

SECTION 3: CHINA'S AGRICULTURAL POLICIES: TRADE, INVESTMENT, SAFETY, AND INNOVATION

Key Findings

- Food and agriculture play an important role in the U.S.-China trade relationship. In 2017, U.S. agricultural and agriculture-related exports were the United States' second-largest category of overall U.S. goods exports to China, accounting for roughly \$24 billion; the U.S. agricultural surplus with China reached \$13.3 billion that year.
- China has a relative paucity of water and arable land, while the United States has both in abundance, suggesting the United States and China should be natural trading partners in agricultural products. However, U.S. exports are constrained by Chinese restrictions and unfair trade practices.
- China has repeatedly used duties and unscientific food safety barriers against U.S. agricultural products to protect its domestic farmers, retaliate against U.S. trade actions, or prompt a U.S. concession in a trade negotiation. In particular, Beijing has frequently targeted U.S. products that are highly reliant on China's market for retaliatory duties. Soy and sorghum are especially vulnerable to retaliation; in 2017, 82 percent of U.S. exports of sorghum and 57 percent of U.S. soybean exports went to China.
- Under its World Trade Organization (WTO) accession protocol, China agreed to allow quotas of foreign rice, wheat, and corn into the country at a 1 percent tariff (known as tariff-rate quotas, or TRQs). All imports beyond these quotas are subject to a prohibitive 65 percent tariff. However, the Chinese government pursues a policy of self-sufficiency in rice, wheat, and corn, and provides generous subsidies to domestic farmers to the disadvantage of foreign producers. The Chinese government also applies TRQs in an opaque and managed way that ensures the quota is never met, which restricts access for U.S. farmers and violates China's WTO commitments.
- China appears reluctant to rely on its current agricultural trading partners (such as the United States) for its food imports, and has attempted to diversify its imports to new markets through promotion of foreign agricultural investment and its Belt and Road Initiative. While these efforts have been largely unsuccessful to date, there may be negative long-term effects on U.S. agricultural exports as Beijing gets better at carrying out its diversification strategies.

- Chinese policies governing genetically modified organisms (GMOs) limit U.S. agriculture export opportunities in two important ways. First, because China broadly closes its borders if it detects unapproved GMO imports and because it is difficult to keep GMOs and conventional crops separate, U.S. firms do not widely release new GMOs in the United States or overseas without Chinese approval. Second, as China lags several years behind the rest of the world in approving GMOs, it holds back new U.S. GMOs long after they are approved in other countries. This slows U.S. agricultural productivity and puts past innovation at risk as pests and weeds acquire immunity to current biotechnology products.
- Since 2014, the United States has engaged with China on its biotech approval process through multiple rounds of high-level bilateral talks. While the Chinese government made commitments to improve its biotechnology regulatory system, it has either not carried out promised changes or has implemented them in a marginal way that did nothing to reform structural problems.
- The Chinese government is investing significant resources into boosting Chinese innovative capacity in biotechnology and genomic sequencing. China appears to be particularly competitive with respect to new gene-editing technology such as CRISPR-Cas9 (CRISPR), a new tool for genetic editing that dramatically lowers the cost of genetic modification. The competence of Chinese firms in new genetic tools such as CRISPR and their ability to quickly sequence genomes may help them become more competitive in agricultural research as CRISPR technology is applied to developing new crop strains.
- U.S. agricultural biotechnology firms have been the target of Chinese corporate espionage, and U.S.-developed GMOs appear to be grown in China without authorization despite Chinese laws banning their cultivation.
- Since major food safety outbreaks in 2007 and 2008, China's food safety laws have improved. However, implementation of these laws remains a challenge due to shortfalls in China's inspection capacity and the large number of small Chinese agricultural firms.

Recommendations

The Commission recommends:

- Congress direct the U.S. Department of Agriculture to identify the extent to which China's asynchronous biotech review and approval system for agricultural products adversely impacts U.S. industry. As part of its review, the U.S. Department of Agriculture should work with the Office of the U.S. Trade Representative to seek bilateral or multilateral measures, as appropriate, to address these impacts.
- Congress direct the U.S. Department of Agriculture, in collaboration with the U.S. Food and Drug Administration, to prepare an annual report on its technical engagement with China on

food safety, inspection, mechanisms for addressing sanitary and phytosanitary problems, and any technical assistance provided to China to improve its food safety inspection regime.

Introduction

While China is the United States' second-biggest market for agricultural goods behind Canada, its large population and dearth of water and arable land suggest U.S. agriculture exports to China should be greater. Unfortunately, U.S. exports have been constrained by Chinese policy for a number of reasons. First, China's longstanding goal of food self-sufficiency disadvantages U.S. farmers through domestic subsidies, in violation of its commitments to the World Trade Organization (WTO). Second, China uses access to its agricultural market to retaliate against U.S. trade measures and as a bargaining chip in negotiations. Finally, China uses its system of tariff-rate quotas as a tool to manage imports of U.S. cereals.

Because China closes its borders if it detects nonapproved agricultural biotechnology imports, and because U.S. biotech firms bear legal and financial responsibility for agriculture shipments seized by Chinese authorities in such situations, U.S. biotech firms do not fully release new genetically modified seeds without Chinese approval. As China's approval process for genetically modified organisms (GMOs) lags behind the rest of the world by several years, China's biotechnology policies threaten U.S. agricultural innovation and productivity by halting the global deployment of new U.S. GMOs.

China's food safety laws have improved since the melamine scandals of 2006 and 2008, and fewer major food safety incidents have occurred. However, China's capacity and the authority of Chinese regulators to enforce food safety laws is lacking. As China is the third-largest supplier of food products to the United States, gaps in China's food safety screening regime could expose U.S. consumers to unsafe products, requiring careful monitoring by U.S. agencies.

This section examines China's agricultural policies and how they affect U.S. farmers, agricultural innovation, and the safety of Chinese food exports. It draws on the Commission's April 2018 hearing on China's agricultural policies, unclassified briefings with U.S. officials, consultations with agriculture and food safety experts, and open source research and analysis.

U.S.-China Agricultural Trade

China must feed a fifth of the world's population with less than a tenth of the world's arable land* as consumer demand for high-quality food and animal protein expands—a demand U.S. farmers are well positioned to fill. Agriculture and food products play a key role in the U.S.-China trade relationship, despite Chinese restrictions on U.S. imports. While the United States ran a \$375.6 billion overall trade deficit in goods with China in 2017, it enjoyed a \$13.3 billion

*China accounts for nearly 20 percent of the world's population but only 8.3 percent of global arable land. The country also faces a mismatch in its limited water resources, which are heavily concentrated in the south far away from China's agricultural production in the north. China's per-capita consumption of resource-intensive meat products (e.g., beef, poultry, sheep, and pork) has increased 37 percent from 1999 to 2017. World Bank Open Data. <https://data.worldbank.org/>; Organization for Economic Cooperation and Development, "OECD Data: Meat Consumption," June 25, 2018.

surplus in agriculture and agriculture-related products.* China imports more food and agriculture products from the United States than from any other country in the world, and exports to China are second only to Canada in terms of their importance for U.S. farmers. In 2017, exports to China accounted for \$24 billion, or roughly 15 percent of U.S. global agriculture and agriculture-related exports (exports to Canada were valued at \$24.7 billion that year).¹ Agriculture and agriculture-related products are the second-biggest category of U.S. exports to China overall (18.5 percent), with transportation equipment (\$29.5 billion or 23 percent) taking the top spot.²

Following China's accession to the WTO in 2001, U.S. agricultural exports to China rose by an average of \$1.25 billion per year (see Figure 1).³ However, growing market restrictions introduced by the Chinese government are putting U.S. exports at risk. For example, between 2012 and 2017, U.S. agriculture and agriculture-related exports to China fell from \$28.6 billion to \$24 billion—a 16 percent decline—driven, in part, by trade restrictions such as China's retaliatory tariffs on dried distillers grains[†] and China's rejection of U.S. corn over GMO safety concerns (for more on Chinese market restrictions, see "China's Restrictions on U.S. Agricultural Exports" later in this section).⁴

