

Discussion Paper Series

IZA DP No. 18362

February 2026

Agricultural Trade and Geopolitics: A Comparative Analysis of China-U.S. and China-Canada Trade Relations

Tony Fang

Memorial University of Newfoundland and IZA@LISER

Torin Pracek

Queen's University

Jianghua Chen

Hefei University

Wen-hao Chen

National Taipei University

Managed at the Luxembourg Institute of Socio-Economic Research (LISER), the IZA Discussion Paper Series is the primary platform to disseminate current research from the IZA Network at LISER (IZA@LISER). Any opinions expressed in this paper are those of the author(s) and not those of IZA@LISER. Research published in this series may include views on policy, but the involved institutions take no institutional policy positions.

IZA@LISER is committed to the European Charter for Research Integrity. These papers often represent preliminary work intended for discussion and should be cited as such.

Agricultural Trade and Geopolitics: A Comparative Analysis of China-U.S. and China-Canada Trade Relations

Abstract

This paper draws on trade data, academic literature, government reports, and policy documents to contextualize historic trade dynamics and trace the buildup to recent disputes. Using a comparative framework, we analyze how Sino-U.S. and Sino-Canada relations have shaped and continue to shape agri-food trade flows. Our analysis reveals structural vulnerabilities in U.S. and Canadian agricultural exports to China, emphasizing how reliance on a narrow set of commodities exposes both countries to economic losses resulting from China's trade policies. Simultaneously, China's dependence on a limited number of suppliers for large volumes of key commodities makes it vulnerable to price volatility and supply uncertainty.

JEL classification

D74, Q11, Q17, Q18

Keywords

agri-trade, bilateral agreements, tariffs and non-tariff trade barriers

Corresponding author

Tony Fang

tfang@mun.ca

1. Introduction

1.1. Background and Rationale

As the global population grows, international trade is crucial for meeting rising demand for agricultural commodities, especially in resource-constrained countries like China, which must feed 20% of the world's population with less than 9% of global cropland and 6% of freshwater. Limited domestic production has made China the world's largest food importer, with its agricultural trade deficit growing at an average annual rate of 26.1% from 2005 to 2024 (author's calculations based on Statista data). This dependence on imports for key commodities such as soybeans, cereals, and livestock heightens vulnerability to global market fluctuations, where price volatility can strain domestic capacity, risk food shortages, and fuel inflation. This paper examines how these trade flows become entangled with geopolitics—defined here as the weaponization of trade for diplomatic leverage within broader strategic competitions.

Given China's growing food imports, reliable trade partners are crucial to its push for food security. The Chinese government has emphasized the need to build a diversified food supply system, particularly in the rising geopolitical tensions between China and the United States. These tensions have raised concerns about the stability of long-standing trade relationships with the U.S. and other trading partners, prompting Chinese policymakers to explore alternative sourcing strategies and deepen ties with other exporters, including Canada. This paper selects the United States and Canada for a comparative case study because they represent a "most similar systems" design with critically divergent political relationships with China. Both are major, developed North American agricultural exporters with advanced farming sectors, competing in similar commodity markets such as soybeans, wheat, and meat (**Appendix Table A1**). They are deeply integrated through trade agreements (e.g., USMCA) and share similar legal and economic traditions. This similarity in their export profiles and economic structures makes the stark differences in their political dynamics with China analytically revealing.

Appendix Table A1 About Here

The core distinction lies in their geopolitical posture. The U.S.-China relationship is characterized by **direct strategic and economic competition**. The United States, as the incumbent superpower, engages with China proactively, often initiating trade disputes and tariffs as part of a broader strategy to manage China's rise and address perceived unfair trade practices. This dynamics makes agricultural trade a central front in a bilateral great-power contest.

In contrast, Canada's relationship with China is largely shaped by its **complex interdependence with and alignment to U.S. foreign policy**. While Canada pursues its

own economic interests with China, its geopolitical stance is often derivative. It becomes entangled in U.S.-China conflicts not by direct choice, but as a consequence of its alliance obligations and legal treaties with the United States (e.g., the extradition treaty). This positions Canada as a secondary, often more vulnerable, target for Chinese retaliation aimed at pressuring Washington. Thus, comparing the two allows us to isolate and analyze how different modes of geopolitical engagement—direct rivalry versus alliance-driven entanglement—shape the weaponization of agricultural trade.

1.2. Research Methodology

This article examines trends and evolving dynamics of agricultural trade between China and its two major North American trading partners, the United States and Canada. The analysis draws primarily on bilateral trade data from the United Nations (UN) Comtrade Database, focusing on agricultural commodities as defined in Annex 1 of the World Trade Organization's *Agreement on Agriculture* (**Appendix Table A2**). To complement the quantitative analysis, this study incorporates academic literature, government reports, and policy documents to contextualize long-term trade patterns and the geopolitical factors shaping them. By combining trade data with policy analysis, the paper offers a comparative perspective on how ongoing trade disputes have influenced the agricultural trade and diplomatic relationships between China and two key North American exporters.

Appendix Table A2 About Here

2. Literature Review

2.1. China's Trade Agreements and Agriculture: A Historical Perspective

Since the latter half of the 20th century, the global economy has become increasingly interconnected, driven in part by the creation and expansion of the General Agreement on Tariffs and Trade (GATT). The legal framework, first established in 1947, sought to promote international trade by reducing tariffs and non-tariff barriers such as quotas, price controls, and export restrictions. The GATT facilitated a wave of bilateral and regional trade negotiations across diverse nations, including those that had historically pursued a protectionist approach to trade policies. The integration of the world economy, in turn, raised global living standards, providing opportunities for developing countries to leverage trade for economic development.

Despite being one of the original contracting parties to the GATT, China's status was deactivated in 1950 following the establishment of the People's Republic of China (PRC) ([Sapir & Mavroidis 2021](#)). In the years that followed, Western countries imposed a blockade and trade embargo on China, effectively suspending its participation in the global trading system for the next three decades. During this time, China prioritized self-sufficiency over international

engagement, pursuing rapid industrialization and a shift away from its agrarian roots. Trade was largely limited to exchanges with the Soviet Union and other like-minded socialist allies, focused primarily on acquiring industrial machinery and technological expertise, which facilitated its production and trade of industrial goods after its entry into the World Trade Organization (WTO) in 2001.

China's economy remained heavily reliant on agriculture during these three decades, with the sector employing approximately 75% of the labour force and contributing around 30% of total output in 1977 ([Cheremukhin et al. 2015](#)). Despite industrial progress, China lagged behind Asian peers like Japan and South Korea, which had leveraged global trade and technology for rapid growth. To accelerate transformation, China launched late-1970s reforms, shifting from a planned to a market-oriented economy and opening to globalization. Key steps included rejoining the World Bank and IMF, allowing foreign investment, and gradually liberalizing trade with Western nations.

China formally applied to resume its status as a member state under the GATT in 1986, with accession negotiations commencing the following year. After 20 rounds of talks, China and the incumbent GATT members failed to reach an agreement by 1995, when the World Trade Organization (WTO) succeeded the previous agreement. A major point of contention was China's socialist market economy system, which differed fundamentally from the liberal economic regimes of the prominent incumbent members ([Mavroidis & Sapir 2019](#)). After another 18 rounds of negotiations under the WTO, an agreement was reached on the terms of China's accession. A breakthrough was ultimately achieved in 2001, marking a turning point in China's integration into the global economy and leaving lasting implications for international trade ([Sapir & Mavroidis 2021](#)). In the following years, China underwent a dramatic structural transformation, characterized by a large-scale reallocation of labour from agriculture to non-agricultural sectors ([Cheremukhin et al. 2015](#)). Under the terms of the agreement, China agreed to bind its agricultural tariffs at relatively low levels compared to many other developing countries and to implement tariff rate quotas on several key agricultural commodities. These market-opening measures, particularly the reduction of average agricultural tariffs from 31% to 14% in the early 2000, exposed China's domestic farmers to international competition. For land-intensive commodities like soybeans, where China held a comparative disadvantage due to limited arable land and smaller-scale farming, cheaper imports surged in, displacing domestic production and fundamentally reshaping its agricultural sector, reflecting China's waning comparative advantage in the sector. (Wang et. al. 2016).

Since joining the WTO, China has transitioned from a net exporter of agricultural products to the world's largest import market, reaching a net trade deficit of over USD 112 billion in 2024 (about 20 billion with US, 6 billion with Canada, **Appendix Figure 1**). Simultaneously, China has become a manufacturing powerhouse, leveraging low-wage labor and economies of scale to

dominate global markets. Therefore, while China has grown reliant on Western nations for key agricultural commodities, these countries have become dependent on China for manufactured consumer goods. This trade specialization, though economically largely beneficial to all parties, has also revealed vulnerabilities as trade becomes increasingly entangled with geopolitical tensions.

