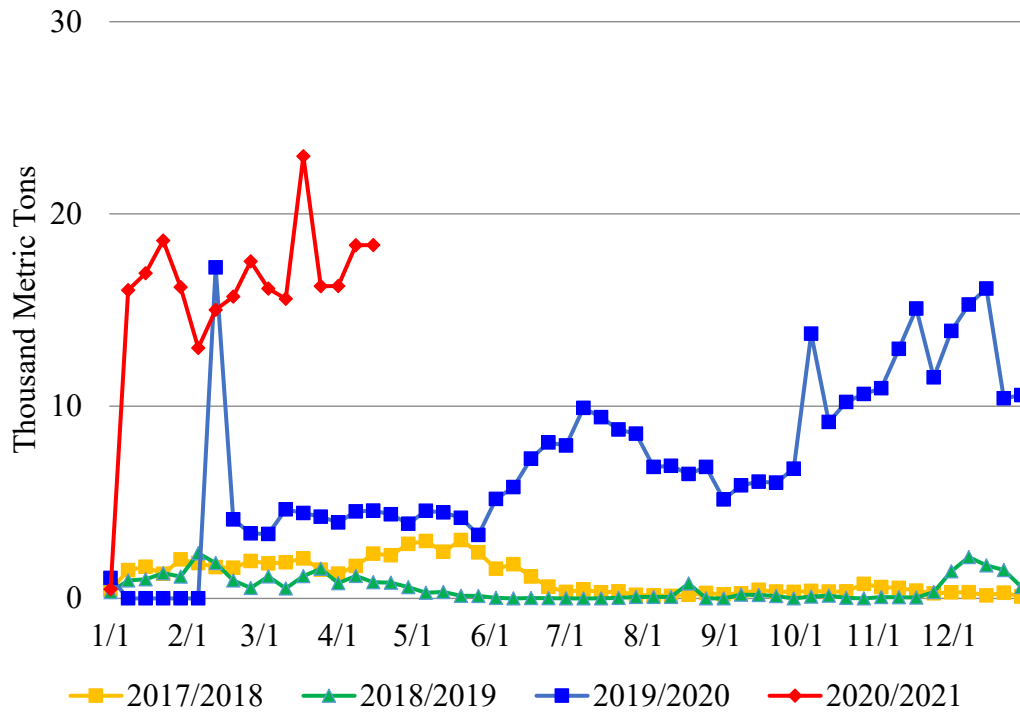**Figure 2d. US weekly sorghum exports to China, 2017–2020.**

Figure 2c shows that China imported 61% of its cotton from January to June in the 2017/18 marketing year. In the 2019/20 marketing year, China has already imported 1.27 million running bales of US cotton. In addition, China also plans to import one million tons of cotton for its national reserve.

Figure 2d shows China's imports of US sorghum. In the 2019/20 marketing year, China has imported 1.65 million metric tons of US sorghum. Based on the WASDE report (USDA 2020c), China has a strong demand for sorghum, in part due to cheap US sorghum prices, and is expected to import five million tons of sorghum from all sources in 2020/21.

The US weekly export data for the period May 1-7, 2020, show new US sales of 371,000 MT of corn, 274,900 MT of soybeans, and 70,000 MT of sorghum to China for the 2019/20 marketing year, and new sales of 315,000 MT of corn and 242,000 MT of soybeans for the 2020/21 marketing year (USDA 2020b). For the period May 8-14, 2020, data show new US sales of 737,400 MT of soybeans and 131,500 MT of sorghum to China for the 2019/20 marketing year, and new sales of 464,000 MT of soybeans and 32,000 MT of sorghum for the 2020/21 marketing year (USDA 2020b).

In May of the 2017/18 marketing year, US weekly average corn exports to China were 31,823 MT and weekly average soybean exports to China were 68,908 MT. Therefore, sales data for May 1-7, 2020, indicate China is accelerating its purchases and is buying much more corn and soybeans in May than it did in 2017. As for sorghum, China imported 96% of its sorghum from September to April in the 2017/18 marketing year and imported a negligible amount of sorghum in May. China's sorghum purchases of 70,000 MT and 131,500 MT in the first and second weeks

of May this year show an abnormal seasonal pattern and suggest China has a much higher demand for US sorghum than in 2017. These out-of-season sales may be due to COVID-19-related problems in Brazil, or they may be a signal that China is making a genuine attempt to buy US products.