Figure 1: U.S. Agriculture and Agriculture-Related Exports to China, 1997–2017



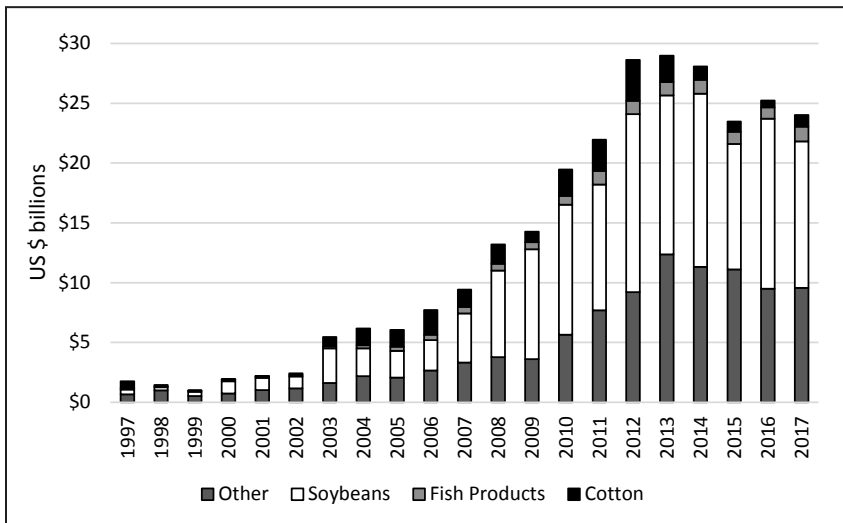
Source: U.S. Department of Agriculture Foreign Agricultural Service, *Global Agricultural Trade System Online*, October 2, 2018.

*This section uses the broadest possible definition of U.S. agriculture and agriculture-related products, and includes bulk products (e.g., soybeans and wheat), agriculture-related products (e.g., seafood and forest products), consumer oriented products (e.g., fruit, pork, and nuts), and intermediate products (e.g., hides, vegetable oils, and live animals). U.S. Department of Agriculture Foreign Agricultural Service, *Global Agricultural Trade System Online*, October 2, 2018; U.S. Census Bureau, *USA Trade Online*, October 2, 2018.

[†]Dried distillers grains are a byproduct from distillation and ethanol production that can be used as high-protein animal feed.

For nearly two decades, soybeans dominated U.S. agricultural exports to China (see Figure 2).⁵ In 2017, exports of soybeans represented 59 percent of U.S. agriculture exports to China—in other words, they were greater than exports of all other agricultural products combined.⁶ U.S. soybean farmers are dependent on China's market. In 2017, China accounted for 57 percent of all U.S. soybean exports to the world; roughly one-third of all soybeans grown in the United States were exported to China by value.⁷ China is the world's largest importer of soybeans,* which makes it difficult for U.S. farmers to transition to other markets without lowering their prices.†

Figure 2: Composition of U.S. Agriculture and Agriculture-Related Exports to China, 1997–2017



Source: U.S. Department of Agriculture Foreign Agricultural Service, *Global Agricultural Trade System Online*, October 2, 2018.

Similar to soybeans, many other U.S. agricultural products, such as sorghum and hay, are heavily dependent on China's market and are frequent targets of Chinese retaliation (see Table 1).⁸ (For further discussion, see "Retaliatory Tariffs" later in this section.)

*For 2017–2018, China's soybean imports are estimated at 94 million metric tons, or 62 percent of total world imports (151.9 million metric tons). U.S. Department of Agriculture, *World Agricultural Supply and Demand Estimates*, September 12, 2018.

†Brazil—whose production in the 2017–2018 growing year was equivalent to the United States (119.5 million metric tons)—is expected to be a beneficiary of Chinese tariffs on U.S. soybeans, but several factors may prevent this from happening. First, Brazil's domestic soybean crush industry is expected to use up to 43 million metric tons of domestically produced soybeans, leaving only 76 million metric tons available for export. Second, soybean growing and harvesting seasons alternate between the Northern Hemisphere (September through November) and Southern Hemisphere (February through May); this means Brazil's export season will have concluded by the time Chinese tariffs on U.S. soybeans go into effect. Meanwhile, Argentina, the third-largest soybean grower in the world, is projected to produce only 37.8 million metric tons in 2017–2018. U.S. Department of Agriculture, *World Agricultural Supply and Demand Estimates*, September 12, 2018; Gustavo Oliveira, "Why China Can't Count on Brazil to Fill the Soybean Gap in its Trade Battle with the U.S.," *South China Morning Post*, June 25, 2018.

Table 1: U.S. Agriculture Products by Exposure to China's Market, 2017

Product	Export Value to China (US\$ millions)	Exports to China as Share of Global U.S. Exports	Share of U.S. Production Exported to China
Sorghum	\$839	81.6%	63%
Soybeans	\$12,253	57.1%	34%
Hides and Skins	\$899	57.3%	n/a
Hay	\$340	27%	6%
Fish Products	\$1,217	23.2%	15% (2015 data)

Source: Various.⁹

China's Food Policy

Fred Gale, who is a senior economist at the U.S. Department of Agriculture (USDA) but testified before the Commission on his own behalf, said China maintains a self-described system of “two markets, two kinds of resources” to meet its food needs. This system, adopted in 2013, allows “moderate imports” for some products while making sure China remains “basically self-sufficient in cereals and absolutely secure in rice and wheat.”¹⁰ China's original food policy, issued in 1996, called for 95 percent self-sufficiency in cereals, beans, soybeans, and tubers;¹¹ the high thresholds for soybeans, beans, and tubers have since been walked back due to China's land and water constraints. Today, the Chinese government is focused on maintaining independence in grain, particularly rice, wheat, and corn.¹²

Domestic Agricultural Support

The Chinese government supports domestic agriculture production through a series of subsidies and price supports* in violation of China's commitments to the WTO. According to U.S. Wheat Associates (a U.S. export market development organization), in 2014 China's total government support for the production of rice, wheat, and corn ranged from an estimated \$48 billion to \$110 billion, several times greater than the \$19 billion subsidy limit allowed to China by the WTO that year.¹³ These distortions have resulted in domestic overproduction and the world's largest public stockpiles of grain as the government purchases grain at artificially high prices. According to the USDA, China's rice, wheat, and corn stockpiles are estimated to equal 50 percent of all global grain stockpiles in 2018.¹⁴

China relies on imports to meet over 88 percent of its soybean consumption.¹⁵ Due to Chinese government restrictions on GMOs, the majority of imported soybeans (including from the United

*China's central government has bought domestic rice, wheat, and corn at minimum prices well above international levels. In October 2016, Beijing ended its price support for corn; however, minimum prices for rice and wheat remain in effect. Niu Shupin, “China to End State Corn Stockpiling, Free up Prices,” *Reuters*, March 28, 2016.

