IFPRI Discussion Paper 02085

December 2021

China's Accession to the WTO and its Impact on Global Agricultural Trade

Joseph W. Glauber

Markets, Trade, and Institutions Division

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

The International Food Policy Research Institute (IFPRI), a CGIAR Research Center established in 1975, provides research-based policy solutions to sustainably reduce poverty and end hunger and malnutrition. IFPRI's strategic research aims to foster a climate-resilient and sustainable food supply; promote healthy diets and nutrition for all; build inclusive and efficient markets, trade systems, and food industries; transform agricultural and rural economies; and strengthen institutions and governance. Gender is integrated in all the Institute's work. Partnerships, communications, capacity strengthening, and data and knowledge management are essential components to translate IFPRI's research from action to impact. The Institute's regional and country programs play a critical role in responding to demand for food policy research and in delivering holistic support for country-led development. IFPRI collaborates with partners around the world.

AUTHORS

Joseph W. Glauber (j.glauber@cgiar.org) is a Senior Research Fellow in the Markets, Trade, and Institutions Division, International Food Policy Research Institute, Washington, DC.

ABSTRACT

China’s rapid rise as a leading global exporter of manufacturing goods since its accession to the WTO in 2001 has been the focus of both admiration and, increasingly, concern, but China is also a large importer of goods, particularly agricultural products. Since China's accession to the WTO, China agricultural exports have increased by 8 percent annually while imports have risen by almost twice that rate. China has become the world's largest importer of agricultural products and the first or second largest destination for many of the world's top agricultural exporters such as the US, Brazil, Australia, New Zealand, Canada and Argentina. This paper examines the evolution of China's agricultural trade since accession and discusses how agricultural trade policy and domestic support policies have evolved, with particularly emphasis on China's experience as complainant and respondent in WTO trade disputes.

Keywords: Agricultural trade, China, WTO, dispute settlement

ACKNOWLEDGMENTS

This paper was prepared as a preliminary draft chapter for inclusion in a forthcoming book on ***China & The WTO: 20 Years On***, edited by Henry Gao, Damian Räss, and Ka Zeng. The author would like to thank IFPRI colleagues Rob Vos, David Laborde and Valeria Pineiro, and participants in the 2021 World Trade Forum seminar on China & the WTO: 20 Years On for their helpful comments. All errors and omissions are the author's.

ACRONYMS

AoA	Agreement on Agriculture
DSB	Dispute Settlement Body
DSU	Dispute Settlement Understanding
MFN	Most Favoured Nation
OECD	Organization for Economic Cooperation and Development
PSE	Producer Support Estimate
SPS	Sanitary and Phytosanitary
STEs	State Trading Enterprises
TRQs	Tariff Rate Quotas
USDA	US Department of Agriculture
USITC	US International Trade Commission
WTO	World Trade Organization

Introduction

China’s rapid rise as a leading global exporter of manufacturing goods since its accession to the WTO in 2001 has been the focus of both admiration and, increasingly, concern (Mavroidis and Sapir 2021). But it is sometimes overlooked that China is also a large importer of goods, particularly agricultural products. Since China's accession to the WTO, China agricultural exports have increased by 8 percent annually while imports have risen by almost twice that rate. China has become the world's largest importer of agricultural products and the first or second largest destination for many of the world's top agricultural exporters such as the US, Brazil, Australia, New Zealand, Canada and Argentina.

Under terms of its accession agreement, China agreed to bind its agricultural tariffs at low levels relative to many other developing (and developed economies). China established tariff rate quotas (TRQs) for a number of commodities and significantly, agreed to liberalize commercial imports by phasing out or limiting the operation of state trading enterprises (STEs).

Many analyses conducted at the time of accession projected increased wheat and maize imports by virtue of the creation of tariff rate quotas and increased imports of meat and dairy products as growth in China per capita income was projected to result in shifts in diets to include more meat and dairy products (USITC 1999; Tuan and Hsin-hui 2001). Those expected gains were a primary reason why US producer groups provided large political support for passage of Permanent Normal Trade Relations with China in 2000 (Glauber and Lester 2021).

While food and agricultural disputes have accounted for almost 45 percent of total disputes brought to the WTO Dispute Settlement Body since 1995 (Bianchi 2021), agricultural disputes involving China have been relatively rare, particularly over the first 15 years of China's membership in the WTO. Since 2016, however, China's trade and agricultural policies have become an increasing focus of attention in the

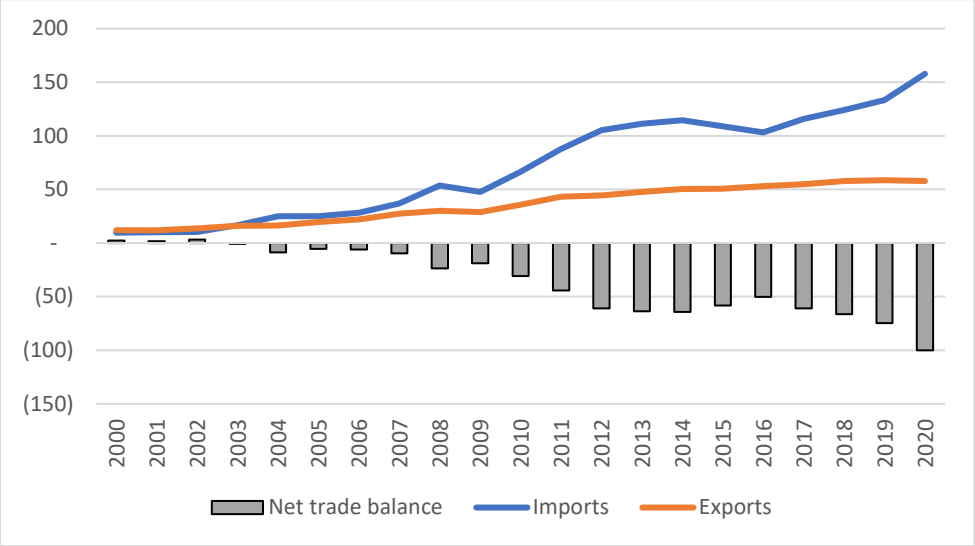
WTO. Trade wars, first with the United States, and then with Canada and Australia, have disrupted agricultural trade, and have threatened to disrupt the pattern of growth experienced over the past 20 years.

This paper examines the evolution of China's agricultural trade since accession. It will examine how China's trade has grown over the past 20 years. It will also discuss how agricultural trade policy and domestic support policies have evolved, and how trade disputes have arisen within this context, with particularly emphasis on China's experience as complainant and respondent in WTO trade disputes. Lastly, it will conclude with thoughts on the outlook for China agricultural trade and trade policy.

1. Evolution of China agricultural trade

Since 2000, China has gone from being a net exporter in agricultural products[1], with a positive net trade balance of USD 2.3 billion in 2000, to a larger net importer, with a net deficit of over USD 100 billion in 2020 (Figure 1). Exports have grown by over 8 percent annually over the past 20 years, but imports have skyrocketed, growing by an average 15 percent per year.

Figure 1: China agricultural trade 2000-2020 (USD billions)



Source: United Nations 2021.

[1] Unless otherwise specified we use the definition of agricultural products defined in Annex 1 of the Agreement on Agriculture. This excludes, for example, fish and forestry products. It also includes various degrees of processing for different commodities (WTO 2003).

Despite its large negative trade balance, China was the world's fourth largest exporter of agricultural products in 2020 (behind the EU-27, United States, and Brazil), exporting over USD 57 billion. Annual growth rates for China over the last 20 years were about one third higher than that of global agricultural export growth (8.2 percent compared to 6.5 percent). With the exception of the EU-27 and US, China's main markets for agricultural products are in East Asia (Hong Kong, Korea and Japan) and the growing markets of Southeast Asia (Vietnam, Thailand, Malaysia, Indonesia, and the Philippines) (Table 1).

