AGRICULTURE ANALYST

# Risks to the US-Brazil-China Soybean Triangle

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- Soybeans are crushed into soybean meal (animal feed) and soybean oil (food and biofuels). China accounts for ~60% of global soybean imports, while Brazil and the US supply ~85% of global exports. We discuss the risks to soybean prices through the lens of the US-Brazil-China soybean triangle.

**On the supply side:**

- **Risk #1 (price upside) High fertilizer prices may tighten Brazil soybean supply…** While Brazil's lower land costs supported rapid acreage expansion and helped it overtake the US as the world's largest soybean producer, higher fertilizer costs could reduce Brazil's cost advantage due to its heavy reliance on imported fertilizer and agrochemicals.
- **… while (price downside) encouraging US soybean supply.** Unlike Brazil, where soybeans and corn are grown sequentially, US farmers choose between the two crops. Because soybeans require significantly less nitrogen fertilizer than corn, higher fertilizer prices typically favor US soybean acreage.

**On the demand side:**

- **Risk #2 (price upside/downside) Trade policy can swing China demand for US soybeans.** US soybean prices rose 4% on July 6 following reports of Chinese purchases of US soybeans, consistent with commitments made at the mid-May Trump-Xi summit. While China has deliberately diversified soybean imports toward Brazil since the 2018 trade tensions, it cannot fully replace US supply because the two exporters operate on offsetting seasonal calendars.
- **Risk #3 (price upside) Rising energy security concerns support soybean demand via expanding biodiesel mandates.**
- **Risk #4 (price downside) Longer term, China's food security strategy — including via higher domestic production — poses downside risk to soybean import demand.** That said, sustained Chinese investment in Brazilian infrastructure suggests continued demand for Brazilian origin soybeans at least in the near-term — a tailwind that may not extend to US exporters.

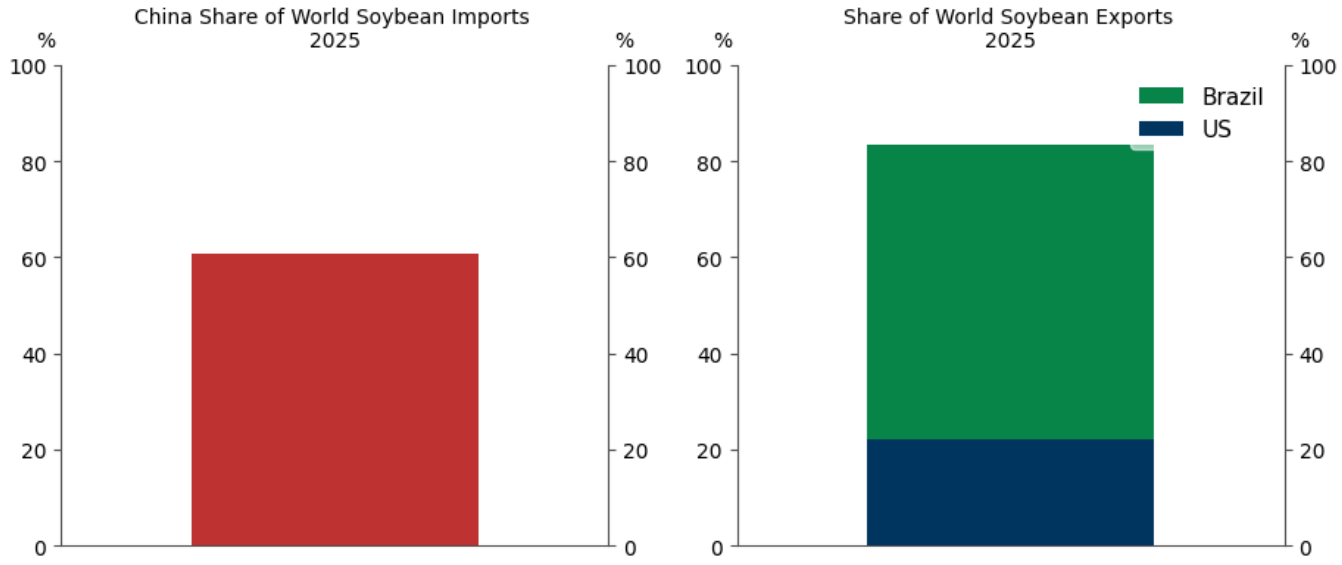
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Investors should consider this report as only a single factor in making their investment decision. For Reg AC certification and other important disclosures, see the Disclosure Appendix, or go to www.gs.com/research/hedge.html.