States) are used for animal feed* or food processing; domestic soybeans are used for human consumption.¹⁶ To support domestic soybean production, China maintains significant subsidies. According to *Dim Sums*, an authoritative blog that follows China's rural economy, in 2018 Heilongjiang Province farmers appeared to receive subsidies equal to almost half the value of their soybean crop from provincial and central authorities.¹⁷

China's price floors and stockpiles affect U.S. grain exports in two contradictory ways. First, high domestic prices† make U.S. exports more attractive to Chinese buyers, who import U.S. rice, wheat, and corn through China's import quota system, though the size of these imports is limited by the government's manipulation of its quotas (for more, see "China's Restrictions on U.S. Agricultural Exports").‡ Second, China's subsidies and price floors prioritize the domestic production of land-intensive crops better suited to production by U.S. farmers.¹⁸ In the absence of these subsidies, Chinese farmers would switch to other crops, creating greater opportunities for U.S. farmers. According to a 2016 study by Iowa State University, lifting China's domestic support policies would result in roughly \$650 million in additional U.S. wheat exports to China per year, an increase of more than 300 percent for U.S. wheat exports to China based on 2016 trade data.§ China's large stockpile also creates an incentive for the Chinese government to erect trade barriers against foreign imports as the government effectively loses money if foreign competition prevents sales from domestic stockpiles. In his testimony to the Commission, Dr. Gale suggested China's antidumping and countervailing duties on U.S. sorghum and distillers dried grains (which are substitutes for corn) may be related to government efforts to draw down China's corn stockpile.¹⁹

China's Restrictions on U.S. Agricultural Exports

Chinese farmers are protected from foreign competition by several restrictions put in place by Beijing. These restrictions include misuse of tariff-rate quotas, food safety restrictions, and tariffs and

*Although China uses the vast majority of imported soybeans for animal feed, it imports primarily whole soybeans, rather than the more value-added soybean meal. China's soybean crushing industry is the biggest in the world, and enjoys significant government support. After China liberalized soybean imports in the 1990s, the surge in soybean meal imports "reduced profit margins for soybean processors in China." To help remedy the situation, in 1999 the Chinese government "moved to encourage imports of soybeans for processing in China by restoring the VAT [value-added tax] on imported soybean meal, eliminating quotas on imported soybeans, and cutting the soybean tariff to 3 percent." Fred Gale, "Development of China's Feed Industry for Imported Commodities," *USDA Economic Research Service*, November 2015, 13; *Reuters*, "As Trade War Crushes China's Soybean Mills, U.S. Rivals Make Hay," July 27, 2018.

†At the start of the 2018–2019 growing season, global wheat prices were at \$5.93 a bushel, while the price floor set by the Chinese government was \$9.75 a bushel. China's minimum prices for corn were typically between 30 and 50 percent higher than global markets. Nigel Hunt, "Global Wheat Supply to Crisis Levels; Big China Stocks Won't Provide Relief," *Reuters*, August 22, 2018; Niu Shupin, "China to End State Corn Stockpiling, Free up Prices," *Reuters*, March 28, 2016.

‡In the 2016–2017 market year, U.S. exports of rice, wheat, and corn to China were equal to 0 percent, 1.37 percent, and 0.35 percent of Chinese consumption in each crop, respectively. U.S. Department of Agriculture Foreign Agricultural Service, *China: Grain and Feed Annual*, April 4, 2018.

§U.S. wheat exports to China totaled \$205 million in 2016. U.S. Wheat Associates, "Chinese Subsidies Harm World Wheat Exporters," September 2018; U.S. Department of Agriculture Foreign Agricultural Service, *Global Agricultural Trade System Online*, April 12, 2018.

antidumping and countervailing duties enacted as retaliation for U.S. trade policy.

Tariff-Rate Quotas (TRQs) on Rice, Wheat, and Corn

Under its WTO accession protocol, China agreed to allow quotas of foreign rice, wheat, and corn into the country at a 1 percent tariff.²⁰ All imports beyond these quotas are subject to a prohibitive 65 percent tariff.²¹ While China's WTO commitments call for these quotas to serve as a transparent and predictable way for foreign farmers to access China's market, China's application of these quotas is opaque and managed in a way that restricts access for U.S. farmers and protects domestic farm interests.²² China's underutilization of TRQs serves as a trade barrier and is in violation of China's WTO commitments.²³ In December 2016, the United States brought a case against China's TRQ management at the WTO; the case is still ongoing.²⁴

Most of China's quotas are allocated to state-owned trading enterprises;* however, these enterprises never use all of the quotas allocated to them, denying U.S. exporters valuable market opportunities. For example, in 2017 only 39 percent of the corn quota and 45 percent of the wheat quota were utilized (see Table 2). Beijing chronically underutilizes TRQs to restrict the volume of grain imports that may compete with domestic stockpiles. Chinese state-owned enterprise (SOE) Sinograin has described use of TRQs as a way to "manage" the flow of grain into China, importing grain to supplement domestic shortfalls rather than expose Chinese producers and retailers to foreign competition.²⁵ According to Dr. Gale, Sinograin attempts to isolate imported grain from the domestic market by storing it separately for designated purposes.²⁶

Table 2: Utilization of Chinese TRQs, 2012–2017

	2012	2013	2014	2015	2016	2017
Wheat	38%	57%	31%	31%	35%	45%
Rice	44%	42%	48%	63%	66%	75%
Corn	72%	45%	36%	66%	44%	39%

Source: Office of the U.S. Trade Representative, *China-Tariff Rate Quotas for Certain Agricultural Products*, April 3, 2018.

Food Safety Restrictions

China restricts imports of some U.S. food and agriculture products on food safety grounds, which in some cases appear to be linked to Chinese trade goals or retaliation against the United States rather than scientific standards. For example, according to Bill Westman, senior vice president of international affairs at the North American Meat Institute, Chinese officials have informed

*Ninety percent of wheat quotas, 60 percent of corn quotas, and 50 percent of rice quotas are allocated to state trading enterprises. Office of the U.S. Trade Representative, *China-Tariff Rate Quotas for Certain Agricultural Products*, April 3, 2018; U.S. Wheat Associates, "Submission in Response to Notice USTR-2016-0012-0001," September 21, 2016; Office of the U.S. Trade Representative, *China-Tariff Rate Quotas for Certain Agricultural Products*, April 3, 2018.

his organization on multiple occasions that Beijing will not consider easing safety restrictions on U.S. beef and poultry imports until the United States certifies Chinese poultry as safe for U.S. consumers.*

- *Beef*: In 2003, Chinese authorities banned imports of U.S. beef after one cow in Washington State tested positive for bovine spongiform encephalopathy (BSE, also known as mad cow disease).²⁷ Despite relatively few cases of BSE in the United States,† China continued to ban U.S. beef until 2017, when it agreed to allow U.S. imports under a stringent safety protocol.²⁸ This concession was granted shortly after the USDA made progress toward accepting Chinese poultry by proposing to add China to a list of countries eligible to export domestically slaughtered poultry to the United States.²⁹
- *Poultry*: The Chinese government has banned U.S. poultry since 2015, claiming fears of avian influenza. This ban appears to be contrary to scientific standards and accepted international practices.³⁰ For example, while only two farms in the United States were affected by avian influenza in 2015, China issued a blanket ban on all U.S. poultry, unlike other countries, which only banned U.S. poultry raised near the affected farms.³¹ Beijing has also maintained its ban for three years, while most other countries lifted their restrictions after 12 months.³²
- *Pork*: U.S. pork exports to China have been affected by China's ban on the feed additive ractopamine, a compound widely used by U.S. pork producers.‡ Beijing banned ractopamine in 2002 after several Chinese consumers were poisoned by domestic use of clenbuterol, a related but more dangerous compound that is banned in the United States.³³ Chinese experts maintain that a complete ban on ractopamine is the only practical way to ensure food safety, as China has too many food producers to inspect.³⁴ However, China's import rejection data suggest enforcement of the import ban is related to trade friction with the United States. Rather than rising or falling with trade flows, the vast majority of China's pork rejections have been levied against U.S. pork during the summer and fall of 2007, after the United States introduced safety curbs on Chinese seafood.³⁵

*China first applied for a safety evaluation to export poultry to the United States in 2004. Currently, Chinese firms can export cooked meat from poultry slaughtered in the United States and other approved countries to the U.S. market, but cannot export poultry slaughtered in China to the United States. The USDA is still in the process of determining whether China's poultry slaughter system is equivalent to U.S. standards. U.S. Department of Agriculture, *Frequently Asked Questions - Equivalence of China's Poultry Processing and Slaughter Inspection Systems*, June 16, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Agricultural Policies: Trade, Investment, Safety, and Innovation*, testimony of Bill Westman, April 26, 2018.