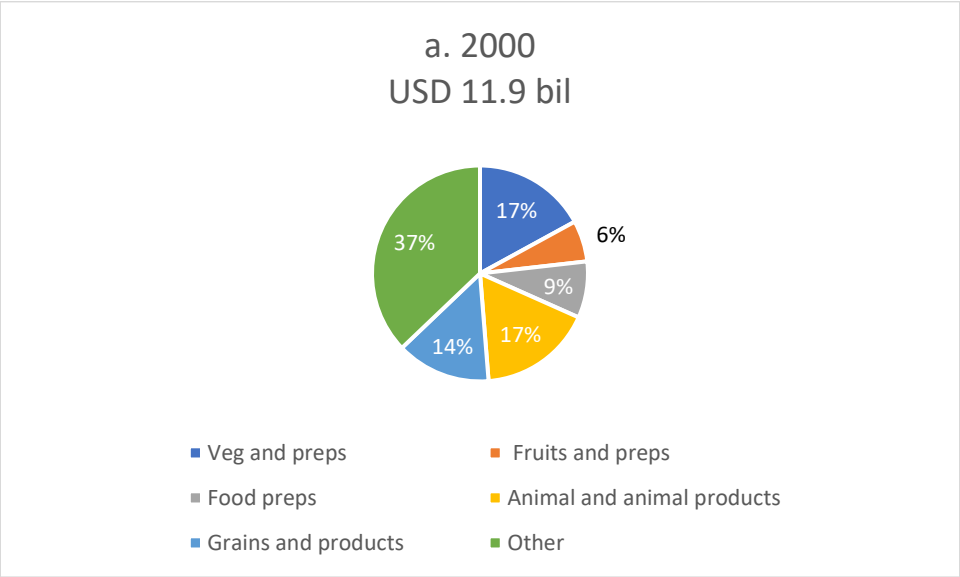
Table 1: Top 10 markets for China agricultural exports, various years

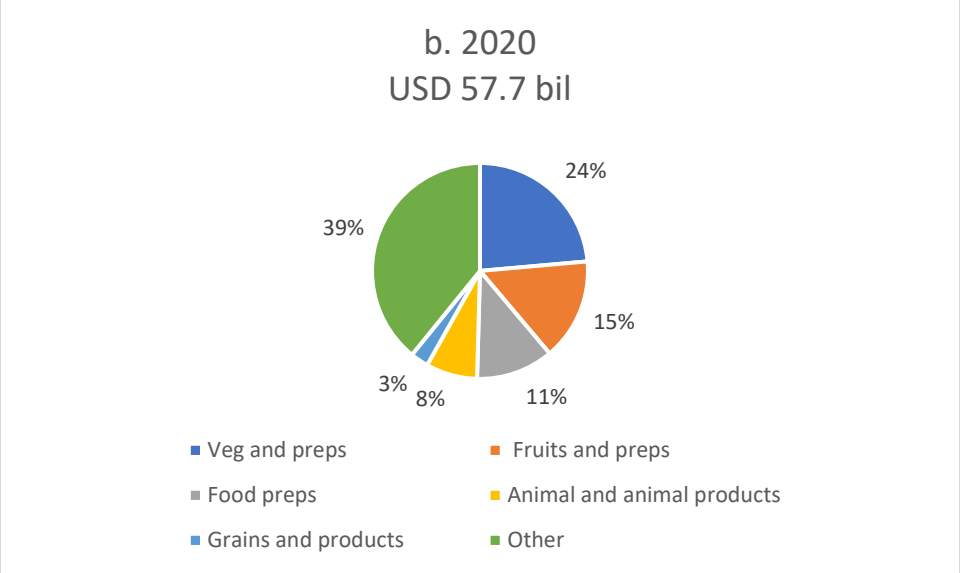
Rank	2000	2010	2020
1	Japan	Japan	Hong Kong
2	Hong Kong	European Union	European Union
3	European Union	Hong Kong	Japan
4	South Korea	United States	Vietnam
5	United States	South Korea	United States
6	Malaysia	Indonesia	South Korea
7	Indonesia	Malaysia	Thailand
8	India	Vietnam	Malaysia
9	Singapore	Russia	Indonesia
10	Taiwan	Thailand	Philippines
Percent of trade accounted for by top 10 markets	82%	73%	74%

Source: United Nations 2021.

The composition of China agricultural exports has changed over the past 20 years (Figure 2). In 2000, almost one third of China's agricultural exports were grain and grain products (14 percent of total agricultural exports) and meat (17 percent of total exports). By 2020, those categories had fallen to 3 percent and 8 percent respectively, as China became a net importer of those products by the late 2000s. At the time of accession, a number of studies (for example, Colby et al. 2000; USITC 1999; Coleman, Fry and Boughner 2003) projected that China exports of fruits and vegetables and processed foods would grow. Indeed, since 2000, exports of fruits and preparations, vegetables and preparations, and food preparations have soared, accounting for 50 percent of total exports in 2020 compared with 32 percent in 2000.

Figure 2: China agricultural exports by product type, 2000 and 2020





Source: United Nations 2021.

In 2020, China was the world's largest importer of agricultural products, importing over USD 157 billion. From 2000 to 2020, China agricultural imports grew by an annual rate of 14 percent and over that time, China became a major destination for the largest exporting countries in the world. Table 2 shows the 15 top import suppliers to China in 2020 and how China ranked as that as destination for those countries' agricultural exports in 2000 and 2020. Of the 15, only Vietnam counted China as its top destination in 2000. By 2020, China was the largest or second largest destination for 12 of the 15 top suppliers.

Table 2: Top 15 agricultural import suppliers to China, 2020

Rank	Exporter	Bilateral agricultural imports in 2020 (USD millions)	China's rank as destination for exporter's agricultural exports	
			2000	2020
1	Brazil	35,271	5	1
2	United States	22,826	7	1
3	European Union	22,148	15	3
4	Australia	8,920	3	1
5	New Zealand	8,531	6	1
6	Thailand	7,383	8	1
7	Canada	6,388	5	2
8	Indonesia	6,090	6	1
9	Argentina	5,986	4	1
10	Ukraine	3,668	27	2
11	Chile	3,361	16	1
12	Malaysia	3,148	4	1
13	Vietnam	2,760	1	1
14	Russia	2,121	7	3
15	India	1,876	17	4

Source: United Nations 2021.

At the time of China's accession, China was viewed as a large potential market for global feed grain exports (Crook and Colby 1996; U.S. Department of Agriculture 1997; Wailes et al. 1998). Lester Brown's 1995 report, *Who Will Feed China? Wake-up Call for a Small Planet* warned that China's rising consumption of animal protein and domestic resource limits would cause rapid growth in import demand and disrupt global grain markets (Brown 1995)[2]. A 1996 study by Crook and Colby reviewed several projections of China's grain imports for various years in the 21st century and found a broad range of estimates from 15 million tonnes to over 200 million tonnes (Crook and Colby 1996).

A 2000 study by the US Department of Agriculture (USDA) concluded that China's accession to the WTO would increase the value of annual US grain exports by about $1 billion (5 percent) over 2000 to 2009 (Colby et al. 2000). In its analysis of the impacts of China's accession to the United States, the United States International Trade Commission (USITC) concluded that wheat exports to China would increase by $43 million (21 percent increase) while corn and other feed grains would increase by $66 million (34 percent) (U.S. International Trade Commission 1999)[3]. By contrast, because of Chinese rice policies aimed at maintaining self-sufficiency, China remained a small, but significant net exporter of rice

[2] Similar concerns were voiced during the agricultural price spikes of 2007-2011, when China was accused of buying up foreign cropland in Africa and elsewhere to feed its population--charges that were shown to be grossly exaggerated (Brautigam 2015).

[3] Impacts assume full implementation relative to the 1998 base year (USITC 1999).

throughout the 30 years and was not viewed as growing market for global rice exports (Colby et al. 2000; Tuan and Hsu 2001; USITC 1999). The analyses projected small gains in the oilseed sector though it was projected that China would import fewer soybeans and more oilseed products such as soybean oil and soybean meal (Colby et al. 2000). Cotton exports were also projected to grow significantly[4].

Table 3 shows the growth in China agricultural imports between 2000 and 2020. What is striking is the size of annual growth over most product categories. As predicted, grains and oilseed imports increased over the period but at slightly smaller annual growth rates than the average. The relative importance of oilseeds and products declined marginally relative to other product groups, but they still account for 35 percent of total agricultural imports in 2020. Meat and dairy product imports increased by over 20 percent *per year* over the past 20 years and account for 28 percent of total imports in 2020 compared to just 10 percent of total imports in 2000. Fruit and vegetable imports increased over 18 percent per year and accounted for 10 percent of total imports in 2020 compared to 6 percent in 2000.