Appendix Figure 1 About Here

2.2. Agricultural Trade, Industrialization, and Comparative Advantage

According to neoclassical trade theory, countries are incentivized to export goods in which a production cost advantage exists and import those that are more costly to produce domestically. The Heckscher-Ohlin (H-O) theorem extends this notion of comparative advantage by attributing trade flows to uneven geographic distribution of productive resources, positing that countries export final goods that can be produced using inputs that they hold in relative abundance. In the early stages of China's economic reforms in the late 1970s, the country possessed a comparative advantage in resource- and labour-intensive products, including processed foods such as fruits, vegetables, and grains, as well as crude materials, manufactured materials, and finished manufacturers. Using the revealed comparative advantage (RCA) index, [Yue and Hau](#) (2002) find that China's comparative advantage was most pronounced for processed foods in 1980, reflecting the country's vast agricultural workforce and production capacity at the time. Consistent with the predictions of the H-O theorem, agricultural goods and commodities accounted for a sizeable proportion of China's exports, sitting around 33% of total trade in 1980 ([Carter & Rozelle](#) 2001).

By the turn of the century, China's RCA index in manufactured materials had grown substantially ([Yue & Hau](#) 2002). Trade liberalization and China's accession to the WTO in 2001 facilitated the inflow of foreign direct investment, advanced technologies, intermediate goods, and capital equipment ([Brandt et al.](#) 2016). These developments significantly strengthened China's industrial capabilities, with the country's industrial production index reaching a record high of 23% in 2004, which fueled rapid economic growth, making it the fastest-growing economy in the early 2000s. ([CEIC](#) 2025).

However, this industrial transformation came with significant costs to the agricultural sector. As the country prioritized industrial investment, agriculture received comparatively less attention. Beginning in the mid-1990s, accelerated urban reforms spurred large-scale rural-to-urban migration, leading to a steady decline in the agricultural workforce. Furthermore, China's fundamental constraint of limited arable land became more pronounced. With less than 0.1 hectares of arable land per capita—significantly below the global average—China could not compete on cost or scale with major exporters like the U.S. and Brazil in land-intensive crops ([Samuel M., et. al.](#) 2024). Most smallholders who remained in rural areas continued to rely on household-based farming, with limited integration into commercial markets beyond basic input

and output exchanges ([Zhang & Mu 2024](#)). As a result, the share of agriculture in China's total trade fell to just 7% by 1999, reflecting a marked departure from earlier export patterns ([Carter & Rozelle 2001](#)). This shift also increased China's dependence on agricultural imports to meet growing domestic food demand, contributing to a notable decline in national food self-sufficiency ([Liu et al. 2024](#)).

This increasing reliance on agricultural imports reflects deeper structural shifts in both supply and demand. On the demand side, sustained income growth, rapid urbanization, and changing dietary preferences have significantly altered consumption patterns. As households become wealthier and more urbanized, diets have shifted away from traditional staples toward more resource-intensive and diverse foods, including meat, dairy, edible oils, and processed products ([USDA 2020](#)). This surge in demand for meat, in particular, has directly driven the need for protein-rich animal feed, for which soybeans are a critical input. This creates a direct causal link between changing Chinese diets and the massive imports of soybeans from the U.S. and Brazil, and canola from Canada. This surge in demand has outpaced the capacity of domestic production, especially as structural reforms in the agricultural sector lag behind those in the industrial sector.

2.3. Trade Conflicts

The prevailing consensus among economists is that trade generate mutual benefits for participating countries. China serves as a compelling example, as its accession to the WTO catalyzed rapid economic growth, largely driven by industrial specialization. China's trading partners have also reaped significant gains, benefiting from access to its vast consumer base and rising demand, as well as an abundant supply of inexpensive industrial goods. It may seem paradoxical, then, that the United States and other western countries have increasingly lodged complaints against China at the WTO, leading to heightened trade tensions and the imposition of new trade barriers. Most notably, President Donald Trump's first U.S. administration launched a trade war with China in 2018, which escalated during his second term, deepening the economic rift between the two powerful countries.

Escalating tensions underscore the limitations of neoclassical economic theory in fully explaining real-world trade dynamics. Traditional models emphasizing comparative advantage and market efficiency often treat trade as an apolitical activity driven by cost differentials and consumer preferences. However, the China-U.S. trade war illustrates that trade decisions are not solely guided by economic rationality, suggesting that strategic and geopolitical considerations play a central role in shaping trade policy.

Economists have sought to address the limitations of purely market-based trade models by incorporating political factors into analyses of international trade. The Stolper-Samuelson theorem, derived from the H-O framework, provides insight into domestic preferences for

protectionist policies. It posits that trade liberalization benefits the owners of a country's abundant factors of production, while harming those reliant on its scarce factors.

These distributional dynamics help explain the political backlash to China's WTO accession in the United States. Labor unions representing manufacturing and industrial workers—groups reliant on labour-intensive manufacturing industries—were particularly opposed, anticipating that exposure to low-cost Chinese imports would lead to widespread job displacement. Their fears were not unfounded. In the decade following China's accession, the ballooning China-U.S. trade deficit is estimated to have cost approximately 2.7 million American jobs, primarily in the manufacturing sector ([Scott 2012](#)). These domestic pressures sparked growing political momentum for protectionist trade policies.

Some scholars contend that the China-U.S. trade war, while partly driven by rising protectionist sentiment in the United States, also reflects broader geopolitical tensions within the multilateral trading system (e.g., [Mattoo & Staiger 2019](#)). At the time of China's accession to the WTO in 2001, the United States held a dominant position in shaping global trade norms and decision-making processes. However, China's unprecedented economic growth and expanding international influence—exemplified by initiatives such as more recent the Belt and Road Initiative (BRI) and extensive state-backed investments abroad—have significantly shifted the global balance of power. Viewed through this lens, the trade war may be interpreted not merely as a response to trade imbalances but as a strategic effort by the United States to contain China's economic ascent and curb its influence in global trade and global governance.

3. China-U.S. Agricultural Trade

3.1. America's Soybean Specialization

As a condition of WTO membership, China was required to undertake notably stringent protocol commitments, which were particularly advantageous for U.S. businesses, especially in the agricultural sector, by expanding access to China's rapidly growing consumer market. In particular, China agreed to implement a tariff-rate quota (TRQ) system, reducing tariff rates to near zero for key agricultural commodities up to specified import volumes ([Lardy 2001](#)). In addition, it committed to limiting the operation of state trading enterprises, eliminating quotas that had previously constrained certain imports, and bringing the average tariff level from 31% to 14% for farm products ([Glauber 2023](#)). As a result of these liberalization measures, U.S. agricultural exports to China rose sharply, reaching over USD 26.2 billion in 2024, growing at an average annual rate of 14.5% since 2001.

While China's rise in agricultural imports has significantly benefited the United States, the gains have been concentrated in a relatively narrow set of products. Soybeans, in particular, experienced a surge in trade following liberalization, as restrictions on state trading enterprises

were eased, curbing their monopoly and allowing for commercial importers to buy foreign products (Glauber 2023). Since 2001, soybeans have consistently ranked as the top U.S. agricultural export to China, accounting for approximately 45.4% of agricultural exports to the country in 2004, increasing slightly to 45.8%, valued at USD 12.0 billion, by 2024 (**Appendix Table A3**). This dominance reflects both the United States' large-scale soybean production and China's rising demand, which has grown at an average annual rate more than four times the global average. The vast majority of these imports are destined for crushing into meal, serving as a critical protein source for China's expanding livestock industry (Glauber et al. 2025).

Appendix Table A3 About Here

Over the past 25 years, growth in U.S. agricultural exports to China has driven China's share of total U.S. agricultural exports from 4% to 15%. This growth has coincided with a decline in the share of exports to traditional partners, including the European Union and Japan, resulting in a more concentrated set of export destinations (USDA 2025). While China ranks behind Canada and Mexico in overall export share, its importance is amplified by its dominance in key commodity markets, particularly soybeans and other bulk agricultural goods. This growing reliance on China has created a structural vulnerability for U.S. farmers, who have become increasingly dependent on export markets to sustain prices and revenues. In 2022, the Economic Research Service estimated that every dollar of agricultural export generated an additional 1.09 USD in economic activity (USDA 2025). As a result, disruptions in trade with China pose risks at the macro-level.

3.2. Trade War, Agricultural Commodities, and Leverage

The China-U.S. trade war was not centred on agriculture but significantly affected the sector. In 2018, the Trump administration imposed sweeping tariffs on USD 84 billion in Chinese goods, including machinery, mechanical appliances, and electrical equipment, under the pretext of protecting American innovation. After failed attempts to ease trade tensions, Chinese officials retaliated by targeting billions of dollars' worth of U.S. exports, focusing on agricultural commodities and food products. Tensions intensified further in 2019, as the Trump administration introduced additional rounds of tariffs, prompting successive waves of Chinese retaliation that further impacted agricultural trade (Bown & Kolb 2025).