†There have been six confirmed cases of BSE in the United States. These cases occurred from 2003 to 2018, and one case likely included a cow from Canada. By contrast, BSE has affected roughly 180,000 cattle in the United Kingdom. China maintained a ban on UK beef for 20 years before lifting it in June 2018. CNN, "Mad Cow Disease Fast Facts," May 30, 2018; Centers for Disease Control and Prevention, *BSE Cases Identified in the United States*, 2018; *Agence France-Presse*, "China Lifts Ban on British Beef Imports Triggered by 'Mad Cow Disease' More than 20 Years Ago," June 28, 2018.

‡The EU and Russia also ban the use of ractopamine. Wayne Pacelle, "This Drug, Banned in Europe, Russia and China, May Be in Your Lunch," *Reuters*, March 31, 2015.

The Smithfield Acquisition

In 2013, Shuanghui International Holdings Limited, a subsidiary of Shuanghui Group (now WH Group), acquired Smithfield, the largest U.S. pork producer, in a \$4.7 billion deal (\$7.1 billion including debt).³⁶ Because Smithfield is one of a few U.S. companies with a large share of ractopamine-free pork production, this purchase allowed China to secure a steady supply of ractopamine-free pork. In fact, the takeover was announced just weeks after Smithfield said over half of its operations would be ractopamine free.³⁷ Acquiring Smithfield also granted China access to valuable biotechnology, since Smithfield has “one of the biggest pork genetics and breeding programs in the world.”³⁸

The Smithfield purchase raised some concerns that China was trying to secure pork supplies “at the source” rather than allowing free market access to all importers.³⁹ In 2015, Smithfield accounted for 97 percent of all U.S. pork exports to China; that share fell to 76 percent in 2017.⁴⁰

The Chinese government is trying to improve domestic food safety conditions; however, part of this process includes requirements that shift inspection responsibilities onto exporting countries, potentially disrupting agricultural trade. China’s 2015 Food Safety Law requires all shipments of food into the country to receive a certification from the exporting country guaranteeing the shipment complies with Chinese standards.⁴¹ This requirement would effectively halt U.S. food and agricultural exports to China, as the United States lacks inspectors to certify every shipment to China.* The requirement is also contrary to international practices, which mandate certification only for select products based on risk.⁴² While implementation of this rule (which was slated to begin in 2017) has been delayed for two years following pushback from U.S. and EU officials, Beijing has not committed to abandoning its blanket requirement for certification.⁴³

Retaliatory Tariffs

Beijing frequently applies tariffs on U.S. agricultural products as retaliation for U.S. trade measures, some of which are not related to agriculture (see Table 3). In 2010, the Chinese government applied a tariff on imports of U.S. chicken parts in response to U.S. antidumping duties on Chinese tires, and in 2016 China applied duties against U.S. dried distillers grains in response to the United States challenging China’s subsidies for rice, wheat, and corn at the WTO.⁴⁴

*As of 2017, the U.S. Food and Drug Administration (FDA) had 190 employees stationed at U.S. ports. Alexandra Heard, Congressional Affairs Specialist, U.S. Food and Drug Administration, interview with Commission staff, February 10, 2017.

Table 3: Retaliatory Chinese Measures on Select U.S. Agriculture Products

Product	Date	Duty or Tariff
Chicken Parts	2010	105%
Dried Distillers Grains	2016	42–54%
Most U.S. Agricultural Products (see Table 4)	2018	5–25%

Source: Various.⁴⁵

In 2018, China imposed its largest set of retaliatory tariffs against U.S. agricultural products to date in response to the United States' Section 232 probes on steel and aluminum and Section 301 probe on China's intellectual property (IP) rights conditions (for more on the Section 301 probe, see Chapter 1, Section 1, "Year in Review: Economics and Trade"). In April 2018, Chinese authorities enacted a 15 percent tariff on U.S. exports of fresh fruit, nuts, and wine, and a 25 percent tariff on U.S. pork as retaliation for U.S. Section 232 duties.⁴⁶ In July, Beijing imposed a 25 percent tariff on most U.S. agriculture and agriculture-related product exports as a response to the United States' Section 301 probe.⁴⁷ In September, China imposed additional tariffs of 5 percent to 10 percent on a range of products including live animals and prepared foods.⁴⁸ Based on 2017 export data, China's tariffs affect 95 percent of all U.S. agricultural and agriculture-related exports to China (roughly \$22.8 billion out of \$24 billion) and more than 17 percent of all U.S. goods exports to China by value (see Table 4).⁴⁹

Table 4: Select U.S. Agriculture and Agriculture-Related Products Subject to Chinese Retaliatory Tariffs

Product	U.S. Exports to China, 2017 (US\$ millions)	Exports to China as a Share of Total U.S. Exports of This Product, 2017
Sorghum	\$839	81.60%
Wool	\$14	72.50%
Hides, Skins, and Leather	\$899	57.34%
Soy	\$12,253	57.12%
Ginseng	\$22	40.57%
Wood	\$2,130	34.28%
Fish Products	\$1,217	23.18%
Furs	\$45	21.70%
Cotton	\$979	16.58%
Tobacco	\$163	13.47%

Source: Various.⁵⁰

China's retaliatory tariffs target U.S. crops that are highly dependent on China's market and cannot easily transition to other markets—particularly sorghum and soybeans, which are almost wholly

reliant on China's market. China's retaliation has already adversely affected U.S. agricultural producers. For example, in July 2018 soybean prices fell 13 percent compared to 2017, hitting a ten-year low.⁵¹

On July 24, U.S. Secretary of Agriculture Sonny Perdue announced a \$12 billion relief package to support U.S. farmers impacted by retaliatory tariffs abroad.⁵² This package would issue incremental payments to soybean, sorghum, corn, wheat, cotton, dairy, and hog farmers, while allowing the USDA to purchase "unexpected surplus" of products like "fruit, nuts, rice, legumes, beef, pork, and milk," providing a buyer for those products.⁵³ No relief packages were announced for other industries affected by retaliatory tariffs.

China's Food Import Diversification

Beijing has sought to diversify its food supply from trading partners such as the United States to other countries. Shifting its food supply to countries accessible through the Belt and Road Initiative is an explicit goal of Chinese foreign policy. In 2018, the Central Committee of the Chinese Communist Party and the State Council issued a policy calling on China to "intensify China's relation of agricultural product trade with the countries and regions along 'The Belt and Road.'"⁵⁴ According to the USDA, Beijing likely seeks to diversify its sources of food imports to hedge against trade tensions with its current trading partners.⁵⁵ Given that the United States is China's largest source of agricultural imports, Beijing's effort to diversify its source of imports necessarily entails shifting to other exporting countries. (For more, see Chapter 3, Section 1, "Belt and Road Initiative.") To date, China's efforts to diversify its food imports have been largely unsuccessful.

The Chinese government has sought to diversify its food imports through overseas investment, and loans and financing:

- *Foreign direct investment (FDI)*: The stock of China's agricultural FDI overseas reached \$26 billion in 2016, according to China's Ministry of Agriculture.⁵⁶ This total likely underestimates China's agricultural investment, as many large acquisitions—such as the \$7.1 billion purchase of Smithfield Foods by WH Group or ChemChina's \$43 billion takeover of Swiss agribusiness Syngenta—are classified by the Chinese government not as agricultural investments but as technology investments.⁵⁷ Most of China's agricultural investment has targeted areas on China's periphery, such as eastern Russia and Southeast Asian countries.⁵⁸ Roughly 51 percent of China's cumulative agricultural investment is in Asia, followed by Europe (15 percent), Oceania (14 percent), Africa (12 percent), Latin America (6 percent), and North America (2 percent).⁵⁹ According to the USDA, while these investments are meant to facilitate imports of food into China, to date most of the agricultural products grown on China-invested farms are sold in the domestic country and relatively few Chinese investment projects have been profitable.*

*Analysis by Chinese researchers shows the poor performance of Chinese overseas agricultural projects can be due to several factors, including "inexperience in global markets, lack of technical