# Risks to the US-Brazil-China Soybean Triangle

Soybeans are crushed into soybean meal (for animal feedstock) and soybean oil (cooking oil for food and increasingly biofuel). The soybean market is heavily concentrated within the US-Brazil-China triangle. China absorbs ~60% of global soybean imports, making it the largest source of demand. On the supply side, Brazil and the US together account for ~85% of global exports (Exhibit 1). With both demand and supply concentrated among few participants, a disruption at any point in the triangle transmits through global prices with limited diversification to absorb it.

**Exhibit 1: China Accounts for ~60% of Global Soybean Imports, While Brazil and the US Together Supply ~85% of Global Exports**



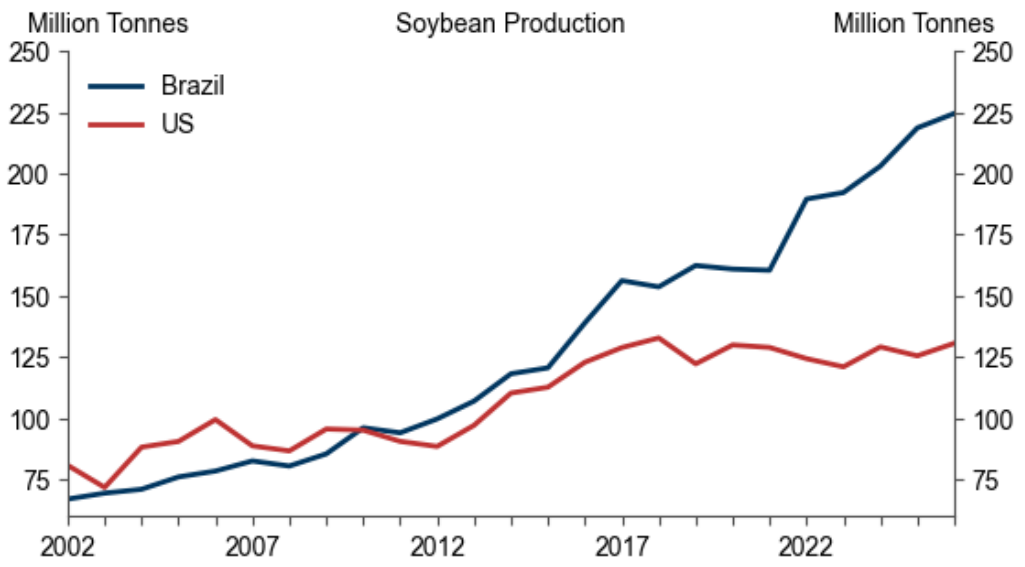

Source: USDA, Goldman Sachs Global Investment Research

In this *Agriculture Analyst*, we discuss the risks to soybean prices through the lens of the US-Brazil-China soybean triangle.

## Risk #1 (Price Upside) High Fertilizer Prices May Tighten Brazil Soybean Supply…

Brazilian soybean production has tripled since the early 2000s driven by acreage expansion, overtaking the US around 2010 as the world's largest soybean producer (Exhibit 2). Brazil soybean production reached approximately 225 million tonnes in the latest crop year, while US output has remained near 110-130 million tonnes.