Table 3: The composition of China agricultural imports, 2000 and 2020 (USD millions)

Commodity	2000	2020	Annual percent change 2000 to 2020
Oilseeds, oils and fats	4,071	55,530	14%
Grains & preps	841	11,917	14%
Meats	732	31,198	20%
Dairy products	289	13,323	21%
Fruits & veg	548	15,827	18%
Cotton	74	3,563	21%
Other	3,059	26,415	11%
Total	9,614	157,772	15%

Source: United Nations 2021.

2. Drivers of China food demand

The rapid growth in China's agricultural trade has been driven by several interrelated factors, including population and income growth, urbanization, economic reforms, and trade liberalization, including reforms associated with China's accession to the WTO (Alexandratos and Bruinsma 2012; FAO 2017). Table 4 presents a number of development indicators for China showing its growth over the past 20 years.

[4] Neither the USDA nor the USITC studies made projections regarding livestock or dairy products, or fruits and vegetables though the USDA study noted that there would likely be gains in those sectors as well (Colby et al. (2000) .

While population grew annually by less than 1 percent per year, real per capita income growth averaged over 8 percent annually over the past 20 years. Rapid industrialization of the China economy resulted in increased urbanization as job growth stimulated rapid rural-to-urban migration. In 2000, less than 36 percent of China's population lived in urban areas. By 2020, over 60 percent lived in urban areas. With rising incomes, per capita food consumption[5] rose from 2815 kcal/day in 2000 to over 3200 kcal/day by 2020, while the percent of the population that is undernourished fell to less than 2.5 percent from 10 percent over the same period[6].

Table 4: Selected China indicators

Indicator	2000	2005	2010	2015	2020
Population (billions)	1.283	1.322	1.360	1.397	1.425
Rate of urbanization (percent)	35.9%	42.5%	49.2%	55.5%	61.4%
Per capita income (2015 USD)	2,194	3,391	4,712	8,067	10,431
Per capita food supply (Kcal/cap/day)	2814	2883	3044	3188	3203
Prevalence of undernourishment (percent)	10.0%	7%	2.8%	< 2.5%	< 2.5%

Source: United Nations (2019); World Bank Group (2021). UN Food and Agriculture Organization (2021).

Accompanying the significant increases in overall calorie availability have been reductions in the shares of calorie intakes from cereals and roots and tubers and increases in the shares of livestock products, vegetable oils, sugar and processed foods. Figure 3 shows China per capita meat consumption versus inflation-adjusted per capita GDP drawn from data over 1961-2018[7]. As households earn more income, they tend to spend purchase more income, particularly at lower income levels (Popkin 2014). In China, per capita income reached USD 2000 (in $2015) in the late 1990s, at which point the rate of growth in consumption began to slow and flatten out. Nonetheless, it was this shift in diets that has propelled (and

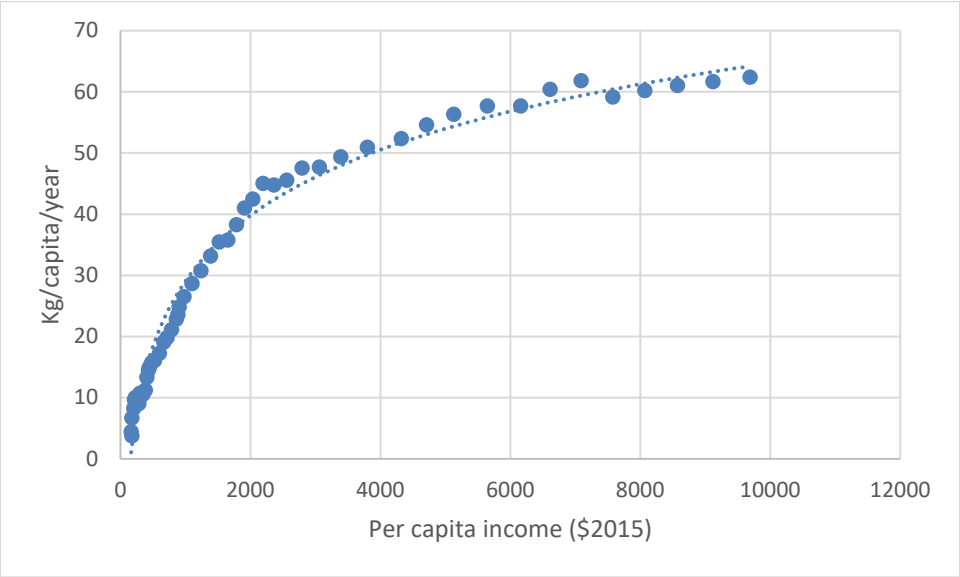
[5] Per capita food supply is a proxy measure for per capita consumption and includes both food consumption and food waste (FAO 2021).

[6] Undernourishment means that a person is not able to acquire enough food to meet the daily minimum dietary energy requirements, over a period of one year (FAO 2021).

[7] Note that FAO changed its methodology for calculating per capita food consumption (availability) in 2014 (FAO 2021).

continues to propel) the growth in imports of dairy, meats, feedstuffs, and fresh fruits and vegetables since 2000[8].

Figure 3: China per capita meat consumption and income, 1961-2018



Source: UN FAO (2021).

To meet the increased demand for meat, China's livestock production has increased in numbers and production efficiency (Gale 2015). Hog and poultry production has been transformed from "backyard operations", where households kept a few animals for home consumption and occasional sale, to more industrialized production practices,based on confined feed operations and processed feeds for inputs[9]. The growth of factory-style livestock and poultry operations has fueled demand for feedstuffs such as maize and other feed grains and soybean meal. While China grows ample supplies of food-grade soybeans (for tofu and other food products) it imports most of its feed-grade soybeans to be crushed into soybean meal and soybean oil. Feed grain imports have grown in importance as well, particularly since 2010 (Gale 2015).

The growth in China exports is expected to continue in the future (Alexandratos and Bruinsma 2012; FAO 2017; USDA/ERS 2021; OECD/FAO 2021). For example, USDA's Economic Research Service

[8] China imports fresh fruits such as cherries, durians and grapes and vegetables (primarily fresh peppers). It exports largely processed rather than fresh fruits and vegetables.

[9] Gale (2015) notes that over the period 2006- 2010, a renewed push for livestock industry modernization under the 11th Five-Year Plan prompted greater use of manufactured feed.

(2021) projects that about half of the growth in global soybean consumption over the next 10 years will be in China. It is projected that the growth in China soybean imports over 2021-2030 will account for 80 percent of the growth in global soybean imports over that period (USDA/ERS 2021). China is also expected to continue to increase its imports of meat products and is projected to account for 40 percent of the growth in global pork imports and 49 percent of the growth in global beef imports over 2021-2030 (USDA/ERS 2021).

3. China trade and agricultural policies

China supports its agricultural producers through a variety of policy instruments including tariffs and other border measures and direct price and income support measures (WTO 2021a). On occasion, the government has intervened to restrict exports to maintain lower prices as they did to restrict rice exports during the price spikes of 2007-2008 (Slayton 2009).

Market access

Prior to accession, China's imports of agricultural products were largely in the hands of China State Trading Enterprises (STEs). Import quotas were arbitrarily set on an annual and often as-needed basis. With accession, China agreed to bind its tariffs at then-applied levels[10]. As a result, the difference between applied and bound rates is relatively small compared to many other developing (and developed) countries[11]. In 2020 the average applied MFN duty across all agricultural products was 13.8 percent (compared with an average bound tariff rate of 15.7 percent). Table 5 shows average bound tariffs and average applied MFN duties across a variety of agricultural products groups (WTO/ITC/UNCTAD 2021). The oilseed sector has generally lower protection that other sectors. For example, the bound tariff rate on soybeans is 3 percent. Sectors receiving higher than average protection include beverages and tobacco

[10] Agricultural products are, with the exception of some animal products, subject to *ad valorem* applied rates (WTO 2021a)

[11] For example, the simple average bound tariff for agricultural goods for India was 113.1 percent while the simple average MFN applied rate was 34 percent in 2020 (WTO/ITC/UNCTAD 2021).

(average applied MFN duty of 18.2 percent), cereals and preparations (19.5 percent), cotton (22.0 percent) and sugars and confections (28.7 percent).