- *Loans and finance:* Beijing has provided public credit and financial incentives to facilitate foreign agricultural investment, and all three of China's major public policy banks (the China Import-Export Bank, the China Development Bank, and the Agricultural Bank of China) have pledged to provide credit for overseas agricultural investments.⁶⁰ For example, in 2013 the state-owned Bank of China provided a \$4 billion loan to WH Group (formerly Shuanghui) for the acquisition of Smithfield Foods, the United States' largest pork producer.⁶¹ In 2015, China's sovereign wealth fund formed a joint venture with China National Cereals, Oils, and Foodstuffs (a state-owned agribusiness firm) to invest overseas.⁶²

Chinese FDI in U.S. food and agriculture sectors is small.⁶³ From 2000 to 2017, Chinese firms invested \$7.5 billion in the U.S. food and agricultural sector, 95 percent of which (\$7.1 billion) was the Smithfield acquisition.⁶⁴ According to the USDA Farm Service Agency, China accounts for only 0.9 percent of all U.S. farmland held by a foreign firm or individual.*

Chinese attempts to acquire or rent farmland have provoked some public backlashes in host countries. In 2018, Australia introduced rules giving domestic buyers the first right to purchase farmland.⁶⁵ In 2017, Laos closed Chinese banana plantations in seven provinces due to excessive pesticide use that caused 63 percent of plantation workers to fall ill.⁶⁶

U.S. Concerns Regarding Chinese Agricultural Biotechnology Policies

Approval Process for GMOs

Unlike many countries, China will not begin the process of reviewing a GMO for approval until the country of origin has completed its own review process (see textbox "Chinese Government Approval Process for GMOs"). The detection of any amount of unapproved strains in grain shipment can result in a complete ban on all imports of this grain.⁶⁷ Since many agricultural crops are mixed together from different sources before they are exported, it is difficult to keep GMO seeds out of shipments bound for China. As a result, U.S. biotech firms do not widely release new GMO crops in the United States or other markets until China approves them.† In addition, China maintains a zero-tolerance policy for low-level presence (LLP) of unapproved biotechnology traits in imports, which means that a shipment of crops would be automatically rejected if any amount of unapproved GMO strains is detected.⁶⁸

personnel, poor language skills, problems with local bureaucracy, political instability, corruption ... [and] statistics that exaggerated the potential for overseas projects." Elizabeth Gooch and Fred Gale, "China's Foreign Agricultural Investment," *U.S. Department of Agriculture*, April 2018, 4–5.

* Only 2.1 percent of all U.S. farmland is held by foreign investors. As such, Chinese firms and individuals hold roughly 0.019 percent of privately held U.S. farmland. Elizabeth Gooch and Fred Gale, "China's Foreign Agricultural Investment," *U.S. Department of Agriculture*, April 2018. U.S. Department of Agriculture, Farm Service Agency, *Foreign Holdings of U.S. Agricultural Land*, December 31, 2014.

† Instead, biotech firms will only provide limited releases of their products in protected settings that can be carefully tracked. U.S.-China Economic and Security Review Commission, *Hearing on China's Agricultural Policies: Trade, Investment, Safety, and Innovation*, oral testimony of Nathan Fields, April 26, 2018.

Legal penalties incentivize biotech firms to wait for Chinese approval before commercializing new crops. Under U.S. law, biotech development firms can bear legal and financial liability for shipments seized by foreign authorities due to GMO detection. In 2017, Syngenta, the company that developed MIR-162, was ordered to pay \$217 million to Kansas farmers as recompense for releasing MIR-162 prior to receiving Chinese approval.⁶⁹ U.S. agricultural industry associations are also very reluctant to endorse new GMO crops without Chinese approval due to the risk of China closing its market to U.S. crops.

A Chinese import ban can have dramatic effects. For example, in November 2013 Chinese regulators detected traces of MIR-162 in a U.S. corn shipment, a GMO strain that was approved in the United States but not in China.⁷⁰ Chinese authorities responded by denying import permits for U.S. GMO and non-GMO corn, effectively sealing off China's market to U.S. corn farmers.⁷¹ U.S. corn exports to China fell from \$1.7 billion in 2012 to \$159.9 million in 2017—a 90 percent decrease.⁷²

Chinese Government Approval Process for GMOs

China's review and approval of GMO strains for cultivation is carried out by China's National Biosafety Committee. The committee meets only twice a year and frequently requires resubmission for review if it has questions regarding the application.* In its 2017 report to Congress on China's WTO compliance, the Office of the U.S. Trade Representative (USTR) noted that China's Ministry of Agriculture was considering "factors other than science when evaluating new biotechnology applications."⁷³

Because of these policies, China has approved fewer GMO strains than other major economies, and Chinese approvals lag several years behind the rest of the world.⁷⁴ Currently, China has approved 64 GMOs for any sort of commercial use; by contrast, the United States approved 202 GMOs, Japan 318, the EU 216, and South Korea 167.⁷⁵ In July 2017, when China last approved a U.S. GMO crop, some U.S. applications had been waiting six years for approval.⁷⁶

In his testimony before the Commission, Joseph Damond, executive vice president for international affairs at the Biotechnology Innovation Organization, said China's asynchronous review process introduces significant delays to commercialization of any given product, "limits U.S. competitiveness, reduces investment in U.S. innovation, and erodes patent life and intellectual property protection for U.S. biotechnology companies."⁷⁷

On its surface, China's biotech approval process appears to favor Chinese firms. While some U.S. GMOs have been approved by China for import, almost no foreign GMOs have been approved for

*According to Croplife International, an international trade association for agricultural innovation companies, of the ten GMOs currently under Chinese review, three have been resubmitted five times each due to questions from the National Biosafety Committee. U.S.-China Economic and Security Review Commission, *Hearing on China's Agricultural Policies: Trade, Investment, Safety, and Innovation*, written testimony of Howard Minigh, April 26, 2018.

cultivation in China,* and most are only approved for use as animal feed or as a food processing ingredient.⁷⁸ By contrast, GMOs from Chinese firms have been approved for cultivation in China and most China-developed GMOs are approved for all uses, including human consumption.⁷⁹ Chinese authorities have blocked U.S. firms from requesting cultivation approval for their GMOs in China. According to the USDA, when foreign companies submit applications for cultivation, China's Ministry of Agriculture rejects their applications on the grounds that China's FDI policies prohibit investment in biotech research or production in China.⁸⁰

In practice, however, Chinese government policies on GMO approvals are also holding back domestic innovation. Despite their protected domestic market, Chinese firms have struggled to commercialize their GMOs, due to government policy banning the planting of GMO strains and public concerns regarding GMO safety.⁸¹ In 2009, the Chinese government approved a Chinese-developed strain of insect-resistant rice for consumption and cultivation; however, following backlash from Chinese consumers, the government walked back its approval and has not approved GMO rice for cultivation since.⁸² Beijing has not approved a China-developed GMO since 2009.⁸³

Chinese Efforts to Advance Domestic Agricultural Innovation

China is the largest public spender on agricultural biotechnology, which Beijing views as a "rainy day" asset it can deploy to address food needs as China's food consumption rises.⁸⁴ While Chinese research institutions have become increasingly competitive, commercial implementation of Chinese GMOs has been hampered by the Chinese public's resistance to genetically modified food.⁸⁵ In a 2016 nationwide survey of Chinese consumers, 41.4 percent of respondents opposed GMOs, and only 11.9 percent supported their use.⁸⁶

Chinese biotechnology institutions have emerged as internationally recognized contributors to agricultural research, but have struggled to commercialize this research due to lack of government approvals for cultivation of GMO strains. From 1973 to 2001, Chinese scientists published very few agricultural biotechnology research articles in international journals.⁸⁷ Since 2007, however, China has emerged as the second-largest publisher of GMO research articles in the top ten biology journals internationally.⁸⁸ In 2002, Chinese scientists were among the first to sequence the genome for rice, and Chinese researchers have made important strides in developing insect-resistant rice and disease-resistant wheat.⁸⁹

China appears to be particularly competitive with respect to new gene-editing technology such as CRISPR-Cas9 (CRISPR). CRISPR is a new tool for genetic editing that dramatically lowers the cost of genetic modification.† From 2014 to 2017, China accounted for 42 percent of all scientific articles published on applying CRISPR tech-

*The only exception is a Monsanto strain of cotton licensed to a provincial Chinese SOE in 1997. Stuart Smyth, *Handbook on Agriculture, Biotechnology, and Development*, Edward Elgar Publishing, 2014, 328.