Figure 2e. US weekly pork exports to China, 2017–2020.
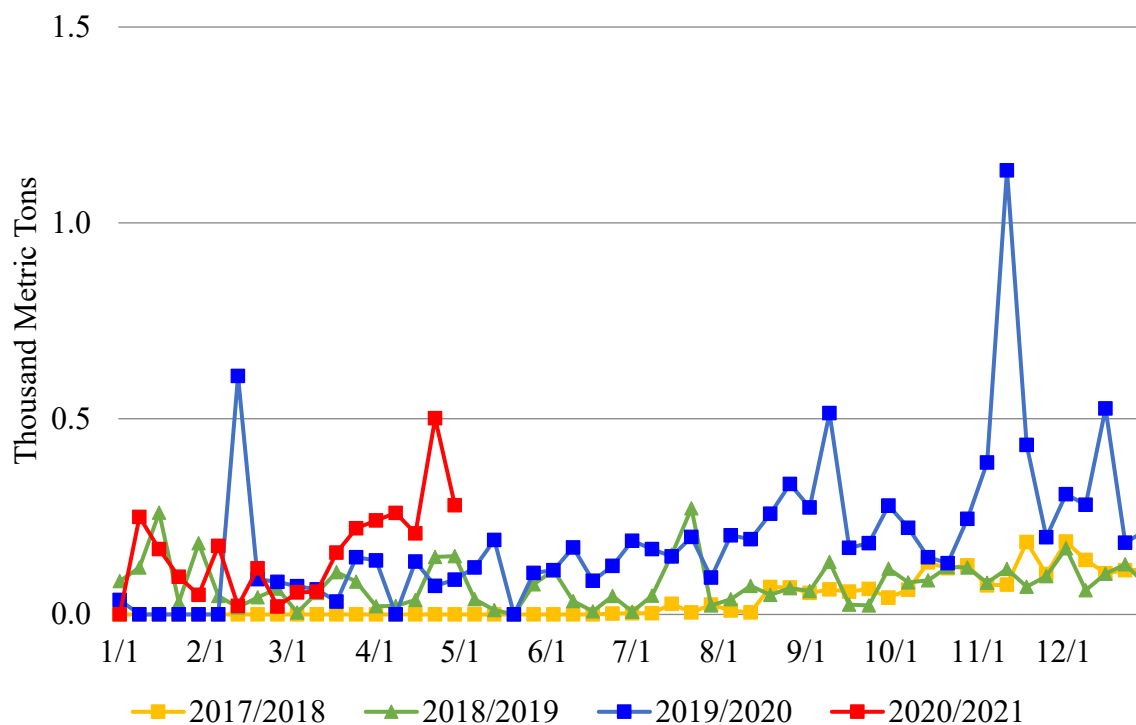
Figure 2f. US weekly beef exports to China, 2017–2020.

Figures 2e and 2f show that China's demand for US pork and beef is surging, which is partially due to the African Swine Fever (ASF) outbreak that began in August 2018 (Carriquiry et al. 2019; 2020). From January to April, 2020, China imported a record level of 291,609 metric tons of US pork and 2,875 metric tons of US beef, which is much higher than the 28,320 metric tons of US pork and the negligible amount of US beef it imported from January to April in 2017. Though the WASDE report reduces export forecasts for US beef and pork in 2020 due to slower expected growth caused by economic weakness and reduced suppliers (USDA 2020c), the upward trend we find seems likely to continue; and thus, the United States will export record-high amounts of pork and beef to China this year.

China's Agricultural Imports from non-US Countries
While it is important to track China's US agricultural imports, it is also crucial we monitor China's agricultural imports from non-US sources—in particular, major exporters like Brazil and the EU—to fully assess China's potential US imports. Thus, we examine patterns in China's US and non-US agricultural imports using monthly GACC data from January, 2017, to March, 2020 (GACC 2020).

China's Monthly US and non-US Imports
Figures 3a–3f show the values of China's imports of corn, soybeans, cotton, sorghum, pork, and beef from the United States and non-US countries. We also present China's soybean imports from Brazil and pork imports from the EU.
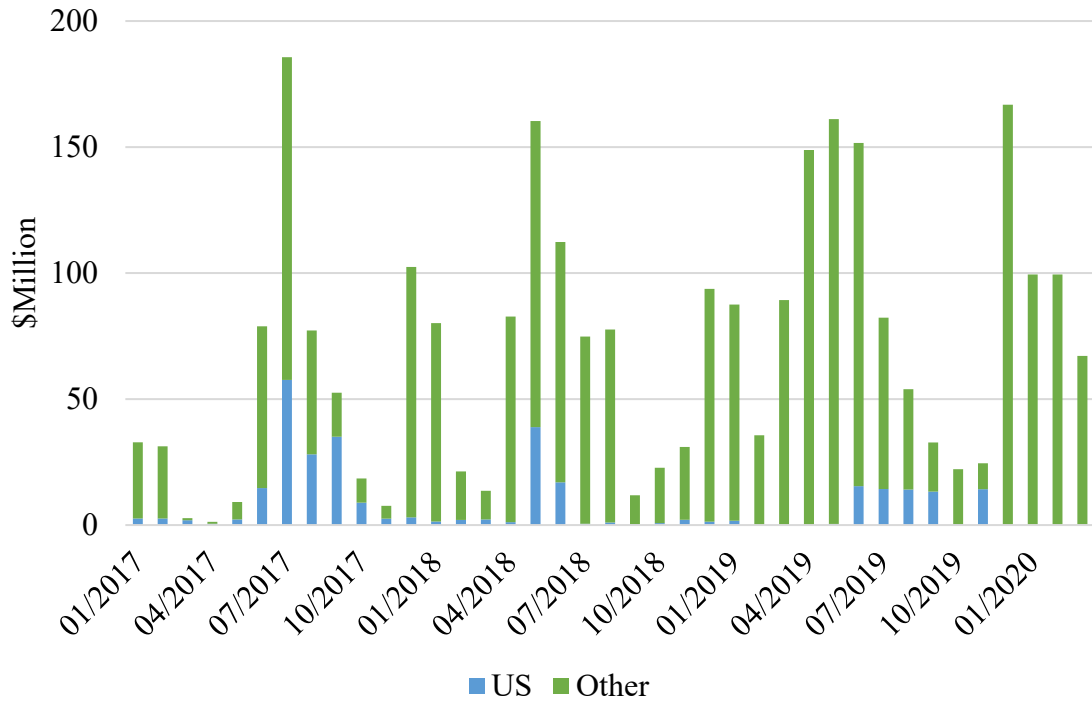
Figure 3a. China's US and non-US corn imports, 2017–2020.
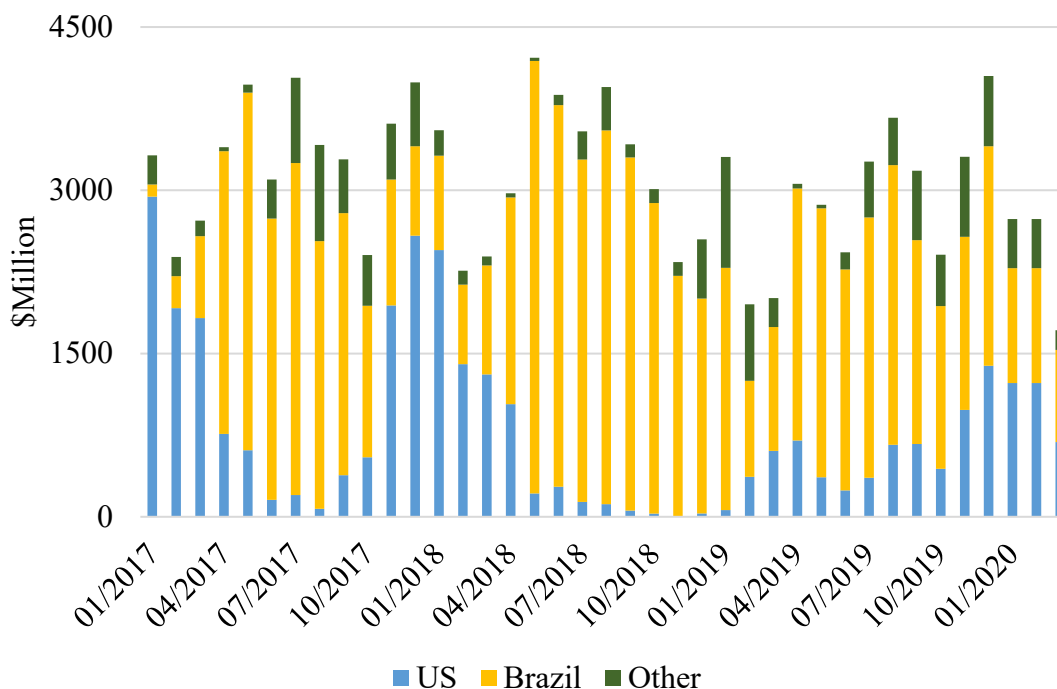
Figure 3b. China's US and non-US soybean imports, 2017–2020.