China weaponized food as a foreign policy instrument, inflicting significant economic pressure on the United States. By the end of 2019, these measures had resulted in an estimated USD 25.7 billion in lost agricultural exports, with soybeans accounting for nearly 71% of the total losses (Morgan et al. 2022) (Morgan et al. 2022), dropping export value by more than 49% between 2017 and 2018. Since then, U.S. soybean exports to China have remained below their pre-trade-war (2017) peak. While the United States held roughly 40% of the soybean market share throughout most of the 2010s, this share has fallen to just over 20% by most recent estimates, while Brazil's share surged from 40% to over 70% (**Appendix Figure 2**). As Chinese importers

shifted away from U.S. products in favour of other suppliers, American farmers sought alternative export markets to sustain trade volumes, turning to Mexico, the Netherlands, and Egypt. Midwest states such as Iowa, Illinois, and Kansas were hit particularly hard due to their heavy reliance on targeted commodities such as soybeans, cotton, and sorghum exports. To mitigate the economic impact, the U.S. government rolled out a series of relief programs, providing farmers billions of dollars in emergency aid. These bailouts, however, faced criticism for disproportionately benefiting large, industrial-scale operations, while smaller farms continued to struggle ([Carr et al. 2019](#)). Midwest farmer bankruptcy filings were up 19% in 2018, corresponding to the highest filings in the last decade ([Newton 2019](#)).

Appendix Figure 2 About Here

On the other hand, food security has long been a priority of China's policy agenda, and the trade war with the United States accelerated its push to diversify agricultural imports. As China raised tariffs on American products, it simultaneously lowered import duties from other partners to incentivize domestic importers to shift towards alternative suppliers. By mid-2019, China had raised tariffs on U.S. farm products and fish exports to an average of 42%, while simultaneously reducing average duties on imports from other nations to 19%. China's tariff gap was particularly pronounced in soybean markets, wherein U.S. exports were subject to a 28% tariff while other imports entered under the standard MFN rate of only 3% ([Bown et al. 2019](#)). Brazil capitalized on China's pivot from U.S.-produced soybeans, pushing its share of China's soybean imports to a peak of 75.7% (**Appendix Figure 2**).

While China's weaponization of food imports significantly harmed American agriculture, it also came with substantial costs for China. Quickly securing alternative suppliers led to market inefficiencies and higher costs. In favouring Brazilian soybeans, surging demand pushed prices up by roughly one USD per bushel within the first five months of the trade war ([Adjemian et al. 2021](#)). Similar pressures emerged in meat markets. China's tariffs on American pork coincided with an African Swine Fever outbreak that drastically reduced the domestic supply, compounding price pressures. Pork prices surged 110% year-over-year by November 2019, causing consumers to shift to other forms of protein. As demand rose for beef, mutton, chicken, duck, and eggs, the prices of these alternatives rose by between 11.8% and 25.7% over the same period. Altogether, China's tariffs on U.S. food products were passed onto Chinese consumers, as consumer inflation was up 4.5% ([Tan 2019](#)).

The 2018 China-U.S. trade war had significant consequences for both countries, triggering a downturn in U.S. agriculture and disrupting China's import flows. Acknowledging the mutual costs, both sides negotiated the "Phase One" trade agreement in 2020, under which China committed to purchasing an additional USD 80 billion worth of U.S. agricultural goods over the next two years ([Bown & Kolb 2025](#)). China only reached 82% of its goal for 2020, with soybean imports particularly underperforming at just 73% of its commitment ([Bown 2021](#)). Nevertheless,

tensions largely eased until the start of Trump's second term, when a 10% tariff was imposed on all Chinese imports. In response, China retaliated with tariffs on key U.S. agricultural goods, prompting Trump to threaten further tariff hikes of up to 145%, but ongoing negotiations have prevented escalation thus far. At the time of writing, both countries maintain a uniform 10% tariff on all bilateral trade ([Bown 2025](#)).

3.3. Asymmetries and Future Considerations

The asymmetrical U.S.-China trade relationship creates strategic vulnerabilities, highlighted during the first Trump administration when the U.S. trade deficit drove tariffs and the Phase One Agreement. This deal pushed China to buy more U.S. agricultural products, temporarily boosting exports but increasing U.S. dependence on China for a narrow set of commodities. Paradoxically, efforts to reduce the deficit have heightened U.S. exposure to future trade disputes, giving China leverage through its control over agricultural imports.

This dynamic also risks China, whose growing dependence on the United States exposes it to supply-side vulnerabilities. Structural constraints, including urbanization, climate change, pollution, and soil degradation, limit China's ability to expand domestic production, particularly of land-intensive commodities like soybeans. Reflecting these pressures, China's total arable land has steadily declined since 2010, falling from 121.4 million hectares to just 108.9 million according to the most recent estimates ([WTO 2022](#)). Simultaneously, the rapid growth of China's middle class has accelerated demand for meat, further driving up the demand for soybeans and other feed crops. According to the [Ministry of Agriculture and Rural Affairs](#) (2022), producing soybeans in China costs 1.3 times more than in the United States while yielding only 40% of American output. This cost disadvantage translates directly to Chinese consumers, who pay roughly 44% more for domestically grown soybeans than imported products ([Kong et al. 2024](#)). This growing imbalance between domestic supply and consumption reduces China's flexibility in trade negotiations with the United States, as it relies heavily on stable agricultural imports to safeguard its food security.

Recognizing imbalances between domestic production and consumption, China has pursued a supply diversification strategy to reduce its dependence on select import sources. These efforts intensified after the 2018 trade war, reflecting growing concerns over food security and the risk of future tariffs or trade disruptions. In particular, China has strengthened relations with countries in Latin America and Africa through free trade agreements, securing viable alternatives for key imports, including soybeans, pork, and wheat ([Tortajada & Zhang 2021](#)). With the development of new trade routes under the BRI, trade with a broader set of partners is expected to continue expanding. However, these policies have yet to meaningfully alter China's concentrated reliance on a small number of dominant suppliers.

4. China-Canada Agricultural Trade

4.1. Evolution of Canada's Exports to China

Since the early 2000s, U.S. agricultural exports to China have been dominated by bulk commodities like soybeans, cotton, and grain sorghum, making up about 70% of exports until the 2018 trade war. Canada's exports, by contrast, have been more diversified, with bulk goods forming a smaller share and greater reliance on semi-processed and processed products such as oil-cakes, raw hides, and edible offal. This diversification has helped Canada offset declines in bulk exports over time. During periods when the value of bulk exports declines, Canada has shown greater capacity to offset losses through growth in these areas (**Appendix Figure 3**).

Appendix Figure 3 About Here

Canada's primary bulk exports to China have shifted notably over the past two decades, gradually transitioning away from a wheat-dominated profile. As one of the world's top wheat producers, Canada has historically ranked wheat and meslin as its leading agricultural exports to China by a sizable margin. However, the relative importance of these commodities has gradually declined over time, primarily influenced by China's domestic grain self-sufficiency policies. In the late 1990s, China announced a 95% grain self-sufficiency target as the foundation of its food security strategy. The government implemented a system that held provincial leaders accountable for stabilizing local markets to meet this goal. This policy was largely effective through the early 2000s, leading to expansion of grain-sown areas, increased total production, and a reduced dependence on grain imports. By keeping its grain import volumes consistently below TRQ levels ([Gale 2021](#)), the share of Canada's wheat in total agricultural exports dropped from nearly half in 2004 (46.5%) to just 12.1% two decades later (**Appendix Table A3**).

Despite China's push for self-sufficiency, the U.S. and Canada have long competed for its wheat market. Canada led in the early 2000s, but U.S. wheat surged in the 2010s as China eased self-sufficiency targets, supplying 67.7% of imports by 2013 (**Appendix Figure 4**). Canada regained prominence during U.S.-China trade tensions in the late 2010s, peaking at 54.9% as China reduced wheat imports and diversified Agri trade. With declining wheat demand, Canadian exporters shifted to canola, boosted by early 2000s investments in high-yield hybrids that doubled production by 2006. Now a key crop, 80–90% of Canada's canola is exported—mainly to China, Japan, and Mexico—and competes globally for its high quality.

Appendix Figure 4 About Here

Since the mid-2000s, canola seeds have been Canada's top agricultural export to China, though geopolitical tensions and quality concerns have repeatedly disrupted trade. Diplomatic strains, such as China's rebuke after Prime Minister Stephen Harper met the Dalai Lama in 2007, often coincided with reduced demand or trade barriers. China also raised concerns over pests like

blackleg, prompting Canada to work with Chinese officials on disease mitigation. A 2012 agreement improved market access, and in 2016, Prime Minister Justin Trudeau secured continued access, with both countries committing to joint scientific research to address quality issues.

The politicization of the canola trade reached a climax in 2018 following the arrest of Huawei CFO Meng Wanzhou by Canadian authorities at the request of the United States, on charges related to alleged violations of U.S. sanctions against Iran. Although China's government did not officially frame its response as retaliation, it effectively weaponized agricultural trade by banning canola seed imports from two of Canada's largest exporters, *Richardson International* and *Viterra*. Their licenses were suspended on the pretext of sanitary concerns; however, Public Safety Minister Ralph Goodale claimed that China failed to provide evidence to validate these accusations. In response, Canada launched a formal trade dispute at the WTO, arguing that China's restrictions violated WTO obligations and represented an example of agricultural trade being used as a tool of diplomatic coercion. In the short run, the [Canola Council of Canada](#) (2021) estimated that the dispute resulted in estimated losses of between CAD 1.5 and 2.4 billion in the year following the imposition of the bans.