†While earlier genetic tools often cost several thousand dollars to use, CRISPR can be used by researchers for less than \$100. Hedi Ledford, "CRISPR, the Disruptor," *Nature*, June 3, 2015.

nology to agricultural applications, the most of any country.* The Chinese Academy of Agricultural Sciences and Chinese Academy of Sciences rank first and third worldwide, respectively, for number of CRISPR patent families† related to plant modification (see Table 5).⁹⁰

China is also very competitive in genomic sequencing (i.e., the process of determining the order of DNA molecules in an organism's genetic code), which is a necessary step for identifying genes associated with beneficial agricultural traits. Chinese biotech firms are the world's largest with respect to genomic sequencing capacity, and roughly 20 to 30 percent of the world's genomic sequencing capacity is based in China.⁹¹ The competence of Chinese firms in new genetic tools such as CRISPR and their ability to quickly sequence genomes may help them become more competitive in agricultural research as CRISPR technology is applied to developing new crop strains.

Table 5: Top Five Research Organizations by Plant-Modification CRISPR Patent Families, 2004–2017

Research Institute	Patent-Families	Location of Institute
Chinese Academy of Agricultural Sciences	39	China
DuPont	34	United States
Chinese Academy of Sciences	32	China
Broad Institute	25	United States
Massachusetts Institute of Technology	25	United States

Source: Corinne Le Buhan and Fabien Palazzoli, "Cross-Patent Landscape," *IP Studies*, January 2018.

China's government has identified biotechnology as a strategic emerging industry, and subsidizes domestic agricultural innovation "primarily through publicly funded research institutes and universities."⁹² For example, in 2008 China approved a 15 year plan for the development of new crop and animal traits through the Key Scientific and Technological Grant of China for Breeding New Biotech Varieties (the total funding for the initiative is approximately \$3.5 billion, of which half came from central and local government and half from the private sector).⁹³ According to Dr. Pray, the Chinese government also supports domestic Chinese research firms through market access restrictions (e.g., foreign investment prohibitions) and favorable biotechnology approvals.⁹⁴

Chinese agricultural innovation has also been facilitated through acquisition of foreign firms, notably the purchase of Swiss agribusiness Syngenta by the Chinese SOE ChemChina in 2017 for \$43 billion.⁹⁵ Syngenta was one of the world's largest biotech firms, with at least 96 different GMO crops approved for commercializa-

*The United States ranked second, accounting for 19 percent of all articles published over this timeframe. Agnes Ricroch, "Use of CRISPR Systems in Plant Genome Editing: Toward New Opportunities in Agriculture," *Portland Press*, November 10, 2017.

†A patent family is a set of patents from multiple countries that protect one invention. For example, if an inventor patented a new solar cell in the United States, China, Germany, and France, he would have four patents and one patent family.

tion worldwide.⁹⁶ In his testimony before the Commission, Dr. Pray noted that the Chinese government's attempt to develop an indigenous agricultural biotech industry has failed, and the "government acknowledged [this] failure ... by buying Syngenta."⁹⁷

Despite sustained government support, Chinese firms have commercialized relatively few GMO traits. Many GMO traits developed by Chinese firms are awaiting Chinese government approval, resulting in what David Talbot, senior writer for the *Massachusetts Institute of Technology Review*, refers to as a "stockpile" of unused agricultural technology.⁹⁸ According to Mr. Talbot, the Chinese government has likely refrained from approving domestic GMOs due to public concerns regarding their safety, but may implement them in the future to improve Chinese agricultural productivity.⁹⁹

Examples of Commercial Espionage against U.S. Firms by Chinese Actors

U.S. agricultural research firms have been the target of corporate espionage conducted by Chinese nationals. For example, in April 2018, Weiqiang Zhang—a Chinese scientist working in Kansas—was sentenced to ten years in U.S. prison for a 2013 theft of rice seeds designed to produce proteins for medical research from U.S. research firm Ventria.¹⁰⁰ Mr. Zhang provided the stolen seeds to staff from a Chinese research institute who traveled to the United States.¹⁰¹ U.S. Customs and Border Protection found the stolen seeds in the luggage of the Chinese staff as they attempted to depart for China.¹⁰² In 2016, another codefendant, Wengui Yan—who worked as a geneticist for the USDA at the time of the theft—admitted to lying about his knowledge of the plans to steal the seeds, and pleaded guilty to making false statements to the FBI; he is awaiting sentencing.¹⁰³ Two additional Chinese researchers have been charged in connection with this case.¹⁰⁴

In December 2016, another Chinese national, Hailong Mo, was convicted of stealing proprietary test seeds from U.S. farms across the Midwest and attempting to ship them back to China where they could be covertly cultivated and analyzed.¹⁰⁵ The stolen seeds were prototypes than can be harvested for additional plantings, unlike most commercial GMO seeds, which can only be planted once. Their theft not only represents a loss of years of research by U.S. firms, but also provides a way for Chinese actors to pirate U.S. agricultural IP.¹⁰⁶ According to U.S. firm DuPont Pioneer, the corn seeds stolen by Mr. Mo were equivalent to a loss of \$30 million and five to eight years of research.¹⁰⁷

Biotechnology Piracy in China

While U.S. firms can obtain patents for their seeds in China, the enforcement of these patents is challenging as Chinese farmers appear to be growing U.S. GMO seeds without authorization. A 2015 survey by environmental group Greenpeace found that 93 percent of samples of corn from fields in five counties in Liaoning Province contained genetically engineered traits, despite the Chinese government's ban on cultivating foreign genetically modified corn.¹⁰⁸ Several of these traits were from U.S. companies such as Monsanto,

DuPont Pioneer, and Dow Chemical, indicating that Chinese farmers obtained U.S. seeds and planted them without authorization.¹⁰⁹

According to Carl Pray, professor at Rutgers University, as much as half of the corn grown in northern China may be genetically modified corn obtained illicitly by Chinese farmers.¹¹⁰ This illicit use of U.S. seed technology by Chinese farmers affects U.S. business decisions. According to Dr. Pray, Monsanto abandoned distribution of its insect-resistant cotton in China through its Chinese partner in 2003 or 2004, having received no payments for its cotton seeds since 2001 due to widespread Chinese piracy.¹¹¹ In the event other GMO crops are approved, they would likely face similar piracy.

Safety of U.S. Food Imports from China

Historically, China has struggled with food safety scandals that have affected U.S. and Chinese consumers. From 2006 to 2007, melamine-contaminated pet food imports* from China resulted in the deaths of 1,950 cats and 2,200 dogs.¹¹² In 2008, melamine poisoning widely affected Chinese infants who consumed the compound in contaminated dairy products, resulting in the deaths of six children and illness of 300,000 more—a watershed moment that prompted reform of China's food safety regime.¹¹³

According to Holly Wang, professor of agricultural economics at Purdue University, China's domestic food safety scandals reduced the public's trust in the Chinese government's ability to manage risks and heightened their concerns over corruption that has been blamed for lax food safety compliance in China.¹¹⁴ As a result, the Chinese government overhauled its food safety laws and regulatory structure. In 2013, China created the China Food and Drug Administration, which largely centralized control over domestic food safety with respect to food production, distribution, and consumption.¹¹⁵ Previously, responsibility for China's domestic food safety was split between three different agencies, and poor interagency coordination weakened China's food safety system, according to several food safety experts.¹¹⁶ In March 2018, Beijing further centralized food security regulation by placing the China Food and Drug Administration and the General Administration of Quality Supervision, Inspection and Quarantine (which has jurisdiction over the safety of food exports and imports) under the same umbrella agency, the State Administration for Market Regulation, which operates directly under the State Council.¹¹⁷ This reorganization may improve implementation of food safety standards.