Figures 3a and 3b clearly show the seasonal pattern of China's US corn and soybean imports, which are in line with the seasonal trends based on US weekly export data we previously illustrated. Specifically, China imports large quantities of corn from other countries, especially Ukraine, from April to September and imports large amounts of US soybeans from September to April.[2] Since the beginning of the 2018 trade war, Brazil's share of China's soybean imports increased from 52.8% in 2017 to 75.7% in 2018, and then decreased to 64.8% in 2019. This is even more significant when considering that only 15%–20% of China's soybean needs are produced domestically. Therefore, whether China will import large quantities of US soybeans depends on Brazil's soybean supply and price. Many US market analysts began to worry about the prospect of the phase one deal as Brazil's monthly soybean exports reached record levels in April, 2020 (Reuters 2020b). However, at the time of writing, Brazil has become a COVID-19 hotspot, which may disrupt its soybean exports.

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[2] China began importing corn from the Ukraine after it rejected loads of US corn in November, 2013. The rejections were related to the presence of Viptera and later Duracade in the US corn system. China has since approved the use of both Viptera and Duracade. Thus, the United States should recapture corn market share from Ukraine in the 2020/2021 crop year.
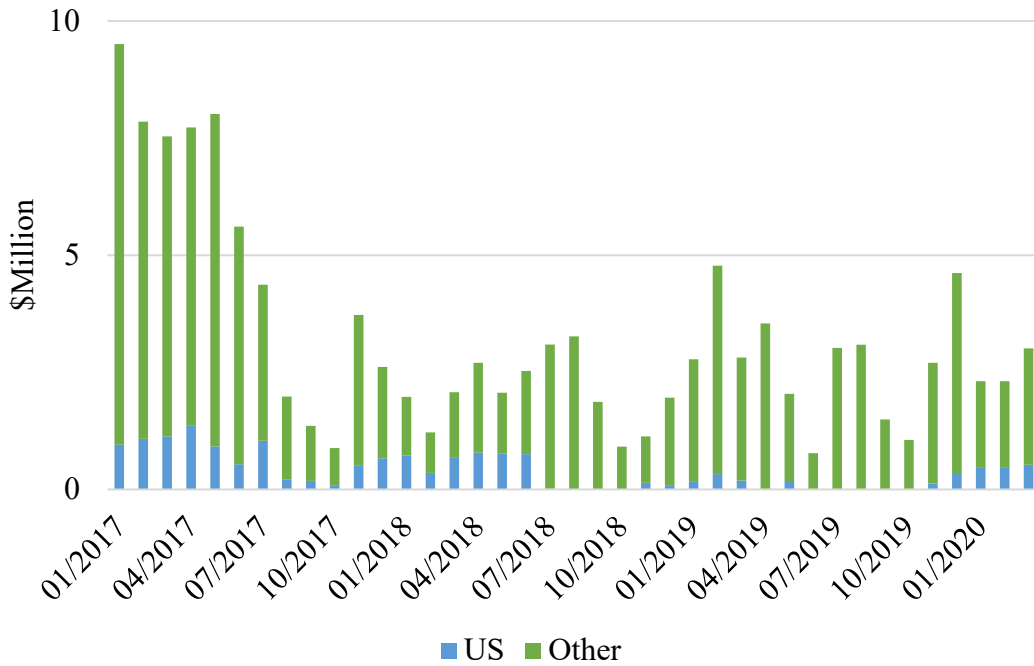
Figure 3c. China's US and non-US cotton imports, 2017–2020.
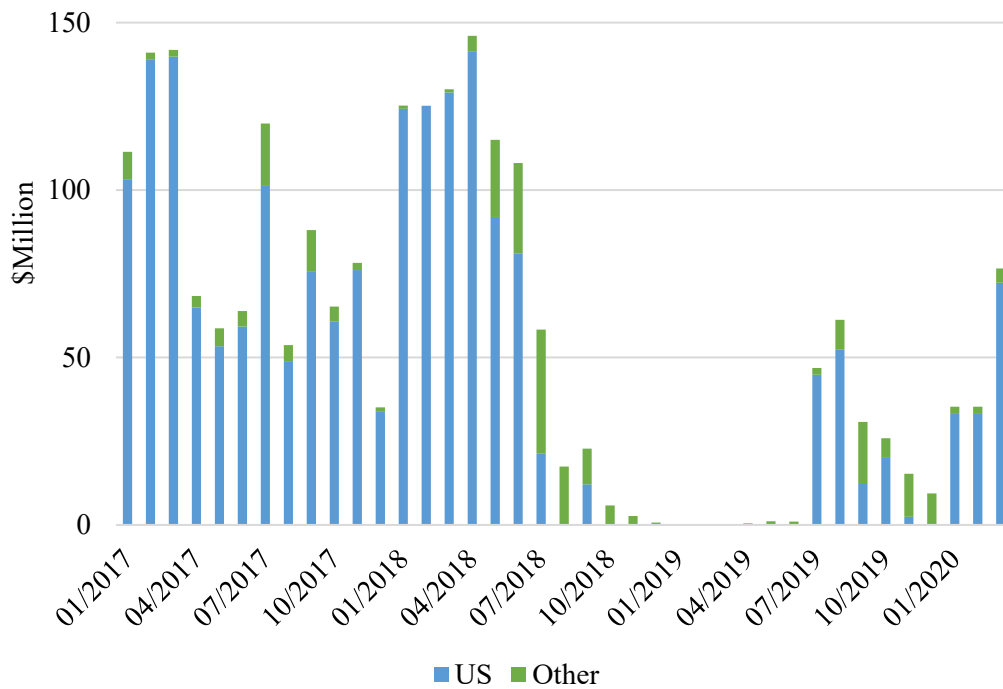
Figure 3d. China's US and non-US sorghum imports, 2017–2020.