In 2021, Meng Wanzhou was released from detention in Canada following a deferred prosecution agreement with U.S. authorities. This progression was largely perceived as a de facto swap for Michael Spavor and Michael Kovrig, two Canadians detained in China on espionage charges shortly after Wanzhou's arrest ([BBC](#) 2021). Following the resolution of the dispute, China lifted its three-year ban on canola imports from *Richardson International* and *Viterra* ([CBC](#) 2022); however, the improvement in diplomatic relations proved short-lived. In late 2024, Canada followed the lead of the United States in imposing an additional 100% surtax on Chinese-made electric vehicles, prompting swift and damaging retaliatory measures from Beijing. In early 2025, China imposed sweeping 25% tariffs on more than USD 2.6 billion worth of Canadian agricultural and food products, with canola once again becoming a primary target ([Cash et al.](#) 2025).

4.2. Canadian Trade Dependencies

Both Canada and the U.S. face Chinese tariffs and trade barriers, but Canada is less vulnerable due to its more diversified agricultural exports. The U.S., by contrast, relies heavily on soybeans—around 60% of its exports to China—making it more exposed to targeted trade measures. By comparison, Canada's leading agricultural export to China, canola, has made up roughly 35% of its exports over the past decade, reflecting a more balanced export composition. This lower concentration means that adverse trade measures affecting canola, while impactful, are less likely to cause disproportionately large economic disruptions relative to the overall agricultural sector. Furthermore, when examining the top five agricultural exports to China, Canada's combined share of these key commodities has consistently been lower than that of the United States

(Appendix Table A3). This suggests that Canadian exports are distributed more evenly across a wider range of secondary products, which enhances resilience by reducing dependency on a small number of crops.

To quantify export diversification, **Appendix Figure 5** presents the Herfindahl-Hirschman index (HHI) for agricultural exports to China, which assigns greater weight to products with larger share values. An HHI above 0.25 generally indicates a high level of concentration, or a low level of export diversification, represented by the grey shaded area in the figure. Evidently, U.S. agricultural exports to China have remained highly concentrated for most periods since China's accession to the WTO in 2001, consistently exceeding this benchmark. In comparison, Canada's agricultural exports generally reflect a more diversified profile, with HHI values typically falling well below the 0.25 threshold, indicating unconcentrated to moderately concentrated trade. However, Canada's periods of elevated concentration have historically coincided with similar spikes in the United States, often driven by shared external factors such as shifts in Chinese demand or broader trade disruptions.

Appendix Figure 5 About Here

4.3. Sanitary and Phytosanitary (SPS) measures

This is a critical and highly relevant point in international trade, particularly concerning trade with China. Examples include restrictions on meat treated with certain growth hormones, limits on pesticide residues on fruit, and bans on agricultural products from regions with specific animal diseases. While essential for public and ecological health, SPS measures can be easily disguised as protectionist tools because they are inherently technical and can be justified with selective or questionable science.

Historical precedents of politicized SPS measures include the **"Canola Dispute" with Canada, the "Pork and Soybean Tariffs" with the U.S.**, and the **generic and opaque rejections**.

For the U.S. and Canada, prioritizing clear, science-based SPS protocols in negotiations with China is a defensive necessity. It is a direct response to a pattern of behavior where trade in essential agricultural commodities has been weaponized for political leverage. By institutionalizing a process that forces disputes into the open and judges them on scientific merit, they can protect their economic interests, de-escalate political tensions, and champion a more stable and predictable trading system. Failure to do so leaves their most vital export sectors vulnerable to the whims of geopolitical friction.

5. Discussion and Policy Implications

5.1. America's Changing Approach to Trading Relationship with China

While China-U.S. trade relations have garnered increasing media attention in recent years due to rising political tensions, the relationship has always been deeply rooted in politics. Formal diplomatic ties between the two nations were established in 1979, not solely as an economic gesture, but as a strategic move by the United States to counter the growing influence of the Soviet Union ([Kim & Hammersmith](#) 1986). In adopting a more conciliatory policy toward China, the U.S. granted China Normal Trade Relations (NTR) status on a conditional basis, allowing Chinese exporters to access the U.S. market at lower Most Favoured Nation (MFN) tariff rates. Until China acceded to the WTO in 2001, these preferential rates were subject to annual congressional renewal, creating persistent uncertainty for Chinese exporters. Periodically, political and human rights concerns in the U.S. led to renewed scrutiny of the trade relationship and calls for economic sanctions ([CRS](#) 2025).

In the early 2000s, a prevailing belief among U.S. policymakers was that China's integration into the global economy would yield significant strategic and economic benefits for the United States ([Kirchner](#) 2022). In a speech ahead of the WTO accession vote, President Bill Clinton advocated for deeper China-U.S. engagement before the Congress, arguing that China's participation in the global trading system would help move the country "faster and further in the right direction" ([IATP](#) 2000). Formal entry into a rules-based system was expected to accelerate China's economic transformation, encouraging a shift away from state socialism toward a more market-oriented model. At the same time, U.S. officials hoped that deeper integration would incentivize China to become a more "responsible stakeholder" in the international community, a stakeholder that would gradually embrace human rights, pluralism, and broader social liberalization ([Kirchner](#) 2022).

Since the mid-2000s, China has increasingly adopted practices that challenge America's central role in the global economy. Technological competition has become a focal point of China-U.S. tensions, particularly in emerging sectors such as semiconductors, 5G networks, and artificial intelligence ([Zhang](#) 2024). However, WTO rulings have rarely resulted in the outcome desired by the United States, prompting President Donald Trump to repeatedly threaten U.S. withdrawal from the organization, citing its inability to curb China's unfair trade practices ([Bown & Irwin](#) 2018). The coercive use of tariffs marks a significant departure from the previous norms of diplomatic trade relations between the two nations. While both the U.S. and China have historically used tariffs to protect domestic industries, such measures were applied non-discriminately per the MFN principle. During the trade war, the United States weaponized tariffs as a bargaining tool, deliberately imposing economic pressure on China and other countries to compel concessions and reduce trade barriers. In response, China implemented retaliatory tariffs out of strategic necessity, targeting U.S. agriculture to maximize economic impact and reduce American leverage at the negotiating table.

In retrospect, the United States has largely backed itself into a corner in its trade relationship with China. While the initial strategy of using tariffs and aggressive trade measures was designed to coerce concessions, it has instead accelerated China's efforts to reduce its dependence on U.S. imports. The agricultural trade imbalance that once served as a source of American leverage is eroding, as China has diversified its suppliers and fortified its own export strengths in high-value manufacturing. Indeed, China has growing surpluses in critical products, including smartphones, laptops, and lithium-ion batteries. These high-demand goods have strengthened China's export leverage, as reflected in the White House's decision to exempt them from tariffs during the most recent trade measures ([DiPippo & Lenain 2025](#)).

5.2. Canada's Changing Approach to Trading Relationships with the U.S. and China

Canada and the U.S. have enjoyed a mutually beneficial relationship, sharing extensive borders, defence and national security partnerships, and trade agreements. Since the implementation of free trade in 1988, the two countries have built one of the world's most significant bilateral trade relationships. Removing tariff and non-tariff barriers under successive trade agreements has fostered greater economic integration across North America, particularly through interconnected supply chains in the automotive, energy, and agricultural sectors. In the following decades, Canada expanded trade under WTO frameworks, grew exchanges with China, and formed new partnerships with Europe and the Pacific. However, it has remained heavily reliant on the United States as its dominant trading partner.

[Hale \(2020\)](#) argues that this deep economic interdependence has often limited Canada's flexibility in shaping its international policy, as Canadian decisions must frequently align with broader U.S. economic and political interests. As demonstrated throughout this article, much of the recent intertwinement between agricultural trade and geopolitics between China and Canada can be traced to Canada's alignment with U.S. priorities. The arrest of Huawei CFO Meng Wanzhou was carried out at the request of U.S. authorities, an act that ultimately embroiled Canada in the escalating U.S.-China rivalry. [Nelson Wiseman \(2018\)](#) asserts that China's decision to target Canada rather than the U.S., despite the extradition request originating from Washington, was a strategic choice to avoid direct confrontation with the United States while sending a forceful message. This dynamic has resurfaced in implementing tariffs on Chinese electric vehicles, where Canada once again followed the lead of the United States and subsequently faced retaliatory measures from China.

Canada's economic gains from interdependence with the United States have diminished as relations grow increasingly strained, particularly under the Trump administration's unilateral trade measures, including sweeping 25% tariffs on Canadian imports and successive rounds targeting steel and aluminum in early 2025. This breakdown in economic cooperation has pushed Canada to prioritize trade diversification, removing domestic trade barriers and strengthening ties

with partners like the European Union and U.K.. Recalibrating relations with China, however, remains complex; Prime Minister Mark Carney has cautiously balanced economic interests with national security concerns, citing alleged election interference and Arctic ambitions (Ha, 2025). Nonetheless, Carney has maintained regular communication channels with China, viewing them as crucial for easing tariffs and trade barriers on Canadian agricultural exports.