Table 5: Average China tariff rates for various agricultural product groups, 2020

Product group	Average bound tariff	Average applied MFN duty
Animal products	14.9	13.2
Dairy products	12.2	12.3
Fruits, vegetables and plants	14.8	12.2
Coffee, tea	14.9	12.3
Cereals and preparations	23.7	19.5
Oilseeds, fats and oils	11.1	10.9
Sugars and confections	27.4	28.7
Beverages and tobacco	23.2	18.2
Cotton	22.0	22.0
Other agricultural products	12.1	9.3
All agricultural products	15.7	13.8

Source: WTO/ITC/UNCTAD (2021).

China continues to operate tariff rate quotas (TRQs) on a number of tariff lines, which are administered through import licenses (WTO 2021a). China accession to the WTO was particularly significant for commodities such as soybeans where quotas were phased out and commercial traders were allowed to import agricultural productions in place of STEs. For grains, cotton and sugar, TRQs were established and while their operation was partially liberalized to allow commercial traders, STEs continued to play a significant role. Table 6 shows tariff rates (both out-of-quota and in-quota) and the tariff quota quantity for various agricultural products. Generally, fill rates for TRQs have been high for sugar, cotton and wool. Fill rates for grains, by contrast, were until recently generally low, often below 50 percent (Glauber and Lester 2021). In 2016, the United States requested consultations under the WTO dispute settlement understanding (DSU) over China's administration of its TRQs for corn, rice and wheat. The case is discussed more fully in section 4 below. In 2020, the fill rates for corn, wheat, and rice were 100 percent, 53 percent, and 55 percent, respectively, in part due to commitments under the Phase 1 agreement and in part due to strong import demand for cereals.

Table 6: Tariff rate quotas on agricultural products and their utilization, 2019-2020

Product	Out-of-quota rates	In quota rates	Tariff quota quantity	In-quota imports Tonnes		Percent of TRQ allocated to STEs
	Percent		Tonnes	2019	2020	
Wheat (7 lines)			9,636,000	3,487,625	5,151,565	90%
Wheat and meslin (4 lines)	65	1				
Wheat or meslin flour (1 line)	65	6				
Groats and meal of wheat (1 line)	65	9				
Pellets of wheat	65	10				
Corn (5 lines)			7,200,000	4,793,424	7,200,000	60%
Maize (corn) seed (1 line)	20	1				
Maize (corn), other than seed (1 line)	65	1				
Maize (corn) flour (1 line)	40	9				
Groats and meal of corn (1 line)	65	9				
Rolled or flaked corn (1 line)	65	10				
Rice (14 lines)			5,320,000	2,545,726	2,911,467	50%
Rice, other than brokens (8 lines)	65	1				
Broken rice (2 lines)	10	1				
Rice flour (2 lines)	40	9				
Meal of rice (2 lines)	10	9				
Sugar (7 lines)	50	15	1,945,000	1,945,000	1,945,000	70%
Cotton (2 lines)	40	1	894,000	894,000	894,000	33%

Source: WTO 2021a; WTO 2021c

Domestic support

Under the terms of accession to the WTO, China has no domestic support entitlements under Article 6.3 of the Agreement on Agriculture (AoA). In practical terms, support is thus capped at the *de minimis* threshold for trade distorting support set out in Article 6.4 of the AoA and in China's Schedule of Commitments, and equal to 8.5 percent of the value of production for the commodity receiving support[12]. The *de minimis* threshold is higher than that for developed countries (5 percent) but less than the *de minimis* threshold for most developing countries (10 percent). China has access to other support provisions of the AoA including Article 6.5 that exempts production limiting measures from reduction commitments (the so-called blue box) and Annex 2 of the AoA which exempts measures that are minimally production- and trade-distorting (the so-called Green Box). However, China agreed to forego

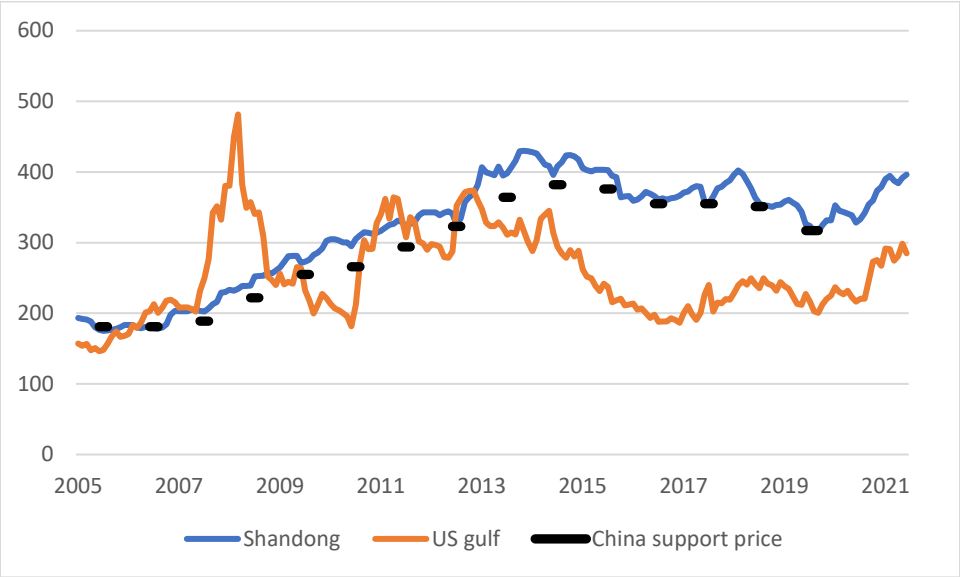
[12] Non-product specific support is capped at 8.5 percent of the total value of China's agricultural production.

recourse to Article 6.2 of the AoA which exempts investment aids and certain input subsidies from reduction commitments for developing countries.

At the time of accession, China taxed many of its agricultural producers by offering procurement prices below global market prices and imposing other duties (Gale 2013). In 2004, authorities began eliminating an agricultural tax on farmers and introduced a broad program of agricultural support that included tax reductions, direct subsidies, price supports, policy loans, expenditure on infrastructure, and intergovernmental transfers (Gale, Lohmar, and Tuan, 2005). Price floors for rice and wheat were introduced in 2004-2006 while price supports for corn, soybeans and rapeseed were introduced in 2008. Cotton price support was introduced in 2012 (MacDonald, Gale and Hansen 2015).

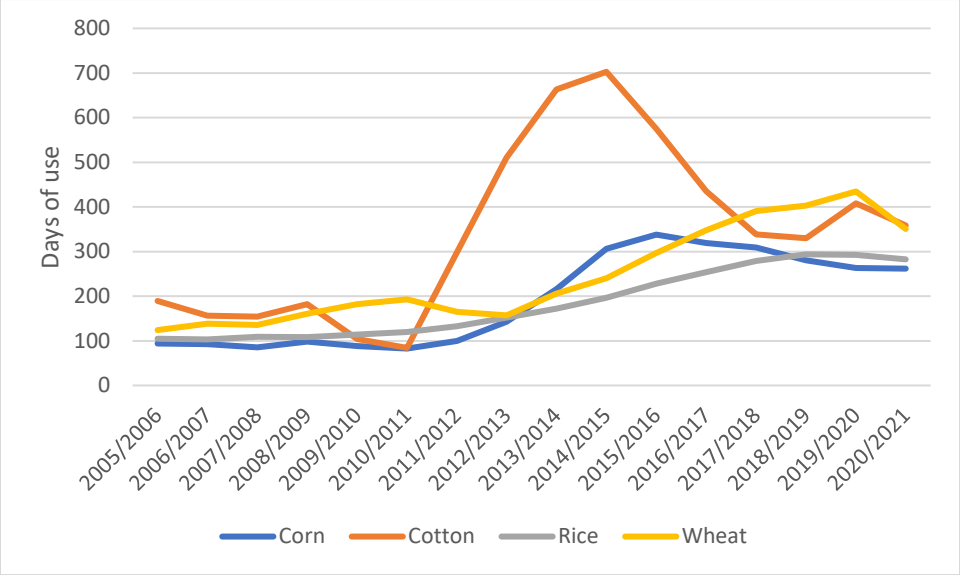
Global prices rose in the late 2000s due to several of factors including the growth of biofuels (primarily in the US), strong import demand from emerging markets like China, and production shortfalls in Australia (Abbott, Hurt and Tyner 2011; Alexandratos and Bruinsma 2012). As global prices rose over 2005-2013, China raised its support prices, but starting in 2013, global supplies had recovered and by late 2013, world market prices had fallen and were significantly less than China domestic prices, such as shown in Figure 4 for wheat. Domestic grain production was increasingly finding its way into government stockpiles to maintain prices above support levels. While there is a paucity of reliable data on China stocks, available estimates suggest that government stockpiles by the mid-2010s were ample enough to satisfy nearly a year's worth of domestic consumption (Figure 5).