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Figures 3c and 3d show that, in 2020, China is importing US cotton and sorghum at a lower level than in the first quarter of 2017. China buys large quantities of US sorghum because US supplies are much cheaper than Australia's, a rival producer, which indicates that China is willing to purchase US agricultural products only when they are cheaper (Almeida and Hirtzer 2020).
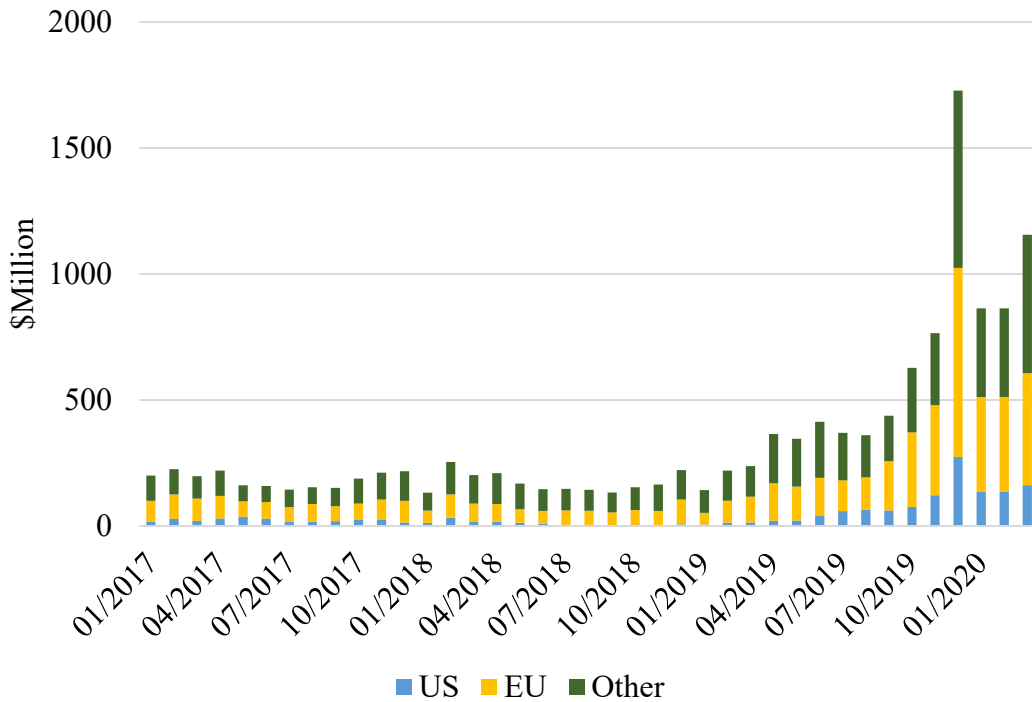