In light of the above analysis and findings, we offer the following policy implications for the key actors involved.

5.3. For the United States

The U.S. should pursue a dual-track strategy that acknowledges the reality of strategic competition while safeguarding its agricultural sector. First, it should proactively support market diversification for its farmers. This includes expanding trade agreements with partners in Southeast Asia (e.g., the Indo-Pacific Economic Framework), Latin America, and Africa to create alternative outlets for commodities like soybeans and pork. Second, federal support programs should incentivize production flexibility and on-farm risk management rather than simply providing disaster relief after a trade shock. Third, in future negotiations with China, the U.S. should prioritize the establishment of clear, science-based protocols for resolving SPS disputes to prevent them from being used as political tools. Finally, investing in agricultural innovation and infrastructure is crucial to maintaining a long-term competitive edge against other major exporters like Brazil.

5.4. For Canada

Canada's experience demonstrates that even a country without a broad trade conflict with China is vulnerable to targeted retaliation. Its policy response must therefore be nuanced. A primary objective should be to reduce the concentration of its canola exports by deepening trade ties with other large importers in Europe and developing new markets in South Asia. Diplomatically, Canada must continue to engage China through multilateral forums and bilateral dialogues, but do so from a position of principle. As Canada moves away from U.S. geopolitical influence, Canada should consider eliminating existing tariffs on Chinese EVs as a possibility to restore Canada-Sino relations. Strengthening the capacity of its food inspection agency (CFIA) to proactively address and transparently communicate SPS issues can help pre-empt future non-tariff barriers. Domestically, policies should encourage value-added processing of agricultural commodities within Canada, which can create more stable domestic jobs and make exports less vulnerable to raw commodity trade disputes.

5.5. For China

While agricultural imports can be utilized by China as short-term leverage, these actions have also highlighted the fragility of its own food security. China's primary policy imperative should be to enhance the resilience of its import supply chains. This means accelerating its diversification efforts beyond the current dominant suppliers (e.g., the U.S. for soybeans). Investing in agricultural productivity and sustainability at home is equally critical; this includes adopting advanced technologies to boost yields, improving water management, and containing soil degradation to reduce the long-term import dependency. On the international stage, China would benefit from reinforcing its commitment to rules-based trade. By working within established WTO frameworks to resolve disputes and ensuring its SPS measures are transparent and scientifically justified, China can build greater trust with its trading partners and secure more predictable, long-term access to the global food supplies it requires.

6. Conclusion

A comparison of China's agricultural trade with the U.S. and Canada highlights the interplay of economic interdependence, geopolitical tensions, and strategic vulnerabilities. Both rely heavily on China, but the U.S. dependence on soybeans exposes it more, while Canada's diversified exports offer greater resilience. All three countries have weaponized agricultural trade, as seen in U.S. tariffs, China's retaliatory measures, and the canola dispute with Canada. China's growing food import needs increase its supply chain risks, while North American exporters face losses when China shifts suppliers. U.S.-China trade is marked by high-stakes competition, whereas Canada's smaller trade remains vulnerable to geopolitical spillovers, such as the Huawei-linked canola ban and retaliation over Canadian EV tariffs.

Our evidence suggests that Canada and the United States should reduce reliance on China by expanding trade with the EU, Southeast Asia, and Latin America, investing in agreements like the CPTPP, supporting farmers through subsidies for crop diversification and innovation, strengthening supply chains, and aligning with allies in trade negotiations. China should boost agricultural R&D to enhance self-sufficiency, adopt sustainable land-use policies to meet the challenges of arable land constraint, diversify imports through BRI partnerships and long-term contracts, and engage in bilateral dialogues to address non-tariff barriers while avoiding retaliatory measures that raise domestic food prices. The future of agricultural trade depends on balancing economic efficiency with strategic autonomy through diversification, innovation, and cooperative frameworks to ensure global food system stability. As China continues to rise, it will be increasingly important for all countries to manage these risks through a combination of market diversification, domestic policy reforms, and strengthened international cooperation.

References

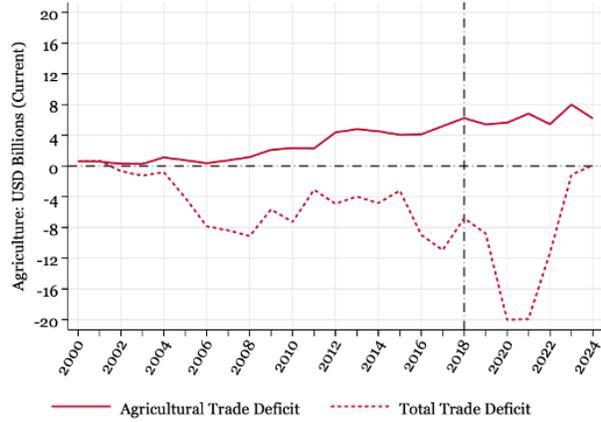
- [1] Z. Liu, Y. Huang, Y. Wang, and Z. Wang, “Identifying the potential construction areas and priorities of well-facilitated farmlands by developing a simple but robust method: A case study in dryland agriculture regions based on public data,” *International Journal of Applied Earth Observation and Geoinformation*, vol. 134, p. 104166, Nov. 2024, doi: 10.1016/j.jag.2024.104166.
- [2] A. Sapir and P. C. Mavroidis, “China and the WTO: Two systems meet,” *Vox EU*. Centre for Economic Policy Research, Apr. 28, 2021. Accessed: Jul. 01, 2025. [Online]. Available: <https://cepr.org/voxeu/columns/china-and-wto-two-systems-meet>
- [3] A. Cheremukhin, M. Golosov, S. Guriev, and A. Tsyvinski, “The Economy of People’s Republic of China from 1953,” *NBER Working Paper Series*, no. 21397, pp. 1–111, Jul. 2015, doi: <https://doi.org/10.3386/w21397>.
- [4] A. Sapir and P. C. Mavroidis, “China and the world trade organisation: towards a better fit,” *Buregel*, no. 6, Jun. 2019, doi: <https://www.bruegel.org/working-paper/china-and-world-trade-organisation-towards-better-fit>.
- [5] C. Yue and P. Hua, “Does comparative advantage explains export patterns in China?,” *China Economic Review*, vol. 13, no. 2–3, pp. 276–296, Jan. 2002, doi: [https://doi.org/10.1016/S1043-951X\(02\)00073-1](https://doi.org/10.1016/S1043-951X(02)00073-1).
- [6] C. A. Carter and S. Rozelle, “Will China’s Agricultural Trade Reflect Its Comparative Advantage?,” *China’s Food and Agriculture: Issues for the 21st Century*. Economic Research Service USDA, 2001. Accessed: Jul. 01, 2025. [Online]. Available: https://www.ers.usda.gov/sites/default/files/_laserfiche/publications/42432/15176_aib775k_1.pdf
- [7] L. Brandt, D. Ma, and T. G. Rawski, “Industrialization in China,” *IZA Discussion Papers*, no. 10096, pp. 1–46, 2016, doi: <https://www.iza.org/publications/dp/10096/industrialization-in-china>.
- [8] “China Industrial Production Index Growth.” CEIC Data, Jan. 2025. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.ceicdata.com/en/indicator/china/industrial-production-index-growth>
- [9] Q. F. Zhang and M. Wu, “The decline and transformation of smallholders in Chinese agriculture: national trends,” *J Peasant Stud*, vol. 52, no. 3, pp. 485–512, Apr. 2025, doi: <https://doi.org/10.1080/03066150.2024.2392688>.
- [10] Y. Liu, Y. Dong, and W. Qian, “Digital economy and China’s agricultural exports: based on trade cost and market competition effect,” *China Agricultural Economic Review*, vol. 16, no. 3, pp. 489–506, Jul. 2024, doi: <https://doi.org/10.1108/CAER-08-2023-0213>.
- [11] H. Jiang, “China: Evolving Demand in the World’s Largest Agricultural Import Market,” *International Agricultural Trade Report*. Foreign Agricultural Service USDA, Sep. 29, 2020. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.fas.usda.gov/data/china-evolving-demand-world-s-largest-agricultural-import-market>
- [12] R. E. Scott, “The China toll,” *Publications*. Economic Policy Institute, Aug. 23, 2012. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.epi.org/publication/bp345-china-growing-trade-deficit-cost/>
- [13] A. Mattoo and R. W. Staiger, “Trade wars: What do they mean? Why are they happening now? What are the costs?,” *NBER Working Paper Series*, no. 25762, Apr. 2019, doi: <http://www.nber.org/papers/w25762>.
- [14] N. R. Lardy, “Issues in China’s WTO Accession,” *Commentary Series*. Brookings Institution, May 09, 2001. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.brookings.edu/articles/issues-in-chinas-wto-accession/>