**Exhibit 2: Brazil Has Overtaken the US as the World's Largest Soybean Producer**

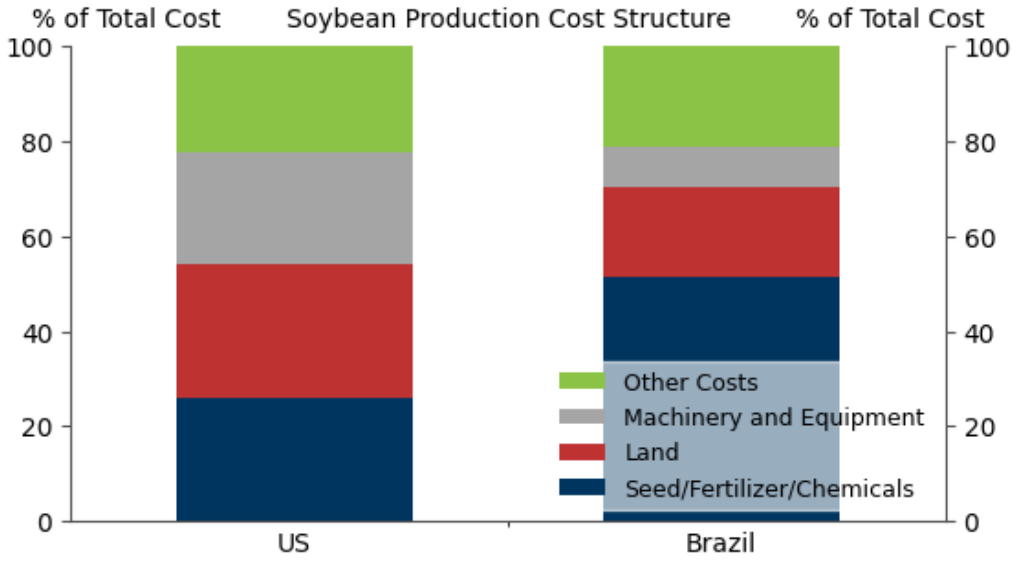



Source: USDA, Goldman Sachs Global Investment Research

Cheaper land has supported Brazil's competitiveness, with average all-in production costs of $511 per acre from 2023–2025 versus $636 per acre in the US (assuming 5.35 USD/BRL). However, this advantage carries a notable exposure: fertilizer alone accounts for about 23% of a Brazilian farmer's budget versus 8% in the US, and combined with crop chemicals and seeds represents nearly 50% of total costs (Exhibit 3). Because Brazil imports about 85% of its fertilizer[1], its farmers are exposed to global supply disruptions and depreciation in the Brazilian currency to a greater degree than US farmers.

[1] Particularly for Brazilian soybean producers, sustained phosphate fertilizer unaffordability may prolong under-application and raise longer-term risks to soybean production. Unlike nitrogen, phosphate can be drawn down from soil reserves in the short term, limiting immediate yield impacts. Continued under-application gradually depletes these reserves, weakening soil quality, crop resilience, and long-term productivity.

**Exhibit 3: Cheaper Land Has Supported Brazil's Competitiveness, But Brazil's Heavy Reliance on Imported Fertilizers and Agrochemicals Are a Vulnerability**




Data sample: 2023-2025

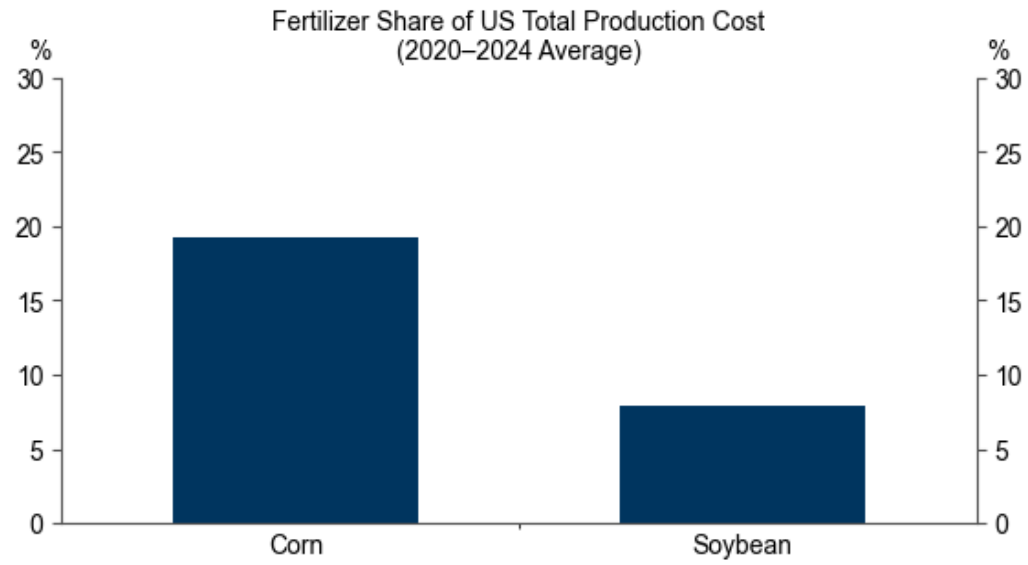
Source: USDA, Ministério de Desenvolvimento Agrário e Agricultura Familiar, Goldman Sachs Global Investment Research