Figure 3e. China's US and non-US pork imports, 2017–2020.
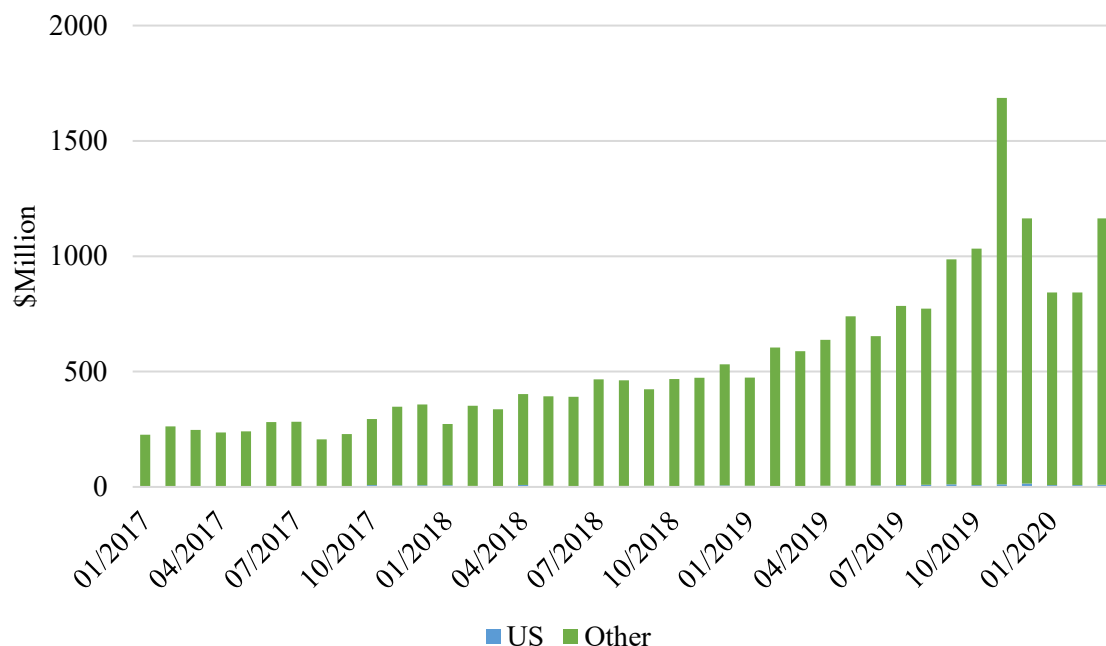
Figure 3f. China's US and non-US beef imports, 2017–2020.

Figures 3e and 3f show China's increasing import demand for pork and beef and the potential for the United States to export recond-high volumes of meat products to China in 2020, partially due to the ASF outbreak (Xiong 2020).

China's 2017 and 2020 First-Quarter Import Comparison
Comparing the United States' share of China's imports in the first quarter of 2017 and 2020 provides a sense of the potential for the rest of the year. Table 1 shows summary statistics of China's imports of the six examined commodities from US and non-US countries in the first quarter of 2017 and 2020. In 2017 Q1, China imported 5% of its corn from the United States; however, only 0.1% of China's corn imports came from the United States in 2020 Q1. For soybeans, China imported 79% and 43.9% of its soybeans from United States in 2017 Q1 and 2020 Q1, respectively. For cotton, China imported 54.3% and 20.3% of its soybeans from the United States in 2017 Q1 and 2020 Q1, respectively. These comparisons show that China is importing a large portion of agricultural products from non-US countries in 2020, which may be due to a need to import from other countries during the 2018–2020 trade war.

Table1. China's 2017 and 2020 First-Quarter Imports

	2017 Q1			2020 Q1		
	US	Non-US countries	US share	US	Non-US countries	US share
Total import quantity (Thousand MT)						
Corn	15	292	5.0%	1	1,249	0.1%
Soybeans	15,429	4,093	79.0%	7,813	9,979	43.9%
Cotton	204	171	54.3%	124	489	20.3%
Sorghum	1,972	55	97.3%	595	38	94.0%
Pork	38	308	11.0%	168	760	18.1%
Beef	0	160,082	0.0%	3	510	0.6%
Total import value ($Million)						
Corn	7	60	10.7%	0	266	0.1%
Soybeans	6,684	1,744	79.3%	3,144	4,043	43.8%
Cotton	3	22	12.7%	1	6	19.0%
Sorghum	382	12	96.9%	139	9	94.2%
Pork	65	558	10.5%	436	2,448	15.1%
Beef	0	736	0.0%	24	2,826	0.8%
Total agricultural and related products	6,296	45,000	12.3%	5,050	37,094	12.0%

Source: General Administration of Customs of China data (GACC 2020).

China's Targeted 2020 and 2021 Trade Deal Imports

Tables 2 and 3 present China's actual US imports in 2017, the targeted 2020 and 2021 imports under the terms of the phase one trade deal, the actual imports in 2020 Q1, the percentage purchased in 2020 Q1, and the imports needed to meet the target in April–December, 2020. We calculate 2020 and 2021 targets by assuming that China's US crop import mix remains the same as in 2017 and scaling up the trade value and quantity to trade deal targets. Considering that ASF severely affects China's import demand for pork and beef, we multiply China's imports in 2020 Q1 by four to set a trade target for 2020, and multiple the 2020 trade target by 1.3= (1+(19.2-12.5)/24) to get the 2021 trade target for beef and pork. Tables 2 and 3 show that China's purchases of pork, beef, and cotton are making good progress, but purchases of soybeans and corn are falling far behind the target. It is important to note that the phase one deal only has total, rather than commodity-specific, targets.