Figure 4: Wheat prices (USD/tonne)



Source: Gale (2013) with updates from Gale (2021).

Figure 5: China stocks of corn, cotton, rice and wheat (measured in days of use)

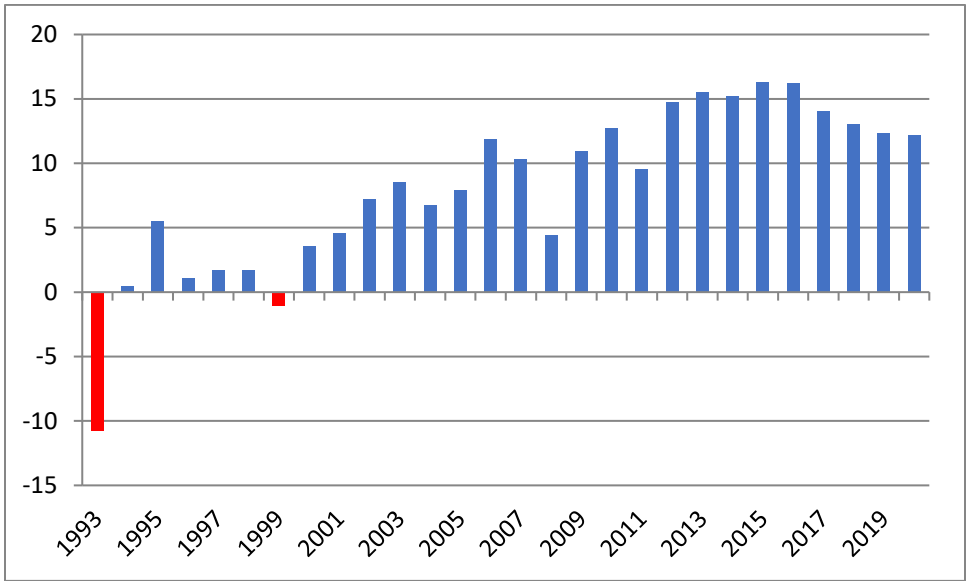


Source: US Department of Agriculture/Foreign Agricultural Service, 2021.

Reforms began in 2015 as cotton price supports began to be phased out and in 2016, corn supports were eliminated (MacDonald, Gale and Hansen 2015). Price supports for wheat and rice were maintained but lowered to minimize acquisitions. Stock levels have decreased since then as the government has taken advantage of higher prices to release grain and cotton from their stockpiles.

Figure 6 shows the evolution of China producer support as measured by the Organization for Economic Cooperation and Development (OECD) over the period 1993-2020. China's Producer Support Estimate (PSE), measured as a percent of the value of agricultural production, peaked in 2015 and 2016 at just over 16 percent[13]. Since then, their PSE has fallen relative to production value, reflecting, in part, lower support prices and other reforms, including the growth of its subsidized insurance program (Kenderdine 2018)

Figure 6: China's Producer Support Estimate (PSE) as percent of value of agricultural production



Source: OECD 2021.

In 2016, the United States requested consultations with China over its support measures for maize (corn), wheat and rice (Ahn and Orden 2021). That case is discussed in more detail below.

Export subsidies and restrictions

Exports of cotton, rice, maize, and tobacco are subject to state trading (WTO 2021a). These products, except for tobacco, are also subject to export quotas and are allocated only to state trading enterprises.

[13]The PSE represents the value of transfers to producers, unlike support under Amber, Blue, and Green Boxes that measure compliance with WTO commitments. Therefore, the value of support as notified to the WTO is neither compatible nor comparable with the values calculated by the OECD (WTO 2021a). In China's most recent Trade Policy Review, officials reiterated that "OECD data do not reflect China's official position and that they could not confirm OECD estimates; they do not agree with the methodologies or data source of the estimation." (WTO 2021a, p. 131).

Wheat is also subject to export quotas. As part of its accession, China agreed to forego the use of export subsidies for agricultural products.

In 2008, there was much concern over the use of export taxes by a number of countries, including China, in response to global price spikes in wheat and rice prices. Such actions were seen as beggaring-thy-neighbor policies that exacerbated price volatility (Slayton 2009; Martin and Anderson 2012; Bouët and Laborde Debucquet 2012). Between 1 January 2008 and 31 December 2008, China imposed interim export tariffs, ranging from 5% to 25% on 57 tariff lines (HS 8-digit) covering wheat, corn, rice, and soybeans. In China's third Trade Policy Review, Chinese officials maintained that the objective of such measures was to conserve natural resources or to protect the environment (WTO 2010). On 1 July 2009, some of these export taxes were removed or lowered, including on wheat and rice. Slayton (2009) points out that, unlike other large Asian rice exporters (such as Vietnam and Thailand), China did not prohibit exports during this period.

4. China and the WTO

Over the past 20 years, China has become increasingly active in WTO committees dealing with agriculture issues such as the Committee on Agriculture and the Sanitary and Phytosanitary (SPS) Committee. Agricultural disputes involving China, while limited in the first 15 years following China, have increased over the past 5 years as trade wars with some of its large partners have been brought to the WTO Dispute Settlement Body for adjudication.

The WTO's Committee on Agriculture oversees the implementation of the Agriculture Agreement and provides a forum for members to raise and address related questions and concerns. Its key responsibility is to monitor how WTO members are complying with their commitments. Over the first 15 years following accession China was relatively quiet in the Committee on Agriculture, raising only 13 questions of other members' notifications and policies. Over the same period, WTO members raised 231 questions

to China. Over 2017-2021, China raised 31 questions to other WTO members compared to 125 questions raised by other members of China's policies and notifications.

Of the 44 questions raised by China, all were directed at developed country members, with 25 being addressed to the United States, 10 to the European Union and 7 to Japan. Of those questions addressed to China, 141 of the 356 (40 percent) were by the United States.

Table 7: Number of questions involving China in Committee on Agriculture

Period	Questions posed to other members by China	Questions posed to China by other members
2002-2006	0	35
2007-2011	11	75
2012-2016	2	121
2017-2021	31	125
Total	44	356
Member	**Questions posed by China to:**	**Questions posed to China by:**
Australia	1	50
Brazil	0	14
Canada	0	50
EU	10	65
Japan	7	25
Korea	1	0
Pakistan	0	1
Russia	0	7
Taipei	0	2
Thailand	0	8
USA	25	141

Source: WTO 2021, *Agricultural Information Management System*.

The SPS Committee is the forum where WTO members discuss issues related to the implementation of the SPS Agreement and potential trade concerns. China has been an active member since accession. As with the Committee on Agriculture, a majority of the questions asked by China have been directed to developed economies such as the US, EU and Japan. The EU and United States have accounted for most of the questions directed to China concerning SPS issues.

Table 8: Number of questions involving China in the SPS Committee

Period	Questions posed to other members by China	Questions posed to China by other members
2002-2006	17	10
2007-2011	12	10
2012-2016	7	12
2017-2021	9	11
Total	45	43
Member	**Questions posed by China to:**	**Questions posed to China by:**
Argentina	0	1
Australia	1	5
Brazil	1	2
Canada	2	4
China Taipei	0	1
EU	15	14
India	1	6
Indonesia	1	2
Israel	0	1
Japan	8	2
Mexico	2	3
Norway	0	2
Paraguay	0	1
Philippines	1	0
Russian Federation	0	1
Ukraine	0	1
USA	15	15

Source: WTO 2021 Sanitary and Phytosanitary Management Information System

Since China acceded to the WTO in 2001, they have been involved with 69 disputes: 22 as a complainant and 47 as a respondent[14]. Surprisingly only 10 have involved agriculture and food products, about 15 percent. By contrast, Bianchi (2021) estimates that 45 percent of disputes brought by all Members before the DSB over 1995-2020 involved agricultural or food products.