- [15] J. W. Glauber, “China’s Accession to the WTO and Its Impact on Global Agricultural Trade,” in *China and the WTO*, H. Gao, D. Raess, and K. Zeng, Eds., Cambridge University Press, 2023, pp. 132–159. doi: 10.1017/9781009291804.010.
- [16] J. Glauber, J. P. Gianatiempo, and V. Piñeiro, “U.S.-China trade war 2.0: What are the implications for global oilseed markets?,” *Issue Post: Markets, Trade, and Institutions*. International Food Policy Research Institute, Apr. 21, 2025. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.ifpri.org/blog/u-s-china-trade-war-2-0-what-are-the-implications-for-global-oilseed-markets/>
- [17] A. Williams and J. Kaufman, “U.S. Agricultural Trade - U.S. Agricultural Trade at a Glance.” Economic Research Service USDA, Apr. 17, 2025. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.ers.usda.gov/topics/international-markets-us-trade/us-agricultural-trade/us-agricultural-trade-at-a-glance>
- [18] C. P. Bown and M. Kolb, “Trump’s Trade War Timeline: An Up-to-Date Guide,” *Trade and Investment Policy Watch*. Peterson Institute for International Economics, Jan. 20, 2025. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.piie.com/blogs/trade-and-investment-policy-watch/2018/trumps-trade-war-timeline-date-guide>
- [19] S. Morgan *et al.*, “The Economic Impacts of Retaliatory Tariffs on U.S. Agriculture,” *Economic Research Report*. Economic Research Service USDA, Jan. 11, 2022. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.ers.usda.gov/publications/pub-details?pubid=102979>
- [20] P. D. Fajgelbaum, P. K. Goldberg, P. J. Kennedy, and A. K. Khandelwal, “The Return to Protectionism,” *Q J Econ*, vol. 135, no. 1, pp. 1–55, Feb. 2020, doi: <https://doi.org/10.1093/qje/qjz036>.
- [21] D. Carr, A. Schechinger, and C. Campbell, “Trump’s Hollow Promise of Trade-War Relief for Small Farms,” *News & Insights*. Environmental Working Group, Nov. 21, 2019. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.ewg.org/news-insights/news/trumps-hollow-promise-trade-war-relief-small-farms>
- [22] J. Newton, “Farm Bankruptcies in 2018 – The Truth is Out There,” *Market Intel*. American Farm Bureau Federation, Feb. 12, 2019. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.fb.org/market-intel/farm-bankruptcies-in-2018-the-truth-is-out-there>
- [23] C. P. Bown, E. Jung, and E. Zhang, “Trump Has Gotten China to Lower Its Tariffs. Just Toward Everyone Else.,” *Trade and Investment Policy Watch*. Peterson Institute for International Economics, Jun. 12, 2019. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.piie.com/blogs/trade-and-investment-policy-watch/2019/trump-has-gotten-china-lower-its-tariffs-just-toward>
- [24] M. K. Adjemian, A. Smith, and W. He, “Estimating the market effect of a trade war: The case of soybean tariffs,” *Food Policy*, vol. 105, p. 102152, Dec. 2021, doi: <https://doi.org/10.1016/j.foodpol.2021.102152>.
- [25] K. Yeung, “China’s Pork Price Rises 110 Per Cent Sending Consumer Inflation Rocketing to Eight-Year High,” *China Economy*. South China Morning Post, Dec. 10, 2019. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.scmp.com/economy/china-economy/article/3041352/chinas-consumer-inflation-rockets-eight-year-high-pork-price>
- [26] C. P. Bown, “Anatomy of a flop: Why Trump’s US-China phase one trade deal fell short,” *Trade and Investment Policy Watch*. Peterson Institute for International Economics, Feb. 08, 2021. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.piie.com/blogs/trade-and-investment-policy-watch/anatomy-flop-why-trumps-us-china-phase-one-trade-deal-fell>
- [27] C. P. Bown, “Trump’s trade war timeline 2.0: An up-to-date guide,” *Realtime Economics*. Peterson Institute for International Economics, Jun. 16, 2025. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.piie.com/blogs/realtime-economics/2025/trumps-trade-war-timeline-20-date-guide>

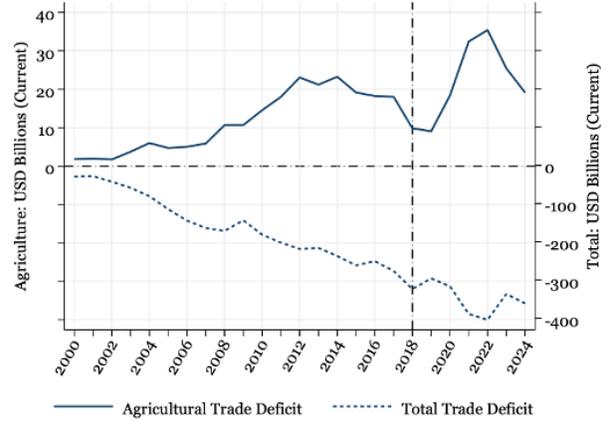
- [28] “Arable land (hectares),” *Data*. World Bank Group, 2022. Accessed: Jul. 01, 2025. [Online]. Available: <https://data.worldbank.org/indicator/AG.LND.ARBL.HA?end=2021&start=2002>
- [29] “China Soybean Area, Yield and Production,” *International Production Assessment Division*. Foreign Agricultural Service USDA, Jun. 12, 2025. Accessed: Jul. 01, 2025. [Online]. Available: <https://ipad.fas.usda.gov/countrysummary/Default.aspx?id=CH&crop=Soybean>
- [30] “全面提升油料生产能力 [Comprehensively improve oil production capacity],” *经济日报* [*Economic Daily*]. 中华人民共和国农业农村部 [Ministry of Agriculture and Rural Affairs of the People’s Republic of China], Apr. 01, 2022.
- [31] W. Kong, M. Wei, N. Khan, J. Liang, D. Han, and H. Zhang, “Assessing sustainable future of import-independent domestic soybean production in China: policy implications and projections for 2030,” *Front Sustain Food Syst*, vol. 8, Jun. 2024, doi: <https://doi.org/10.3389/fsufs.2024.1387609>.
- [32] C. Tortajada and H. Zhang, “When food meets BRI: China’s emerging Food Silk Road,” *Glob Food Sec*, vol. 29, p. 100518, Jun. 2021, doi: <https://doi.org/10.1016/j.gfs.2021.100518>.
- [33] J. Ito and X. Li, “Interplay between China’s grain self-sufficiency policy shifts and interregional, intertemporal productivity differences,” *Food Policy*, vol. 117, no. 102446, May 2023, doi: <https://doi.org/10.1016/j.foodpol.2023.102446>.
- [34] F. Gale, “Cracking Open China’s Wheat Import Quota,” *Amber Waves*. Economic Research Service USDA, Dec. 07, 2021. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.ers.usda.gov/amber-waves/2021/december/cracking-open-china-s-wheat-import-quota>
- [35] R. Cardwell and D. G. Brewin, “Blackleg or blackmail? Economics of the Canada–China canola trade dispute,” *Canadian Journal of Agricultural Economics/Revue canadienne d’agroeconomie*, vol. 67, no. 3, pp. 251–260, Sep. 2019, doi: <https://doi.org/10.1111/cjag.12203>.
- [36] J. McGregor, “China agrees to maintain Canada’s access to \$2.6B canola market through 2020,” *Politics*. CBC News, Sep. 22, 2016. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.cbc.ca/news/politics/canada-china-beef-canola-1.3773980>
- [37] C. Tunney, “Canada’s review of Huawei won’t be derailed by threats, Goodale says,” *Politics*. CBC News, Jan. 18, 2019. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.cbc.ca/news/politics/china-huawei-ban-goodale-1.4983582>
- [38] Left Field Commodity Research, “Case Study - Impacts of the Chinese Trade Restrictions on the Canadian Canola Industry,” *CCC Market Access Case Studies*. Canola Council of Canada, Feb. 2021. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.canolacouncil.org/wp-content/uploads/2021/03/CCC-Market-Access-Impact-Report-China-Final.pdf>
- [39] “Huawei executive Meng Wanzhou freed by Canada arrives home in China.” BBC News, Sep. 25, 2021.
- [40] The Canadian Press, “China has lifted a 3-year ban on Canadian canola, Ottawa says,” *Politics*. CBC News, May 18, 2022. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.cbc.ca/news/politics/china-canada-canola-ban-ends-1.6458746>
- [41] J. Cash, M. M. Chu, and Y. Zhang, “China hits back at Canada with fresh agriculture tariffs,” *Markets*. Reuters, Mar. 09, 2025. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.reuters.com/markets/china-announces-retaliatory-tariffs-some-canada-farm-food-products-2025-03-08/>
- [42] H. N. Kim and J. L. Hammersmith, “U.S.-China Relations in the Post-Normalization Era, 1979-1985,” *Pac Aff*, vol. 59, no. 1, pp. 69–91, 1986, doi: <https://doi.org/10.2307/2759004>.