Table 2. China's Actual First-quarter 2020 Imports and 2020 and 2021 Targeted Trade Deal Imports ($Million)

Commodities	2017	2020 target	2021 target	2020 Q1	Percentage purchased	Exports needed in April-December 2020
Total agricultural and related products	24,002	36,503	43,503	3,358	9.2%	33,145
Key crops						
Soybeans	12,224	18,591	22,157	1,028	5.5%	17,563
Cotton	978	1,487	1,772	291	19.6%	1,196
Grain sorghum	838	1,275	1,519	116	9.1%	1,159
Wheat	351	534	636	0	0.0%	534
Corn	152	231	275	0	0.0%	231
Rice	1	1	1	0	0.0%	1
Soybean meal	7	10	12	1	10.0%	9
Soybean oil	24	37	44	0	0.0%	37
Key meat products						
Pork & pork products	489	2,548	3,291	637	25.0%	1,911
Beef & beef products	31	56	72	14	25.0%	42
Other products						
Dairy products	569	865	1,030	91	10.5%	774
Ethanol, incl. bev. (Thousand liters)	83	127	151	0	0.0%	127
Fish products	1,234	1,876	2,236	132	7.0%	1,744
Other products	7,022	8,865	10,307	1,046	11.8%	7,819

Note: For pork and beef, we multiply China's imports in 2020 Q1 by 4 to set trade a target in 2020, and we multiple the 2020 trade target by (1+(19.5-12.5)/24) to get the 2021 trade target.
Source: Global Agricultural Trade System data (USDA 2020a).

Table 3. China's Actual First-quarter 2020 Imports and 2020 and 2021 Targeted Trade Deal Imports (Thousand Metric Tons)

Commodities	2017	2020 target	2021 target	2020 Q1	Percentage purchased in 2020 Q1	Exports needed in April-December 2020
Key crops						
Soybeans	31,689	48,194	57,436	2,821	5.9%	45,373
Cotton	533	811	966	165	20.3%	646
Grain sorghum	4,604	7,001	8,344	648	9.3%	6,353
Wheat	1,514	2,303	2,745	0	0.0%	2,303
Corn	826	1,256	1,497	1	0.1%	1,255
Rice	1	1	1	0	0.0%	1
Soybean meal	14	21	25	3	14.3%	18
Soybean oil	30	46	55	0	0.0%	46
Key meat products						
Pork & pork products	275	1,076	1,390	269	25.0%	807
Beef & beef products	3	8	10	2	25.0%	6
Other products						
Dairy products	383	582	693	55	9.5%	527
Ethanol, incl. bev. (Thousand liters)	209,072	317,964	378,943	165	0.1%	317,799
Fish products	409	622	742	49	7.9%	573

Source: Global Agricultural Trade System data (USDA 2020a).

Assessing China's Potential 2020 Agricultural Imports

We predict China's total US and non-US agricultural imports based on monthly data from January 2017 to March 2020, and then examine information on US-China price gaps of key commodities to assess China's potential US agricultural purchases for the rest of 2020.

China's Predicted 2020 Agricultural Imports

We use linear extrapolation, which accounts for seasonality and trend, and monthly GACC data (GACC 2020) from January 2017 to March 2020 to predict China's monthly US agricultural purchases from April to December, 2020. The prediction process is as follows: (*a*) we obtain the monthly *seasonal index* by averaging the imports each month and dividing the monthly average by the overall average; (*b*) we divide the actual data by the seasonal factors to get deseasonalized data and use that data to make a linear prediction to extrapolate deseasonalized imports from April to December, 2020; and, (*c*) we then multiply the predicted imports from April to December 2020 by the seasonal index to get seasonalized imports.

Considering that the 2018 trade war is seriously affecting US-China trade, we conduct our prediction using two different scenarios—with and without using 2018–2019 data. Table 4 presents prediction results. Panel A shows the predicted trade value and quantities using monthly trade data in 2017 and the first three months in 2020, while panel B shows the

predicted trade value and quantities using monthly data from January, 2017, to March, 2020. China's predicted total imports of US agricultural and related products are around $18.6 billion based on 2017 and 2020 data, and imports are about $12.7 billion based on 2017–2020 data.

Table 4. China's Predicted 2020 Agricultural Imports

|	Total imports ($Million)	US imports ($Million)	Total imports (Thousand MT)	US imports (Thousand MT)
Panel A: Imports based on seasonality and trend in 2017 and 2020 Q1				
Corn	1,326	27	6,300	352
Soybeans	34,426	6,231	87,831	16,092
Cotton	47	4	1,191	283
Sorghum	347	313	1,342	1,204
Pork	5,838	845	2,335	405
Beef	7,846	119	1,541	9
Total agricultural and related products	-	18,599		
Panel B: Imports based on seasonality and trend in 2017–2019 and 2020 Q1				
Corn	1,672	27	8,332	352
Soybeans	29,129	10,820	72,887	26,970
Cotton	25	0	1,981	299
Sorghum	48	0	1,342	1,204
Pork	12,164	2,747	2,956	588
Beef	13,326	119	2,068	13
Total agricultural and related products	-	12,669		

Note: Author's estimation based on monthly data.

Although our prediction that accounts for seasonality and trend indicates that China has fallen fell far behind the trade targets, there are several positive signals that China will accelerate its purchases in the future. These signals include large US-China price differentials of key commodities and China's announcement of purchases of corn, soybeans, and cotton. In addition, chapter 3, article 3.1 of the phase one deal indicates that the United States and China should not employ trade barriers as a means of preventing the full utilization of agricultural tariff-rate quota. Therefore, China might also increase its purchase from the United States due to the removal of these trade barriers, which is especially important for corn as China has the option of imposing a restrictive duty once imports reach 7.2 million tons (Li et al. 2018).