China was a complainant in three disputes involving food products (Table 9). Two of those disputes involved poultry exports to the US (DS392) and the EU (DS492). The third involved shrimp exports to the US (DS 422) (Ahn and Messerlin 2014). All three disputes went to panel determination where the reports were ultimately adopted by the DSB. Despite positive rulings on claims made in the poultry cases against the EU and United States, China exports remain minimal due to SPS restrictions in those countries. US imports of shrimp from China were almost USD 340 million in 2018, but have fallen since then to less than USD 56 million in 2020 as a result of anti-dumping actions by the US Department of Commerce.

[14] China was an interested third party in 190 disputes as of 4 November 2021.

Table 9: Disputes brought by China before the WTO Dispute Settlement Body involving agricultural and food products

Dispute number	Respondent	Request for consultations	Short title	Most recent action/date
DS392	United States	17/04/2009	US – Poultry (China)	Panel report adopted 23/07/2010
DS422	United States	28/02/2011	US – Shrimp and Diamond Sawblades	Panel report adopted 23/07/2012
DS492	European Union	08/04/2015	EU - Poultry Meat (China)	Panel report adopted 19/09/2017

Source: WTO (2021c).

As of 4 November 2021, there have been seven requests for consultations with China involving food and agricultural products; all but one of those disputes were initiated within the last 5 years (Table 10). In 2011, the United States requested consultations with China concerning China's measures imposing anti-dumping and countervailing duties on broiler products from the United States (DS427). The Panel report was adopted in 2013. In 2016, the United States requested a compliance hearing under Article 21.5. That report was adopted in 2018. US chicken product exports to China totaled USD 759 million in 2020.

In 2016, the United States requested consultations with China on the level of subsidies provided to agricultural producers (DS511) and consultations on China's administration of its TRQs (DS517). In *China – Agricultural Producers* (DS511), the issue was China's provision for domestic support, in the form of market price support, in excess of its product specific *de minimis* level, provided to agricultural producers of wheat, India rice, Japonica rice and corn in 2012, 2013, 2014, and 2015 (Ahn and Orden 2021). The Panel sided with the United States on its claim that China's support had exceeded *de minimis* levels for India rice, Japonica rice and wheat and hence was in excess of its commitment level of "nil"[15] under China's Schedule of Concessions on Goods. The Panel report was adopted in 2019, but in 2020, the United States requested a compliance panel under Article 21.5 of the DSU, which has been referred to the original panel for deliberation.

[15] The Panel concluded that the reform to China's corn policy removed an essential element (the Applied Administrative Price) of the challenged corn measure, thus marking the expiry of this measure in years 2012 through 2015. As such, despite this corn measure being within the Panel's terms of reference, the Panel did not find any reason to make a ruling on this measure (WTO 2021c, p. 226)).

Table 10: Disputes brought against China before the WTO Dispute Settlement Body involving agricultural and food products

Dispute number	Complainant	Request for consultations	Short title	Most recent action/date
DS427	United States	20/09/2011	China – Broiler Products	Art. 21.5 report adopted 28/02/2018
DS511	United States	13/09/2016	China – Agricultural Producers	Art. 21.5 request referred to original panel 28/09/2020
DS517	United States	15/12/2016	China – TRQs	Art. 21.5 request referred to original panel 30/08/2021
DS568	Brazil	16/10/2018	China – Certain Measures concerning Imports of Sugar	In consultations
DS589	Canada	09/09/2019	China - Canola Seed (Canada)	Request for panel 17/06/2021
DS598	Australia	16/12/2020	China – AD/CVD on Barley (Australia)	Panel composed 03/09/2021
DS602	Australia	22/06/2021	China – AD/CVD on Wine (Australia)	Request for panel 16/09/2021

In *China-TR*Qs (DS517), the United States requested consultations with China regarding its administration of TRQs for wheat, rice and corn. A key finding of the Panel was the administration of state-trading-enterprises (STE) and non-STE portions of TRQs was inconsistent with the obligations to administer TRQs on a transparent, predictable, and fair basis, using clearly specified administrative procedures, and in a manner that would not inhibit the filling of each TRQ (Glauber and Lester 2021; WTO 2021c). The Panel Report was adopted by the DSB in 2019. In August 2021, the United States requested the DSB to establish a compliance panel under Article 21.5 of the DSU.

Four additional trade disputes involving agricultural products have been brought against China. In *China—Certain Measures affecting Imports of Sugar* (DS568), Brazil requested consultations with China in 2018 concerning (i) a safeguard measure imposed by China on imported sugar, (ii) China's administration of its tariff-rate quota for sugar and (iii) China's import licensing system for out-of-quota sugar. The European Union, Thailand and Guatemala have also requested consultations. In *China—Canola Seed (Canada)* (DS589), Canada requested consultation with China in 2019 concerning two sets of measures allegedly affecting the importation of canola seed (intended for processing and consumption, not for planting) from Canada: (a) measures suspending the importation of canola seed from two Canadian companies; and (b) measures applying enhanced inspections on all imports of Canadian canola seed. In June 2021, Canada requested a Panel to be formed.

Lastly, two disputes have been brought by Australia regarding recent actions taken by China affecting barley and wine imports from Australia. In *China – AD/CVD on Barley (Australia)* (DS598), Australia requested consultations with China in 2020 regarding its use of anti-dumping and countervail measures against barley imports from Australia. A Panel was formed in September 2021. In *China – AD/CVD on Wine (Australia)* (DS602), Australia requested consultations with China in 2021 with respect to anti-dumping and countervailing measures on bottled wine in containers of 2 litres or less imported from Australia. In September 2021, Australia requested the establishment of a Panel.

Over the next couple of years China will face Panel decisions on a number of disputes involving agricultural products including two disputes with Australia (barley and wine), one dispute with Canada (canola) and two compliance hearings with the United States (agricultural subsidies and TRQ administration). Zhou (2019) has pointed out how China has had a high rate of compliance with WTO rulings in the past. The current impasse in the Appellate Body means that Panel ruling that are appealed face an uncertain future and this may affect China's compliance with future Panel and compliance rulings.

China's trade war with the United States

In addition to trade disputes within the WTO, China has also been embroiled in a trade war with the United States (Bown and Irwin 2019; Bown and Kolb 2021). In 2018, in response to duties placed on China goods by the United States, China placed counter-retaliatory duties on a number of US agricultural exports, including soybeans. Total US agricultural exports to China fell to $9.1 billion in 2019 and soybean exports fell by almost 75 percent, to USD 3.1 billion, the lowest level since 2006 (Glauber 2020). Brazil was a big beneficiary as China sourced most of its soybean imports from them in 2018 and 2019, and while the United States was able to send some of its soybeans to markets that would have normally imported from Brazil, overall, US soybean exports fell by USD 4 billion in 2018 and USD 3 billion in 2019 and US soybean receipts in 2019fell by 12 percent from 2017 levels (Adjemian, Smith and He 2021; Carter and Steinbach 2020).

On January 15, 2020, China and the United States signed The Phase One Economic and Trade Agreement. The agreement included chapters addressing intellectual property protection, technology transfer, trade in food and agricultural products, some new market access in China for financial services, exchange rates and transparency, and a government-to-government enforcement mechanism that could result in unilaterally determined trade sanctions if one side did not live up to the agreement (Bown 2021a). China agreed to import USD 36.5 billion in US agricultural goods in 2020 and USD 43.6 billion[16]. Actual China agricultural imports from the United States in 2020 totaled USD 23.6 billion, about 64 percent of the target. Based on import data through November 2021, Bown (2021b) estimates that China is on track to achieve 87 percent of the targeted level for agriculture for 2021.