## … While (Price Downside) Encouraging US Soybean Supply

Unlike Brazil, where soybeans and corn are grown *sequentially*, US farmers choose between the two crops. Because soybeans require significantly less nitrogen fertilizer than corn, higher fertilizer prices typically encourage US acreage to shift toward soybeans, increasing US soybean supply and partially offsetting lower Brazilian production (Exhibit 4).[2]

[2] The surge in nitrogen fertilizer prices following the Strait of Hormuz disruption in early 2026 may have already contributed to a shift in US acreage from corn to soybeans. According to the USDA NASS soybean planted area increased 5% year-on-year to 85.4 million acres in 2026, while corn acreage declined 3% to 95.3 million acres. The acreage response was likely tempered by the fact that fertilizer procurement and seed purchases in the US had largely been completed before the disruption occurred. A stronger US acreage shift toward soybeans could emerge if renewed disruptions tighten fertilizer markets ahead of the 2027 Northern Hemisphere planting season.

**Exhibit 4: Soybeans Require Significantly Less Nitrogen Fertilizer Than Corn**



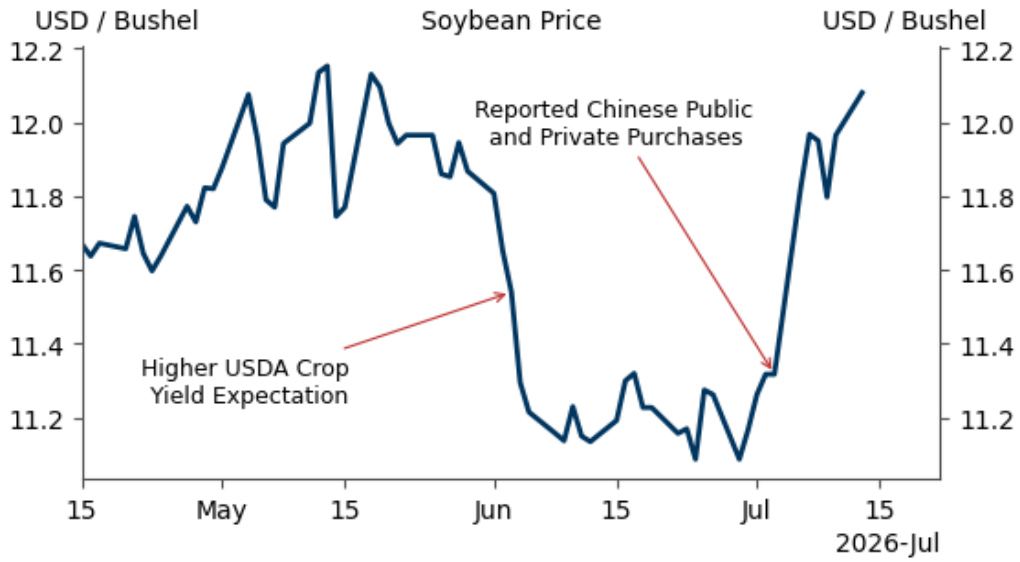

Source: USDA, Goldman Sachs Global Investment Research

## Risk #2 (Price Upside/Downside) Trade Policy Can Swing China Demand for US Soybeans

US soybean prices (CBOT) surged by ~4 % on July 6th — the biggest daily gain since June 2023 — following reports of Chinese purchases of US soybeans through both state-owned companies and private sales, consistent with the commitments at the mid-May Trump-Xi summit (Exhibit 5). However, we estimate that only ~4% of the latest commitments have been executed so far.[3]

[3] China commited to purchase 25 million tonnes of soybeans annually from the US. The USDA has reported over one million tonnes of flash sales of soybeans from the US with destination China, for delivery 2026/27.