- [43] “Permanent Normal Trade Relations and U.S.-China Tariffs,” *In Focus*. Congressional Research Service, May 14, 2025. Accessed: Jul. 01, 2025. [Online]. Available: https://www.congress.gov/crs_external_products/IF/PDF/IF12980/IF12980.4.pdf
- [44] S. Kirchner, “From ‘China Shock’ to deglobalisation shock: China’s WTO accession and US economic engagement 20 years on,” *Trade and Economics*. United States Studies Centre, Jan. 24, 2022. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.ussc.edu.au/from-china-shock-to-deglobalisation-shock-chinas-wto-accession-and-us-economic-engagement-20-years-on>
- [45] “Full Text of Clinton’s Speech on China Trade Bill.” Institute for Agriculture and Trade Policy. Accessed: Jul. 01, 2025. [Online]. Available: https://www.iatp.org/sites/default/files/Full_Text_of Clintons_Speech_on_China_Trade_Bi.htm
- [46] K. H. Zhang, “Goeconomics of US-China tech rivalry and industrial policy,” *Asia and the Global Economy*, vol. 4, no. 2, p. 100098, Jul. 2024, doi: 10.1016/j.aglobe.2024.100098.
- [47] CFR Editors, “The Contentious U.S.-China Trade Relationship,” *Backgrounder*. Council on Foreign Relations, Apr. 14, 2025. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.cfr.org/backgrounder/contentious-us-china-trade-relationship>
- [48] “Disputes by member,” *Trade Topics: Dispute Settlement*. World Trade Organization, 2025. Accessed: Jul. 01, 2025. [Online]. Available: https://www.wto.org/english/tratop_e/dispu_e/dispu_by_country_e.htm
- [49] C. P. Bown and D. A. Irwin, “What Might a Trump Withdrawal from the World Trade Organization Mean for US Tariffs?,” *Policy Briefs*. Peterson Institute for International Economics, Nov. 2018. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.piie.com/publications/policy-briefs/2018/what-might-trump-withdrawal-world-trade-organization-mean-us>
- [50] G. DiPippo and B. Lenain, “Testing Self-Reliance: What the Trade War Reveals About China’s Vulnerabilities and Power,” *Research & Commentary*. RAND, Jun. 10, 2025. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.rand.org/pubs/commentary/2025/06/testing-self-reliance-what-the-trade-war-reveals-about.html>
- [51] G. Hale, “Capacity and conditions for choice: managing Canada’s international economic policy relations in an unstable world,” *Canadian Foreign Policy Journal*, vol. 26, no. 3, pp. 276–297, Sep. 2020, doi: <https://doi.org/10.1080/11926422.2020.1712218>.
- [52] K. Dangerfield, “Why China is trying to bully Canada (and not the U.S.) into releasing Huawei CFO,” *News*. Global News, Dec. 13, 2018. Accessed: Jul. 01, 2025. [Online]. Available: <https://globalnews.ca/news/4758109/china-bully-canada-release-huawei-cfo/>
- [53] S. Ha, “Carney agrees to ‘regularize’ communication between Canada and China,” *Politics*. CTV News, Jun. 06, 2025. Accessed: Jul. 01, 2025. [Online]. Available: <https://www.ctvnews.ca/politics/article/carney-agrees-to-regularize-communication-between-canada-and-china/>
- [54] Statista 2025. “Trade balance of agricultural product imports and exports in China from 2005 to 2024 (in billion U.S. dollars)”. Accessed: Oct. 12, 2025. [Online]. Available: <https://www-statista-com.qe2a-proxy.mun.ca/statistics/1301293/china-balance-of-trade-in-agricultural-products/>
- [55] Samuel M., et. al. “Atmospheric particulates over the northwestern Pacific during the late Holocene: Volcanism, dust, and human perturbation” *Science Advances*. October 2024. DOI:10.1126/sciadv.adn3311
- [56] Wang, Y., et. al. “A Review of the Growth of the Fast Food Industry in China and Its Potential Impact on Obesity”, *Int J Environ Res Public Health*, 2016 Nov 9;13(11):1112. doi: [10.3390/ijerph13111112](https://doi.org/10.3390/ijerph13111112)

(a) China-Canada Trade Deficits

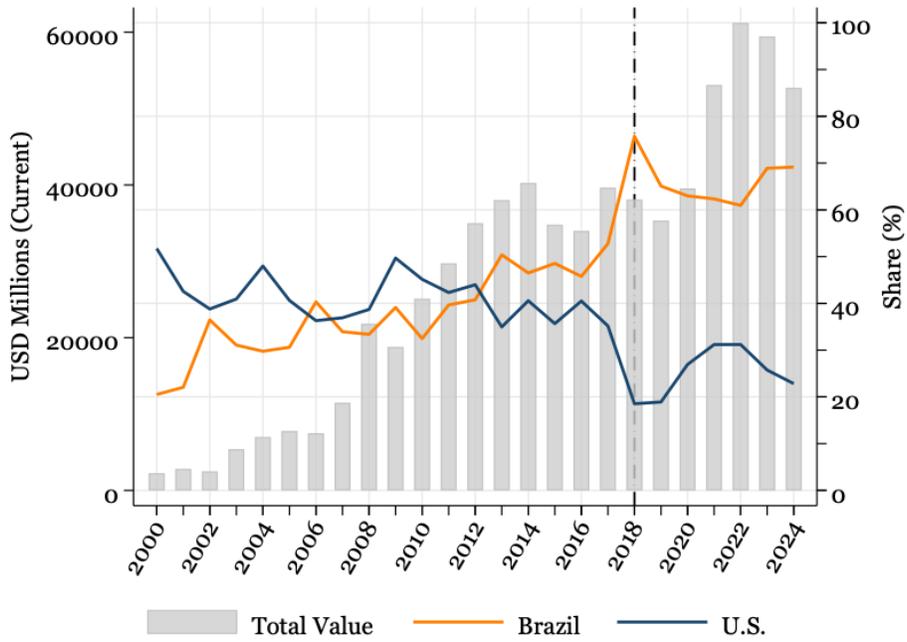


(b) China-U.S. Trade Deficits



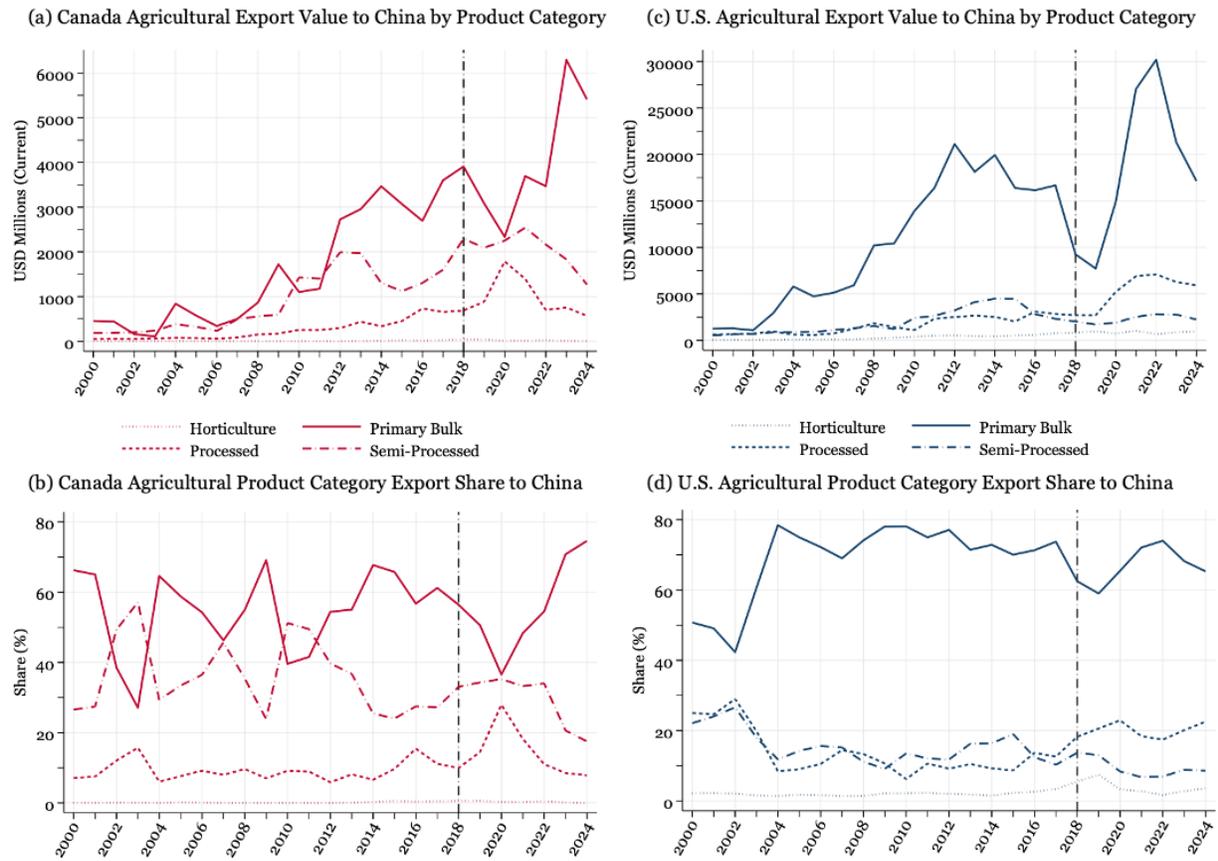
Source(s): Author's calculations using UN Comtrade.