US-China Price Differentials
Examining US-China price differentials of agricultural products is useful to assess market drivers that might influence trade for the rest of 2020. Figures 3a–3c present the daily prices of corn, soybeans, and cotton in China and the United States from January 20 to April 30, 2020, based on data from the Ministry of Agriculture and Rural Affairs of China (MARAC) (MARAC
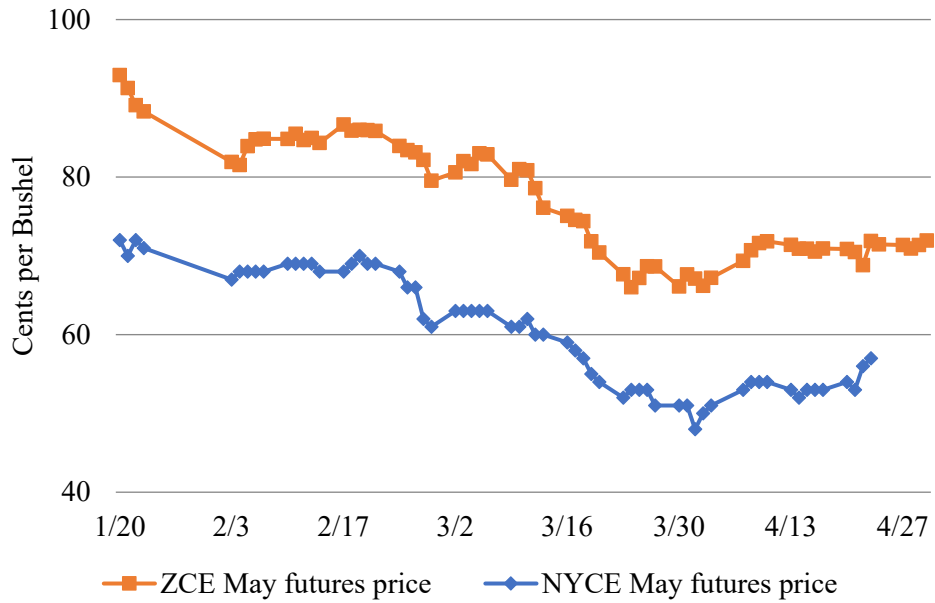
2020). China's prices of corn and soybeans are always higher than US prices, and the price gaps are widening, indicating strong motivation for China to import corn and soybeans from the United States later this year.
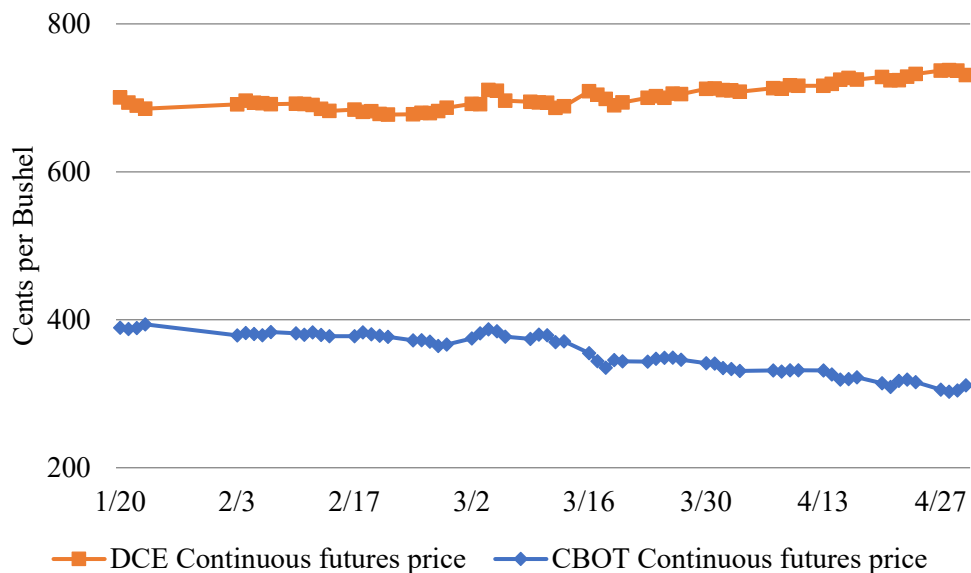
Figure 4a. Daily US and China corn prices, January–April 2020.
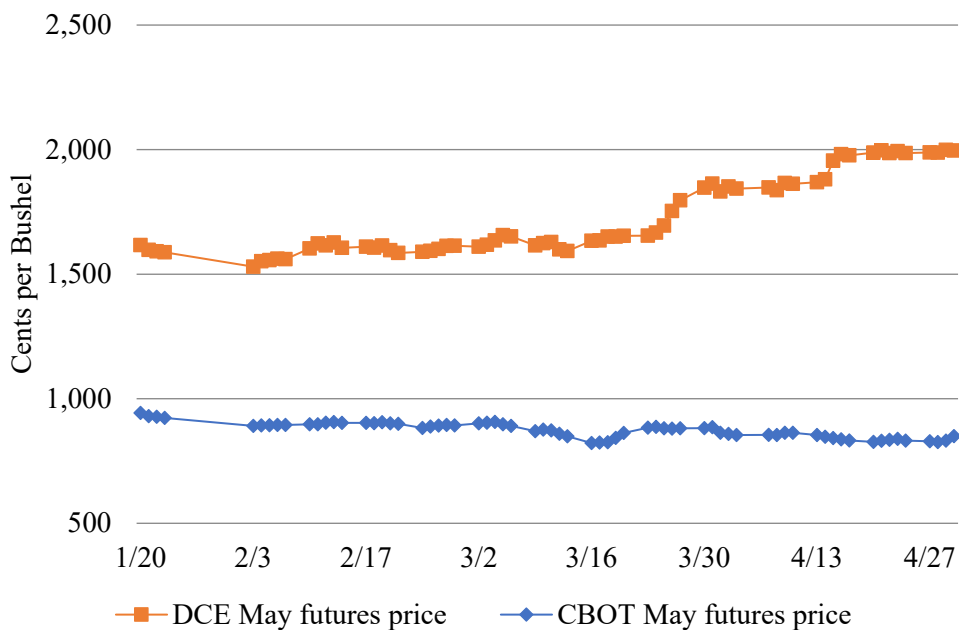

**Figure 4b. Daily US and China soybean prices, January–April 2020.**

Figure 4c. Daily US and China cotton prices, January–April 2020.