**Exhibit 5: US Soybean Prices (CBOT) Surged 4% Following China's Reported Public and Private Purchases From the US**

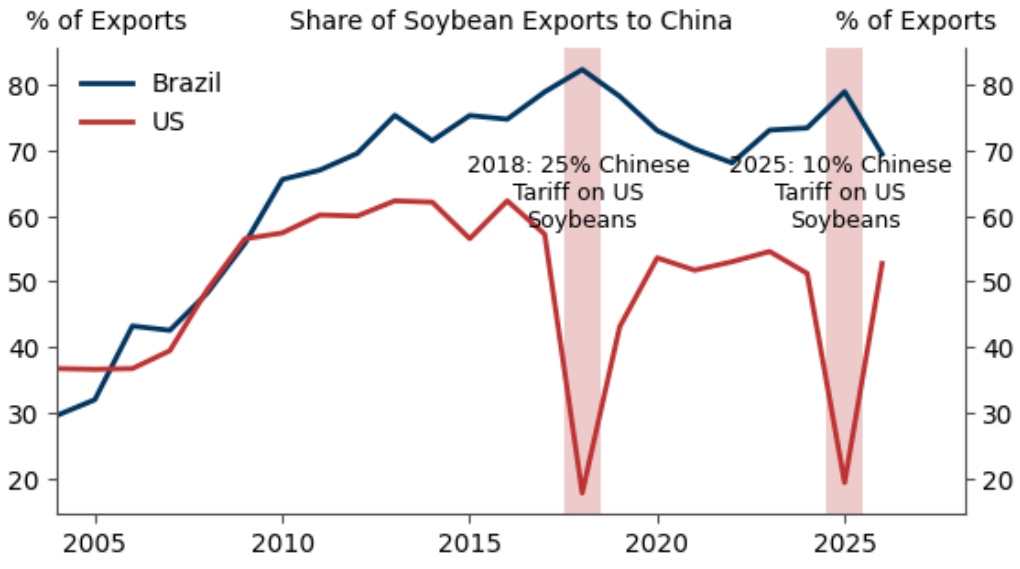



Soybean prices: front-month futures (CBOT)

Source: Bloomberg, Goldman Sachs Global Investment Research

Since the 2018 trade tensions, China has deliberately diversified its soybean imports away from the US by increasing purchases from Brazil and supporting Brazilian export infrastructure through more than a decade of investment in soybean logistics, including state-owned food processing company COFCO's origination and port assets at Santos and São Simão, and China Merchants' control of port TCP Paranaguá (Exhibit 6).

**Exhibit 6: US Soybeans Exports to China Are Subject to Trade Tensions**

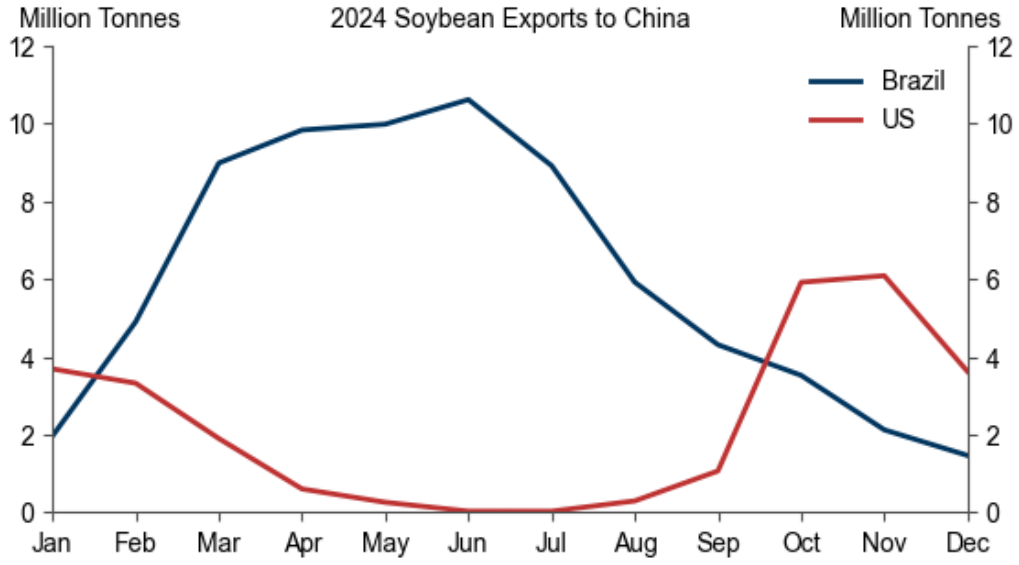



Source: Global Trade Tracker, Goldman Sachs Global Investment Research

China cannot fully replace US supply because the two exporters operate on offsetting seasonal calendars (Exhibit 7). Brazil's exports to China peak in February-July, following its Southern Hemisphere harvest, then decline by September-October as domestic stocks draw down. The US pattern is the inverse, with exports at their lowest in Q2 and

rising from October onward following the Northern Hemisphere harvest. With Brazilian stocks running thin by late in the year, China shifts its sourcing to the fresh US harvest in Q4.