In their analysis of the Phase One Agreement, Feenstra and Hong (2021) pointed out the adverse impact of the agreement on other export suppliers to China, particularly Australia and Canada, followed by Brazil, Indonesia, Malaysia, Thailand, and Vietnam. At the WTO Committee on Agriculture meeting in March 2021, in response to questions concerning trade diversion and deviation from MFN treatment as a result of the Phase One Agreement, China assured Members that:

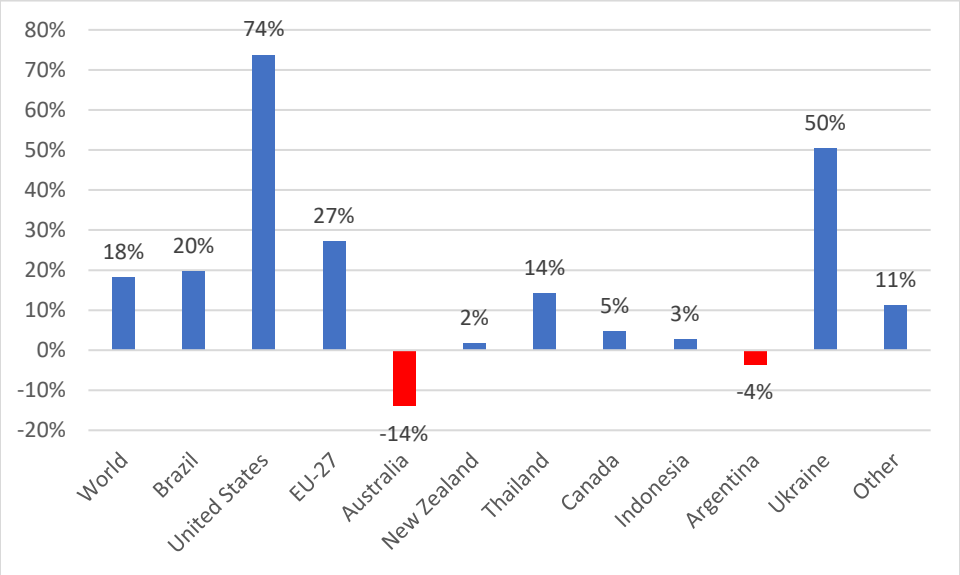
> *Purchases are based on commercial considerations and market conditions. In 2020, COVID-19 severely hit global economy, trade flow and transportation. These unexpected factors, among others, could influence the market. China is a large market. We welcome competitive products from all Members. We will continue to import products based on market conditions in line with WTO rules. As the economy recovers, we expect that the demands would increase. China will continue to facilitate trade from all Members based on market conditions and in line with WTO rules (WTO 2021).*

Figure 7 shows that China agricultural imports from the United States in 2020 increased by almost 80 percent over imports from the United States in 2019. The large increase was due to the low level of

[16] Chapter 3 of the Phase One agreement also included a number of provisions that addressed more substantive trade issues such as biotechnology approvals, SPS concerns, and TRQ administration (USDA 2020).

imports in 2019 due to the trade war. Compared to 2017—the last year before the trade war started in 2018, imports from the United States in 2020 were up only 1 percent. Moreover, China showed a very large increase in total agricultural imports in 2020, up 18 percent over 2019 levels. Agricultural imports from most of China's top 10 suppliers showed large gains. Agricultural imports from Brazil, for example, increased by USD 5.8 billion over 2019 levels (up 20 percent) while agricultural imports from the EU-27 were up USD 4.7 billion (27 percent). By contrast, agricultural imports from Australia were down due to Chinese restrictions on barley and wine imports. Overall, the data suggest that much of the increase in imports was due to factors other than Phase 1 such as the rapid recovery in hog populations in China in 2020 after herds had been sharply reduced in 2018-2019 due to African Swine Fever (USDA/FAS 2021).

Figure 7: China agricultural imports, change from 2019 to 2020



Source: United Nations, COMTRADE

Chapter 3 of the Phase One agreement also included a number of provisions that addressed more substantive trade issues such as biotechnology approvals, SPS concerns, and TRQ administration (USDA 2020). Significantly, however, supplemental duties remain on key agricultural products lending uncertainty to what is now a tenuous truce in agricultural trade relations between the two parties.

Conclusions

Twenty years after its accession to the WTO, China has become the world's largest agricultural importer and one of the top export destinations for the world's largest agricultural exporters. Population, income growth and increased urbanization has driven dietary changes and consumption growth that has outpaced domestic production and required China to import an increasingly larger share of its consumption needs. Those trends are projected to increase over the next 10 years, and likely beyond.

Accession to the WTO has been a significant factor in the growth of agricultural trade (both exports and imports). Binding tariffs at relatively low rates provided certainty to exporters and the phase out of some tariff rate quotas and operation of importing STEs has allowed commercial interests to flourish. Moreover, WTO trade disciplines have arguably shaped China's agricultural policies. China's agricultural support has fallen in recent years, in part due to adverse rulings at the WTO Dispute Settlement Body but also in part due to domestic reforms to correct unsustainable policies that distorted internal market prices.

Recent WTO disputes on agricultural support and TRQ administration point to the challenge of how to support domestic producers and be consistent with WTO trade rules. Further, trade wars with trade partners such as the United States, Australia and Canada have disrupted trade patterns, not just bilaterally, but because of the size of China's imports, have been disruptive to world trade as well. Worse, they threaten to undermine liberalization trends by raising tariff levels and placing importing decisions back into the hands of STEs and other government entities. A functioning WTO DSB helps ensure compliance to WTO trade rules, but the current impasse over appointing new members of the Appellate Body undermines its function (Glauber and Xing 2020; Bown and Irwin 2019; Mavroidis and Sapir. 2021). Time will tell whether these recent trends will be reversed but growing China food demand will likely keep pressures on the China government to keep markets open to agricultural imports.

REFERENCES

Abbott, P., C. Hurt, and W. Tyner. 2011. "What's Driving Food Prices in 2011?" Oak Brook, IL: Farm Foundation.

Adjemian, M., A. Smith, and W. He. 2021. "Estimating the market effect of a trade war: The case of soybean tariffs". *Food Policy*: 102152. https://doi.org/10.1016/j.foodpol.2021.102152

Alexandratos, N., and J. Bruinsma. 2012. World Agriculture Towards 2030/2050: The 2012 Revision. Rome: Food and Agriculture Organization of the United Nations.

Ahn, D. and P. Messerlin. 2014. United States – Anti-Dumping Measures on Certain Shrimp and Diamond Sawblades from China: Never ending zeroing in the WTO? *World Trade Review*, 13(2), 267-279.

Ahn, D. and D. Orden. 2021. "China – Domestic Support for Agricultural Producers: Does One Policy, Multiple Parameters Imply Modest Discipline." W*orld Trade Review*.

Bianchi, E. 2021. "Food Products, the WTO Dispute Settlement System and Trade Remedies." in The Road to the WTO Twelfth Ministerial Conference: A Latin American and Caribbean Perspective. V. Piñeiro, A. Campos and M. Piñeiro (eds). IICA and IFPRI. Washington, DC https://repositorio.iica.int/handle/11324/19221

Blustein, P. 2009. Misadventures of the Most Favored Nations. New York, NY: Public Affairs Books.

Blustein, P. 2019. Schism: China, America, and the Fracturing of the Global Trading System. Waterloo, Ontario: Centre for International Governance Innovation.

Bouët, Antoine, and David Laborde Debucquet. 2012. "Food Crisis and Export Taxation: The Cost of Non-Cooperative Trade Policies." *Review of World Economics / Weltwirtschaftliches Archiv* 148 (1): 209–33. https://www.jstor.org/stable/41485792.

Bouët, A. and D. Laborde. 2018. "US trade wars with emerging countries in the 21st century: Make America and its partners lose again," *The World Economy*, 41(9): 2276-319.

Bown, C. 2021a. " The US-China Trade War and Phase One Agreement." Peterson Institute of International Economics. Washington, DC. https://www.piie.com/sites/default/files/documents/wp21-2.pdf

Bown, C. 2021b. "US-China phase one tracker: China's purchases of US goods." Peterson Institute of International Economics. Washington, DC. https://www.piie.com/research/piie-charts/us-china-phase-one-tracker-chinas-purchases-us-goods

Bown, C. and D. Irwin. 2019. "Trump's Assault on the Global Trading System." *Foreign Affairs* 98 (September-October): 125-136.

Bown, C. and Kolb, M. 2021. "Trump's Trade War Timeline: an Up-to-Date Guide" Peterson Institute for International Economics, Washington DC. https://www.piie.com/sites/default/files/documents/trump-trade-war-timeline.pdf

Brautigam, D. 2015. Will Africa Feed China? New York, NY: Oxford University Pres.

Brown, L.R. 1995. Who Will Feed China? New York, NY: W.W. Norton & Co.

Carter, C. A., and S. Steinbach. 2020. The Impact of Retaliatory Tariffs on Agricultural and Food Trade. Working Paper 27147, NBER.

Castle, Stephen. 2008. "Negotiators acknowledge WTO process needs to change." The New York Times. July 30. https://www.nytimes.com/2008/07/30/business/worldbusiness/30iht-wto.4.14895269.html

Crook, Frederick W. & Colby, W. Hunter. 1996. "The Future of China's Grain Market." U.S. Department of Agriculture, Economic Research Service Agriculture Information Bulletin Number 730. https://www.ers.usda.gov/publications/pub-details/?pubid=42115.