As for meat products, we collected China's weekly pork and beef wholesale prices from January 1, 2019, to April 30, 2020, from MARAC (MARAC 2020) and US prices from USDA Agricultural Marketing Services (USDA 2020d). In 2020, pork and beef prices in China are much higher than in 2019. Considering that China has a strong demand for pork and beef due to the ASF outbreak, China is very likely to import large quantities of pork and beef this year. The recent price spikes in US pork and beef prices in April are due to meat processing plant shutdowns from the COVID-19 pandemic.
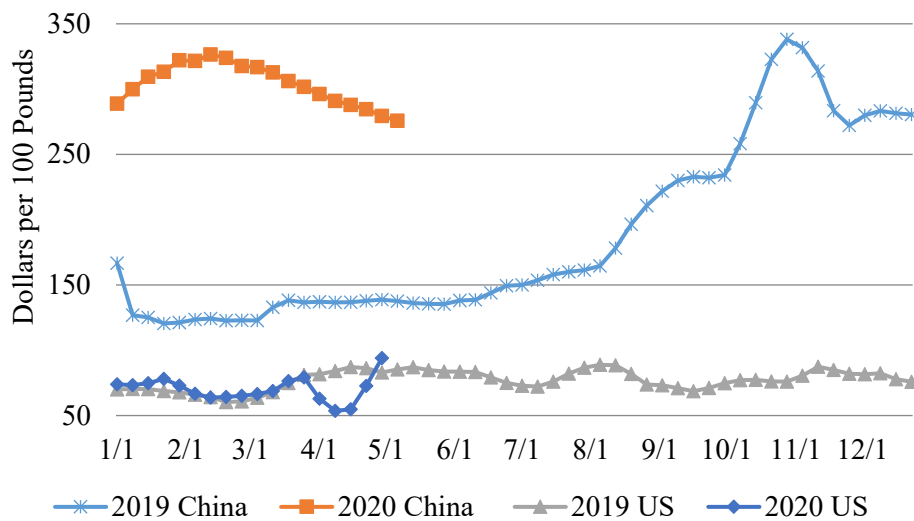
Figure 4d. Weekly US and China pork prices, 2019–2020.
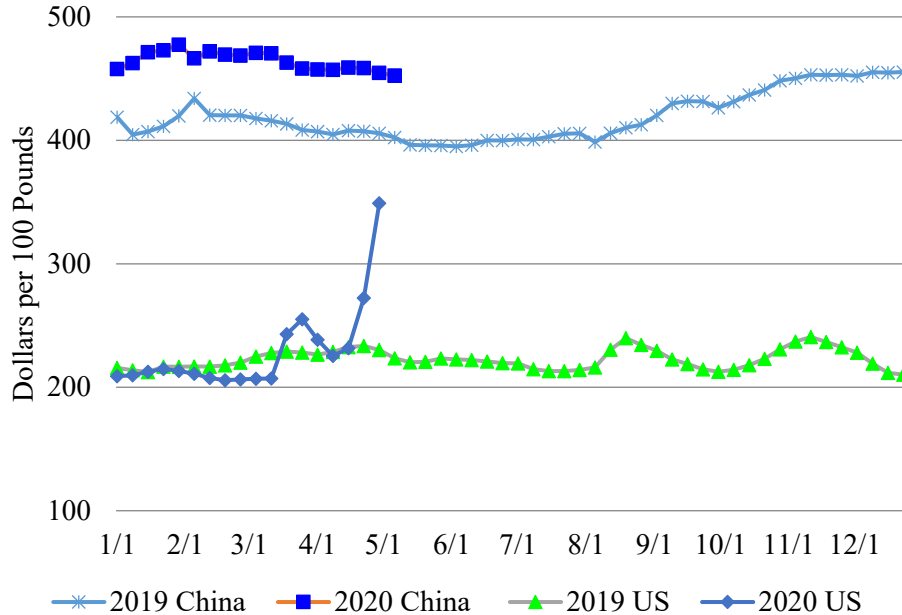
Figure 4e. Weekly US and China beef prices, 2019–2020.

Overall, the large price differentials between key commodities in China and the United States shows that market signals support an acceleration of China's purchases of US agricultural commodities.

Conclusions

We present basic descriptive statistics of China's agricultural imports from US and non-US countries through the first quarter of 2020 and find modest evidence that China is making efforts to fulfill its phase one obligations. For example, China is importing large amounts of cotton, sorghum, soybeans, and pork from the United States; however, China is importing a larger portion of its agricultural products from non-US countries than it did in 2017. It may take some time for China to reorient its imports to 2017 market shares.

We find several positive signs for US agriculture. First, the US-China price differential for key commodities, including corn, soybeans, pork, and beef, recently increased, which indicates an opportunity for China to import more agricultural products than in 2017. In addition, there is indication that China plans to import large quantities of corn, starting in October, as the domestic supply gap widens. China also plans to purchase 20 million tons of corn, 10 million tons of soybeans, and one million tons of cotton to increase its national reserve. China is also making regulatory changes as per the phase one agreement, including expanding its internal list of US beef and pork products eligible to enter its ports, removing references to age restrictions on beef and beef products, and updating its lists of US facilities eligible to export distillers dried grains with solubles (USTR 2020). In addition, both the United States and China agree both sides are making good progress and expect to meet their phase one obligations in a timely

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manner. Therefore, China will likely accelerate its purchases in the rest of 2020. However, overall trade prospects are still quite uncertain and depend on COVID-19's impact on various logistical channels.

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