**Exhibit 7: China Cannot Fully Replace the US, Because the Two Exporters Operate on Offsetting Seasonal Calendars**

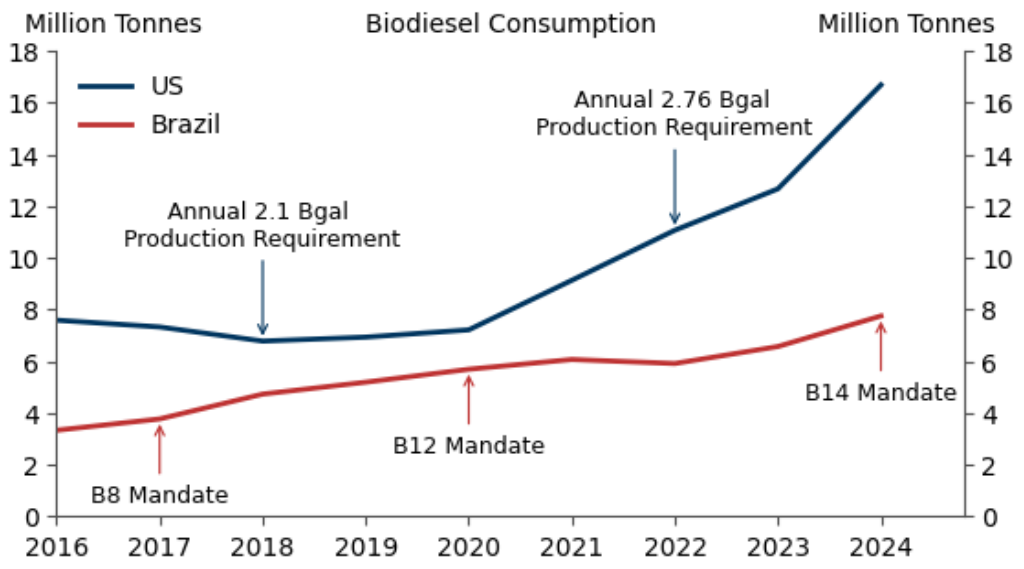



Source: Global Trade Tracker, Goldman Sachs Global Investment Research

## Risk #3 (Price Upside) Rising Energy Security Concerns Support Soybean Demand via Expanding Biodiesel Mandates

Rising biodiesel mandates in both Brazil and the US are increasing soybean oil demand and reducing exportable soybean supply (Exhibit 8). For 2026, the EPA set biodiesel and renewable diesel volume requirements in the US of 5.4 billion gallons, up from 3.35 billion last year.

**Exhibit 8: Biodiesel Mandates Lift Soybean Oil Demand**




BXX denotes a biodiesel blending mandate of XX%. US production requirements are set in the Renewable Fuel Standard (RFS) by the Environmental Protection Agency (EPA).

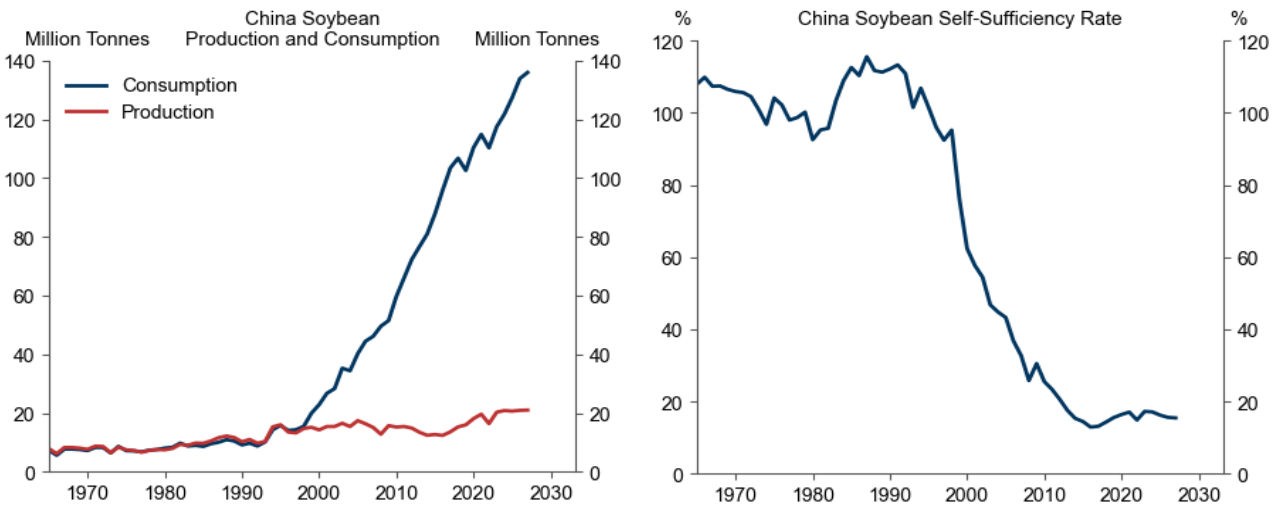
Source: EIA, Goldman Sachs Global Investment Research