Appendix Figure 2: China Soybean Import Value, Brazil and U.S. Soybean Export Share, 2000-2024



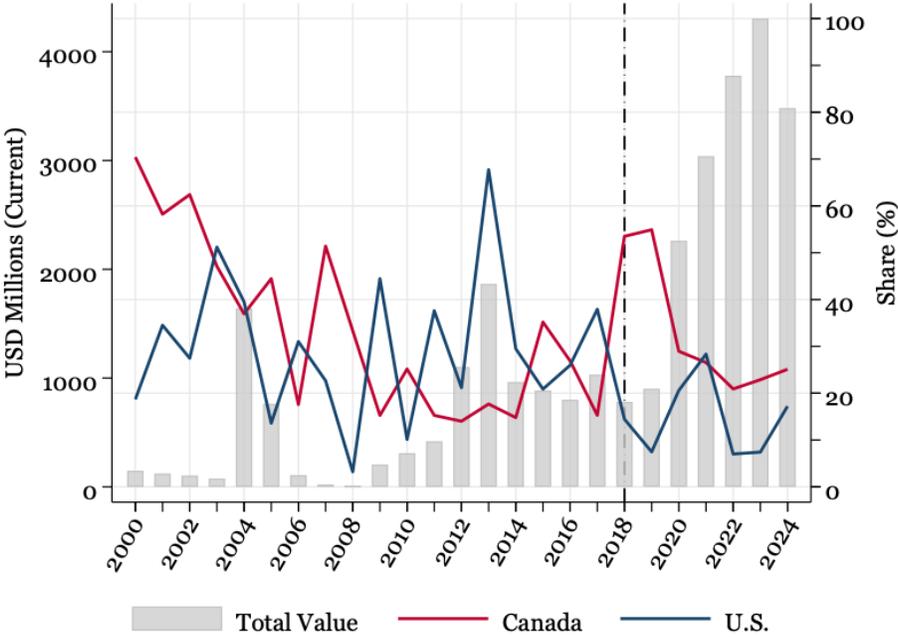
Source(s): Author's calculations using UN Comtrade.

Appendix Figure 3: Canada, U.S. Agricultural Export Value to China by Product Category Value and Export Share, 2000-2024



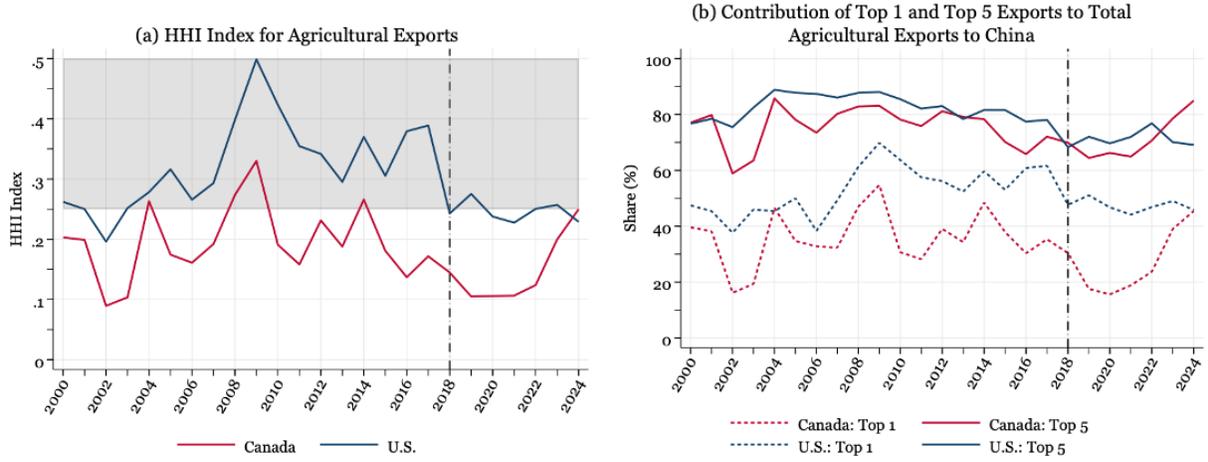
Source(s): Author's calculations using UN Comtrade.
Notes(s): Definitions of product categories are available in Appendix Table B1.

Appendix Figure 4: China Wheat and Meslin Import Value, Canada and U.S. Wheat and Meslin Export Share, 2000-2024



Source(s): Author’s calculations using UN Comtrade.

Appendix Figure 5: Canada, U.S. Agricultural Export Diversification to China, 2000-2024



Source(s): Author's calculations using UN Comtrade.

Appendix Table A1: Descriptive Statistics of Agricultural Sector: U.S. and Canada

	Canada	United States
(1) Agriculture workers as share of total employment (2023)	1.3%	1.6%
(2) Number of farms	0.2 million (2021)	1.9 million (2024)
(3) Farm area (hectares)	62.2 million (2021)	354.5 million (2024)
(4) Agriculture as share of GDP	1.8 (2020)	0.9 (2021)
(5) Value of agricultural exports (2023)	USD 44.1 billion	USD 113.2 billion
(6) Top five agricultural exports by value (2023)	Wheat, rapeseed or colza seed, rapeseed/canola oil (crude), pig meat, cattle meat	Soya beans, walnuts (shelled), maize (corn), cattle meat, pig meat
(7) Top five agricultural export markets (2024)	United States (36.4%), China (17.1%), Japan (5.8%), India (3.4%), Indonesia (2.7%)	Mexico (17.2%), Canada (16.1%), China (14.0%), Japan (6.8%), South Korea (4.8%)

Source(s): (1) World Bank, *Employment in agriculture* using ILOSTAT. (2-3) Statistics Canada, 2021 Census of Agriculture. U.S. Department of Agriculture, *Farm and Land in Farms 2024*. (4) World Bank, *Agriculture, forestry, and fishing, value added* using World Bank national accounts and OECD National Accounts. (5-6) United Nations, FAOSTAT Trade Indices. (7) Statistics Canada, Trade Data Online. U.S. Department of Agriculture, GATS.

Appendix Table A2: Definition of Agricultural Products based on the World Trade Organization's Annex 1 f the *Agreement on Agriculture*

Category	HS Codes
Horticulture	0601, 0602, 0603, 0604, 0701, 0702, 0703, 0704, 0705, 0706, 0707, 0708, 0709, 0714, 0801, 0802, 0803, 0804, 0805, 0806, 0807, 0808, 0809, 0810, 0813, 0904, 0905, 0906, 0907, 0908, 0909, 0910, 1210
Primary Bulk	09011*, 0902, 0903, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1801, 2401, 5201, 5202, 5301, 5302
Processed Products	0201, 0202, 0203, 0204, 0205, 0206, 0207, 0208, 0209, 0210, 0401, 0402, 0403, 0404, 0405, 0406, 0407, 0408, 0409, 0410, 0710, 1212, 1517, 1601, 1602, 17019*, 1702, 1703, 1704, 1806, 1901, 1902, 1903, 1904, 1905, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2101, 2102, 2103, 2104, 2105, 2106, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2309, 2402, 2403
Semi-Processed Products	0101, 0102, 0103, 0104, 0105, 0106, 0501, 0502, 0503, 0504, 0505, 0506, 0507, 0508, 0510, 0511, 0711, 0712, 0713, 0811, 0812, 0814, 09012*, 09019*, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1109, 1208, 1209, 1211, 1213, 1214, 1301, 1302, 1401, 1402, 1403, 1404, 1501, 1502, 1503, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 1518, 1519, 1520, 1521, 1522, 17011*, 1802, 1803, 1804, 1805, 230110, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 290543, 290544, 290545, 3301, 3501, 3502, 3503, 3504, 3505, 380910, 3823, 382460, 4101, 4102, 4103, 4301, 5001, 5002, 5003, 5101, 5102, 5103, 5203

Appendix Table A3: Top Five Agricultural Exports to China for the U.S. and Canada: 2004, 2014, 2024

	2004		2014		2024	
	Product	Share (%)	Product	Share (%)	Product	Share (%)
Panel A: United States						
1	Soybeans	45.4	Soybeans	59.7	Soybeans	45.8
2	Cotton	23.9	Starch residues	6.4	Cotton	7.1
3	Wheat and meslin	8.8	Grain sorghum	5.5	Grain sorghum	5.4
4	Raw bovine hides and skins	7.9	Raw bovine hides and skins	5.3	Misc. food preparations	5.3
5	Misc. food preparations	2.8	Cotton	4.6	Bovine meat	4.2
Panel B: Canada						
1	Wheat and meslin	46.5	Canola seeds	48.5	Canola seeds	45.4
2	Canola oil	16.0	Canola oil	11.5	Wheat and meslin	12.1
3	Canola seeds	10.2	Soybeans	8.9	Oil-cake and other residuals	10.8
4	Raw bovine hides and skins	6.8	Shelled vegetables	5.4	Soybeans	8.8
5	Barley	6.2	Raw bovine hides and skins	3.9	Barley	7.8

Source(s): Author's calculations using UN Comtrade.

Note(s): Export share is calculated as the product export value over the total value of agricultural exports to China.