Colby, W. Hunter, Price, Michael J. & Tuan, Francis C. 2000. "China's WTO Accession Would Boost U.S. Ag Exports & Farm Income." *Agricultural Outlook* 269:11-16.

Coleman, J., J. Fry, and D. Boughner. 2003. "The Impact of China's Accession to the WTO on U.S. Agricultural Exports." USITC Office of Industries Working Paper No. ID- 03. US International Trade Commission. Washington.

Feenstra, R. and C. Hong. 2021. China's import demand for agricultural products: The impact of the Phase One trade agreement. *Review of International Economics*, 00, 1– 24. https://doi.org/10.1111/roie.12568

Gale, F. 2013. "Growth and Evolution in China's Agricultural Support Policies." U.S. Department of Agriculture, Economic Research Service Economic Research Report Number 153. http://www.ers.usda.gov/media/1156829/err153.pdf.

Gale, F. 2015. "Development of China's Feed Industry and Demand for Imported Commodities", FDS-15K-01 US Department of Agriculture, Economic Research Service. https://www.ers.usda.gov/webdocs/outlooks/36929/55490_fds-15k-01.pdf?v=2510.2

Gale, F. 2021. Personal communication.

Gale, Fred, Bryan Lohmar, and Francis Tuan. 2005. *China's New Farm Subsidies*, WRS-0501, USDA, Economic Research Service. http://www.ers.usda.gov/publications/wrs0501/

Gale, F., J. Hansen, and M. Jewison. 2014. China's Growing Demand for Agricultural Imports, EIB-136, U.S. Department of Agriculture, Economic Research Service. Washington DC.

Gao, Henry S. 2021. China's Changing Perspective on the WTO: From Aspiration, Assimilation to Alienation. Available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3958510

Glauber, J. 2020. "US Trade Aid Payments and the WTO", *Applied Economic Perspectives and Policy* 43(2):586-603.

Glauber, J. and X. Xing. 2020. *WTO dispute settlement cases involving the agreement on agriculture, 1995–2019*. IFPRI Discussion Paper 1917. Washington, DC: International Food Policy Research Institute (IFPRI).

Glauber J. and S. Lester. 2021. "China – Tariff Rate Quotas for Certain Agricultural Products: Against the Grain: Can the WTO Open Chinese Markets? A Contaminated Experiment". *World Trade Review* 1–16. https://doi.org/10.1017/S1474745621000148

Hoekman, B., H. Horn and P. C. Mavroidis. 2009. "Winners and Losers in the Panel Stage of the WTO Dispute Settlement System." Developing Countries in the WTO Legal System, Chantal Thomas & Joel Trachtman, Eds., Oxford University Press.

Hoekman. B., H. Horn, L. Johannesson and P. Mavroidis. 2016. "The WTO Dispute Settlement Data Set 1995–2015. User's Guide" https://globalgovernanceprogramme.eui.eu/research-project/wto-case-law-project/

Kenderdine, T. 2018. "Insurance Plus Futures: Agricultural Commodity Price Reform in China". *Asia & the Pacific Policy Studies* 2(5): 331-346.

MacDonald, S., F. Gale and J. Hansen. 2015. "Cotton Policy in China" US Department of Agriculture, Economic Research Service CWS-15c-01 Washington, DC https://www.ers.usda.gov/webdocs/outlooks/36244/52550_cws-15c-01.pdf?v=9723.7

Martin, W. and K. Anderson. 2012. "Export restrictions and price insulation during commodity price booms. *American Journal of Agricultural Economics*

Mavroidis, P. and A. Sapir. 2021. *China and the WTO: Why Multilateralism Still Matters.* Princeton, NJ: Princeton University Press.

Organization for Economic Cooperation and Development (OECD). 2021. Agricultural Policy Monitoring and Evaluation. https://www.oecd.org/agriculture/topics/agricultural-policy-monitoring-and-evaluation/

OECD-FAO. 2021. *OECD-FAO Agricultural Outlook 2021-2030*. Paris: OECD Publishing. Rome: Food and Agriculture Organization of the United Nations.

Popkin, B. 2014. Nutrition, agriculture and the global food system in low and middle income countries. *Food Policy* 47:91–96.

Popkin, B. 2017. Relationship between shifts in food system dynamics and acceleration of the global nutrition transition, *Nutrition Reviews* 75(2): 73-82. https://doi.org/10.1093/nutrit/nuw064

Slayton, T. 2009. "Rice Crisis Forensics: How Asian Governments Carelessly Set the World Rice Market on Fire." CGD Working Paper 163. Washington, D.C.: Center for Global Development. http://www.cgdev.org/content/publications/detail/1421260/

Smith, V. H. and J.W. Glauber. 2020. "Trade, Policy and Food Security." *Agricultural Economics* 51:159–171. https://onlinelibrary.wiley.com/doi/10.1111/agec.12547

Tuan, Francis C. & Hsu, Hsin-Hui. 2001. "U.S.-China Bilateral WTO Agreement and Beyond." In *China: Agriculture in Transition*, U.S. Department of Agriculture, Economic Research Service.

United Nations, Department of Economic and Social Affairs. 2019. *World Population Prospects* https://population.un.org/wpp/.

United Nations Food and Agriculture Organization (FAO). 2017. “The Future of Food and Agriculture – Trends and Challenges.” Rome: FAO.

United Nations Food and Agriculture Organization (FAO). 2021. FAOSTAT. *Food Balances*. https://www.fao.org/faostat/en/#data

U.S. Department of Agriculture, Economic Research Service (USDA/ERS). 2021. "2021 International Long-Term Projections to 2030." https://www.ers.usda.gov/data-products/international-baseline-data/

U.S. Department of Agriculture, Foreign Agricultural Service. 2021. “PS&D Online.” https://apps.fas.usda.gov/psdonline/app/index.html#/app/home.

U.S. Department of Agriculture, Office of the Chief Economist. 1997. “Agricultural Baseline Projections to 2005, Reflecting the 1996 Farm Act.” World Agricultural Outlook Board Staff Report WOAB-97-1. https://www.ers.usda.gov/webdocs/outlooks/98720/waob-97-1.pdf?v=2436.6

U.S. International Trade Commission. 1999. “Assessment of the Economic Effects on the United States of China’s Accession to the WTO.” Publication 3229.

U.S. International Trade Commission. 2011. “China’s Agricultural Trade: Competitive Conditions and Effects on U.S. Exports.” Publication 4219.

U.S. Trade Representative. 2018. “2017 Report to Congress on China’s WTO Compliance.” https://ustr.gov/sites/default/files/files/Press/Reports/China%202017%20WTO%20Report.pdf

Wailes, E., C. Fang, and F.C. Tuan. 1998. "US–China Agricultural Trade: Constraints and Potential", *Journal of Agricultural and Applied Economics* 30(1), 113–126.

World Bank Group. 2021. *World Development Indicators*. https://data.worldbank.org

World Trade Organization (WTO). 2003. *WTO Agreements Series: 3. Agriculture*. World Trade Organization Secretariat. Geneva.

World Trade Organization (WTO). 2010. Trade Policy Review—China. WT/TPR/S/230

World Trade Organization (WTO). 2021a. Trade Policy Review—China. WT/TPR/S/415

World Trade Organization (WTO). 2021b. Agriculture Information Management System. https://agims.wto.org/

World Trade Organization (WTO). 2021c. WTO Dispute Settlement: One-Page Case Summaries 1995–2020. https://www.wto.org/english/res_e/booksp_e/dispu_settl_1995_2020_e.pdf

World Trade Organization, International Trade Centre and UN Conference on Trade and Development (WTO/ITC/UNCTAD). 2021. *World Tariff Profiles 2021*. Geneva. https://www.wto.org/english/res_e/booksp_e/tariff_profiles21_e.pdf

Zhou, W. 2019. China’s Implementation of the Rulings of the World Trade Organization. Oxford, UK: Hart Publishing.

ALL IFPRI DISCUSSION PAPERS

All discussion papers are available **here**

They can be downloaded free of charge

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
www.ifpri.org

IFPRI HEADQUARTERS
1201 Eye Street, NW
Washington, DC 20005 USA
Tel.: +1-202-862-5600
Fax: +1-202-862-5606
Email: ifpri@cgiar.org