China's Food Safety Inspection Regime

The Chinese government has moved from a reactive food safety system (where food safety officials respond to safety threats after they emerge) to a predictive risk-based system that seeks to anticipate food safety threats and address them before they materialize.¹¹⁸ Through changes to its Food Safety Law in 2015, China has adopted what some experts have called "the most stringent and comprehensive food safety law in Chinese history."¹¹⁹ In particular,

*Melamine is a compound that can make food products appear to contain more protein than they actually do. Melamine contamination can cause crystals to form in consumers' kidneys, leading to kidney failure. World Health Organization, "Questions and Answers on Melamine."

the new Food Safety Law introduced harsher punishments for food safety abuses and created a system of standards more comparable to those of North America and Europe.¹²⁰

Any Chinese food product destined for export undergoes a two-step review process. First, all Chinese food producers are required by law to set up safety and hygiene control systems meant to ensure the production and storage of food is in compliance with the legal requirements of the destination country.¹²¹ Second, before a Chinese food product can be exported, it is subject to entry-exit inspection by China's General Administration of Quality Supervision, Inspection and Quarantine.¹²²

According to Chinese government data, food safety compliance rates increased from 90.8 percent in 2006 to 96.8 percent in 2015.¹²³ The United States has also updated its ability to detect and preempt health risks from China, primarily through the implementation of the Food Safety Modernization Act of 2011 (for more on U.S. defenses against foreign food risks, see the textbox "U.S. Import Food Safety Tools").

Risks Associated with China's Food Safety Inspection Regime

Despite regulatory improvements in China's food safety system, many food safety risks remain:

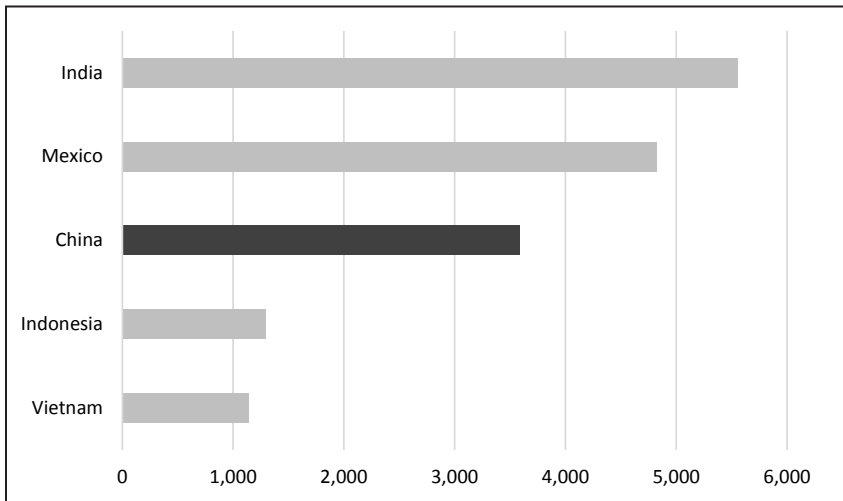
- *Small-scale Chinese agricultural producers:* The large number of small-scale Chinese food producers creates a challenge for Chinese inspectors as they cannot inspect every food producer to ensure food safety compliance.¹²⁴ China is estimated to have as many as 200 million individual households engaged in farming relatively small plots of land,* and there are more than 400,000 registered small or medium food processors.¹²⁵ While small-scale producers mostly serve the domestic market, they also provide exports via contracting and farmers cooperatives.¹²⁶ Small farms are incentivized to take actions that create health risks but protect their scant agricultural assets, such as applying excessive antibiotics to livestock. Additionally, the Chinese government is reluctant to penalize small-scale farmers for poor safety conditions, as prosecuting several poor farmers would be politically unpopular.¹²⁷
- *Limited inspection resources:* China's inspection capacity is lacking. Food inspectors still require training on China's new food safety regulations, and inspectors have reportedly deferred to the traditional safety standards used by city governments, resulting in a patchwork of conflicting food standards as opposed to one uniform system.¹²⁸ Less developed provinces often lack the tools to inspect all food products.¹²⁹
- *Industrial pollution:* China's industrial pollution creates food safety risks. According to a national survey conducted by China's central government, more than 19 percent of China's farmland is contaminated by pollutants (including lead, cadmium, and arsenic).¹³⁰ These pollutants can enter some food products, such as cereal crops, that are eaten by Chinese consumers but not shipped

* Roughly 93 percent of China's farms are less than 1 hectare in size. The average U.S. farm size in 2012 was more than 101 hectares. James MacDonald, "Large Family Farms Continue to Dominate U.S. Agricultural Production," *U.S. Department of Agriculture*, March 6, 2017; Bloomberg, "Farming the World: China's Epic Race to Avoid a Food Crisis," May 22, 2017.

abroad.* Chinese pollutants can also accumulate in exported products such as seafood. A 2013–2014 survey of coastal Chinese seafood found that 20 percent of surveyed saltwater crabs had excessive levels of cadmium.¹³¹ As seafood is China's largest food export to the United States and China is the United States' largest source of imported seafood, accounting for 14 percent of all U.S. seafood imports in 2017, food safety risks in Chinese seafood have the potential to widely affect U.S. consumers.¹³²

Data from the U.S. Food and Drug Administration (FDA) show China was the third-largest source of food-related import refusals (see Figure 3), indicating it remains a source of risk for U.S. consumers.¹³³ As China is the United States' third-largest source of food imports (behind Canada and Mexico), it is not surprising that China accounts for a significant share of U.S. import refusals.¹³⁴ However, China accounts for a proportionally larger share of import refusals than its volume of trade with the United States would warrant. Relative to the total value of each country's food exports to the United States, China had roughly 2.6 times as many import refusals as Mexico and 13 times as many import refusals as Canada from 2014 to 2016.¹³⁵

Figure 3: Food-Related Import Lines† Refused by the FDA, 2014–2017



Source: U.S. Food and Drug Administration, *Import Refusal Report*. <https://www.accessdata.fda.gov/scripts/importrefusals/>.

Seafood products constitute the largest share of Chinese import refusals, mostly due to unclean conditions or detection of veterinary drugs such as antibiotics, suggesting they represent the largest

*Cadmium is a heavy metal that can cause irreversible kidney damage and kidney failure in small doses. Rice in Hunan Province has been shown to have cadmium levels 50 percent higher than the amount allowed under Chinese law and most international standards. Long-term exposure to cadmium can result in cancer and organ toxicity. *Economist*, "The Most Neglected Threat to Public Health in China Is Toxic Soil," June 8, 2017; Centers for Disease Control and Prevention, *Cadmium Toxicity*, May 11, 2013.

†An import line consists of all products of a given type from a particular producer in one shipment. One shipment can have multiple import lines (e.g., a shipment of chocolate cookies from China, India, and England and vanilla cookies from China would have at least four import lines).

source of risk for U.S. consumers among Chinese food products and warrant close monitoring. Due to excessive or inappropriate use of veterinary drugs in Chinese aquaculture, the FDA currently has two import alerts on Chinese seafood: (1) all aquaculture shrimp, dace, and eels from China* are detained until they are cleared; and (2) all aquaculture seafood imports from select Chinese companies are detained until the importer can show these imports do not pose a health risk.¹³⁶ From 2005 to 2013, seafood accounted for 32 percent of all import refusals from China.¹³⁷

U.S. Import Food Safety Tools

The United States government employs several tiers of defense to protect consumers:

- *Overseas risk prevention:* Before a product arrives at a U.S. port, all importers of human food are required to verify that their foreign suppliers have procedures to ensure they comply with U.S. standards under the Food Safety Modernization Act of 2011.¹³⁸ The FDA also plans to incentivize importers to use safe suppliers through the Voluntary Qualified Importer Program, which will provide importers quicker import reviews if they buy from foreign suppliers who adopt food safety assurance procedures and are certified to meet U.S. standards under the FDA's Accredited Third-Party Certification Program.¹³⁹ The FDA also inspects some facilities in China. However, given the large number of food exporters in China, FDA inspectors cannot inspect every Chinese supplier. In 2016, there were almost 27,000 FDA-registered food suppliers in China and only 23 FDA China-based personnel.¹⁴⁰
- *Import screening:* Once an import arrives at a U.S. port of entry, it is electronically screened by PREDICT, an algorithm-based screening methodology.¹⁴¹ PREDICT screens imports of FDA-regulated products in real time as they arrive at the U.S. border, and directs inspectors to examine shipments that are likely to have a higher risk of containing noncompliant products based on factors such as the type of product being shipped, the compliance history of firms associated with the shipment, and other data.¹⁴² Imports that appear to be adulterated or contaminated are denied entrance to the United States.¹⁴³
- *Import alerts:* Through an import alert, the FDA can also detain food imports from a certain country, from a particular supplier, or of a particular commodity. In response to a health risk, the FDA can issue an import alert that detains all shipments of the type specified at the U.S. border.¹⁴⁴ Once detained, the importer must demonstrate that the shipment is safe, otherwise it is destroyed, returned to the country of origin, or sent to another country.¹⁴⁵

*Some Chinese producers are exempted from this detention requirement. U.S. Food and Drug Administration *Import Alert 16-131*, June 8, 2018.

U.S. Import Food Safety Tools—*Continued*

- *Mandatory recalls:* In the event an unsafe food import enters the United States, the FDA can issue a mandatory recall for the import. The FDA partners with the Centers for Disease Control and Prevention and local and state governments to monitor food safety threats as they emerge and quickly recall products before they are widely consumed.¹⁴⁶

Implications for the United States

Chinese Market Restrictions

Due to China's relative paucity of water and arable land, the United States and China should be natural trading partners across many different agricultural products, particularly land- and water-intensive goods such as cereals and meat. However, U.S. farmers have had success in China's market only where Beijing has allowed them access. Soybeans dominate U.S. exports as Chinese authorities have opened this sector to imports, while crops such as rice, wheat, and corn remain subject to underutilized TRQs.

Beijing consistently uses agricultural market access to punish the United States. Since 2010, the Chinese government has applied at least six sets of retaliatory tariffs against U.S. agricultural exports in response to defensive U.S. trade measures.¹⁴⁷ According to industry experts, China also uses nonscientific food safety barriers against U.S. poultry and beef as a tit-for-tat negotiation strategy to urge the United States to move forward with its safety review of poultry exports from China.¹⁴⁸

Opportunities for U.S. Firms

In the absence of market restrictions, China presents several opportunities for U.S. agricultural firms:

- *Food quality:* U.S. food products enjoy a reputation for quality and safety that grants them an advantage over domestically sourced goods. For example, Chinese consumers have been willing to pay a markup of 150 to 300 percent for imported infant formula due to concerns regarding the safety of domestic products.¹⁴⁹
- *China's cold-chain:* According to the U.S. Department of Commerce, China's cold-chain infrastructure, a transportation network that preserves perishable food, is projected to grow by a factor of 20 in the next decade, opening millions of consumers outside of China's largest cities to U.S. meat and perishable food exports if those exports receive predictable market access from Chinese authorities.¹⁵⁰
- *E-commerce:* E-commerce may provide an opportunity for U.S. firms to sell food products directly to Chinese consumers. U.S. firms have already partnered with online retailers such as JD.com and Alibaba, and China's online food market is projected to more than double by 2020 when it will account for almost 7 percent of all Chinese grocery sales.¹⁵¹

- *Consumer demand:* The scale of China's domestic market also creates opportunities for U.S. food producers, especially as incomes rise. A 2015 study by the USDA Economic Research Service found higher purchasing power increased Chinese consumers' demand for imported higher value added foods and beverages, such as wine, spirits, and cheese.¹⁵²

Chinese Biotechnology Policy

According to Nathan Fields, director of biotechnology for the National Corn Growers Association, China's biotechnology approval process puts U.S. agricultural gains and innovation at risk.¹⁵³ U.S. corn productivity has increased roughly 16 percent from 2007 to 2017, largely due to biotech innovation.¹⁵⁴ GMOs that are naturally resistant to weeds and pests can also help reduce pesticide and fungicide use. However, to maintain these benefits, U.S. farmers require a broad suite of biotech products, including new seed strains. In the absence of new products, insects, weeds, and fungi can develop resistance to on-market GMOs, effectively undoing agricultural gains from past innovation. By slowing the commercialization of new U.S. agricultural biotech products, China not only prevents the introduction of new innovative products for U.S. farmers, but also puts current productivity at risk as insects and weeds acquire immunity. Additionally, widespread piracy in China—possibly facilitated by corporate espionage—limits the revenue U.S. biotech firms can earn in China.

U.S.-China Bilateral Engagement

Engagement with China has been hampered by structural negotiation deficiencies. According to Ambassador Darci Vetter, former USTR chief agricultural negotiator, when engaging with Chinese authorities, U.S. officials are frequently left playing a game of “hot potato” as their concerns are shifted between China's Ministry of Agriculture (which, according to Ambassador Vetter, does not view U.S. trade concerns as a priority) and China's Ministry of Commerce (which is more receptive to U.S. concerns, but frequently refers U.S. requests to the Ministry of Agriculture).¹⁵⁵ In her testimony before the Commission, Ambassador Vetter said this split of responsibility was partially overcome in multiagency dialogues such as the U.S.-China Joint Commission on Commerce and Trade; however, as neither the Chinese minister of agriculture nor the U.S. secretary of agriculture served as cohosts to these dialogues, agricultural issues were typically “a minor part of very broad economic policy agendas, which left little time for discussion.”¹⁵⁶

As a result, U.S. bilateral dialogues have achieved limited success in addressing Chinese agricultural restrictions, but have not led China to significantly alter these policies. Since 2014, the United States has engaged in intensive negotiations with China on its biotech approval process at the U.S.-China Joint Commission on Commerce and Trade, the U.S.-China Strategic and Economic Dialogue (S&ED), and the U.S.-China Comprehensive Economic Dialogue, which replaced the S&ED.¹⁵⁷ At every meeting, China committed to improve its approval process; however, China's biotechnology regulatory system endures because the Chinese government has not car-

ried out promised changes or has implemented them in a marginal way that did nothing to reform structural problems.¹⁵⁸

Most tellingly, in May 2017 China agreed to convene a meeting of the National Biosafety Committee by the end of that month to review eight U.S. biotech product applications that were pending review.¹⁵⁹ To date, the committee has approved only four of those eight products; it also has not held another meeting since June 2017.¹⁶⁰

The Chinese government's tendency to offer commitments it does not uphold and to approve individual products during bilateral dialogues, rather than addressing systemic problems, creates a risk that China will use new U.S. biotech products as a renewable source of bargaining chips to extract concessions from the United States or to appease the United States in future negotiation.

Food Safety

Since 2013, China has improved its food safety laws, but their implementation remains a challenge due to a lack of qualified inspectors, uneven application of China's food safety regulations, and the large number of small agricultural producers, which are difficult to regulate. The United States has also improved its imported food safety measures since 2011; however, full implementation of the Food Safety Modernization Act has only just begun. For example, the FDA expects company participation in the Voluntary Qualified Importer Program to start in 2019.¹⁶¹ China's exports to the United States suggest seafood products in particular represent a health risk to U.S. consumers, given China's status as the largest exporter of seafood to the United States and the relatively high levels of veterinary drugs detected in Chinese seafood.

While no major food safety events related to Chinese imports have merged in the United States since the 2006 and 2007 melamine pet food outbreaks, it is not clear if this is due to new U.S. preventative import safety procedures, better Chinese food safety laws, or good fortune. As a result, Chinese food safety conditions require constant monitoring and cooperation between U.S. and Chinese regulators to strengthen both countries' food safety defenses.

ENDNOTES FOR SECTION 3

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