Growing biodiesel mandates are turning soybean oil into an increasingly important driver of soybean prices. Historically, soybean value was driven primarily by meal demand linked to Chinese livestock production, but rising energy security concerns boost soybean oil demand for biofuel feedstocks. In 1H26 the soybean oil-to-meal price ratio rose, as soybean oil increasingly competes with palm and rapeseed oil in the (disrupted) fuel markets, while soybean meal remains tied to feed demand.

## Risk #4 (Price Downside) Longer Term, China's Food Security Strategy — Including via Higher Domestic Production — Poses Downside Risk to Soybean Import Demand

Chinese soybean demand increased rapidly from the 2000s onward, driven by an expanding livestock sector and rising per-capita protein consumption, while domestic soybean production did not keep pace (Exhibit 9, Left Panel). As a result, China's self-sufficiency rate declined from approximately 100% in the late 1990s to below 20% today (Exhibit 9, Right Panel).

**Exhibit 9: China's Soybean Self-Sufficiency Declined as Consumption Outpaced Domestic Production Since the 2000s**

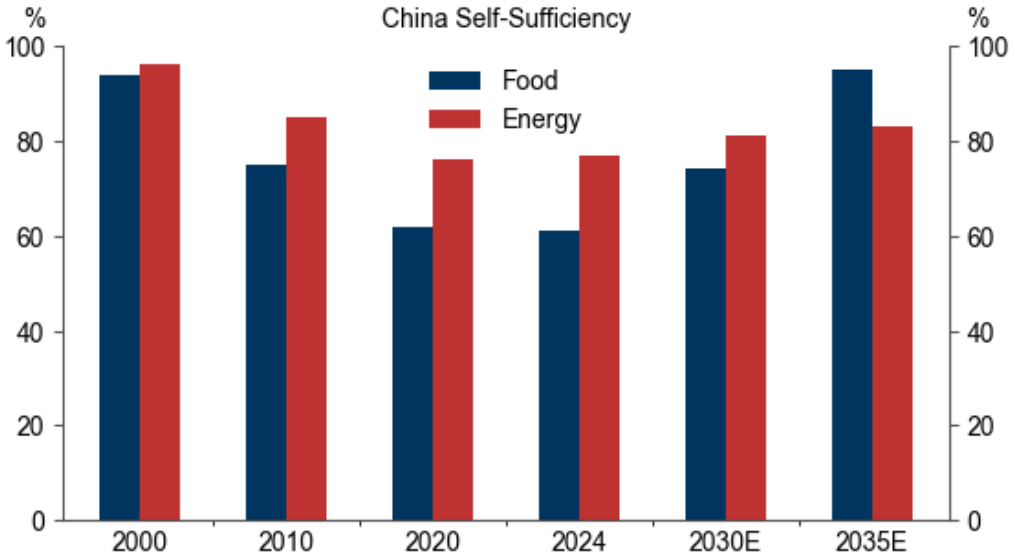



Right panel: We define self-sufficiency as the share of domestic apparent consumption that is met through domestic production.

Source: USDSA, Goldman Sachs Global Investment Research

Longer-term import demand looks increasingly less secure as China pushes for greater food security via higher domestic soybean production (Exhibit 10). That said, sustained Chinese state and private investment in Brazilian ports, crush capacity, and logistics suggest continued demand for Brazilian origin soybeans at least in the near-term — a tailwind that does not extend to US exporters.

**Exhibit 10: Our Equity Analysts Expect China's Food and Energy Security to Continue Strengthening Over the Coming Decade**




We define self-sufficiency as the share of domestic apparent consumption that is met through domestic production. Please see our equity analysts' publication for more information: China Agriculture: China's Food Security - Remarkable Progress Towards an Ambitious Goal

Source: Company Data, NBS, MOA, FOA, USDA, Wind, Goldman Sachs Global Investment Research

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*Samuel is an off-cycle intern in our commodities research team.