Are Brazil soy production systems bound to maintain their cost competitiveness against U.S. counterparts?

An analysis of Costs and Margins

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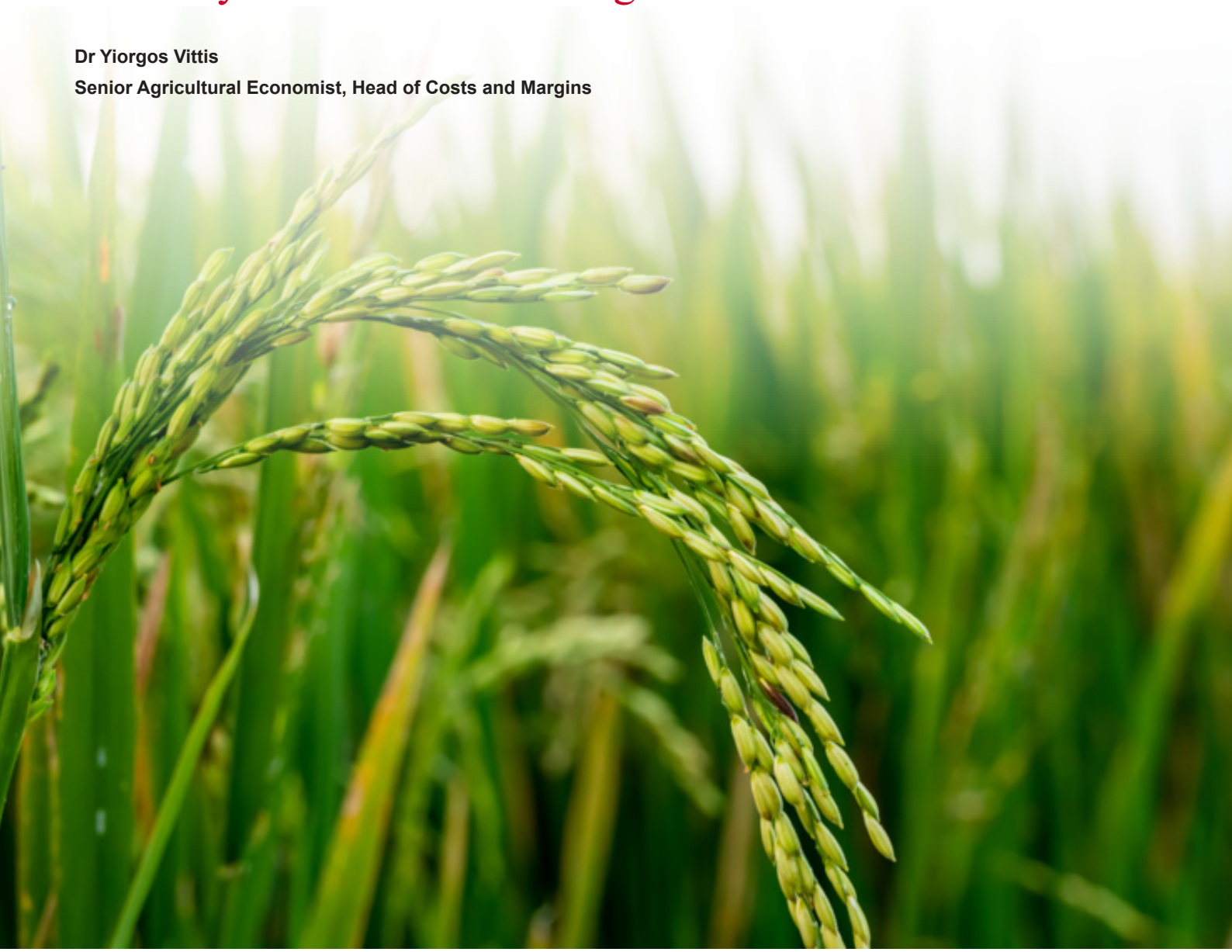

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Key takeaways

- **Gross Margins Advantage**: From 2023 to 2030, the U.S. maintains a consistent advantage in gross margins for soybean production, averaging $87 USD/HA ($35 USD/Ac) more than Brazil. This is primarily due to significantly lower operating costs in the US.
- **Revenue Trends**: While the U.S. initially surpassed Brazil in revenue per unit of land in 2020, Brazil is expected to generate higher revenues on average by $152 USD/HA ($61 USD/Ac) through 2030, driven by increased crop prices that are projected to exceed U.S. prices.
- **Cost Structures and Competitive Edge**: The rising costs in Brazil, particularly in variable expenses like fertilizers and agrochemicals, are expected to enhance the competitiveness of U.S. soybean production. However, Brazil benefits from factors like double cropping and currency devaluation, which could further improve its revenue potential.

Overview

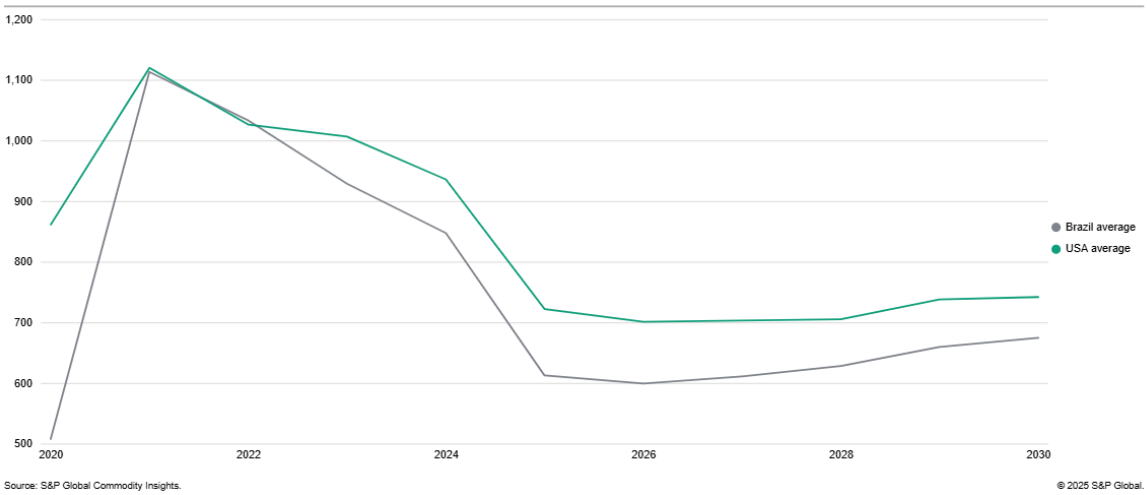
Soybean products rank among the most heavily traded agricultural commodities globally, reflecting their critical role in food supply chains and various industries, including animal feed and biofuels. The production landscape is predominantly shaped by a select few regions, primarily in the Americas, which account for the majority of exports. As global demand for soybeans continues to rise, understanding the drivers of export competitiveness becomes increasingly important for stakeholders in the agricultural sector. In evaluating this competitiveness, it is crucial to consider a range of factors beyond mere production costs. Transportation logistics, ancillary expenses, and regional market conditions play significant roles in determining the overall viability of soybean exports. This analysis employs S&P Global's new Costs and Margins product to conduct a comprehensive comparison of the cost structures associated with soybean production in Brazil and the United States.

By investigating the evolution of these cost structures over time, the report aims to provide insights into how they influence the competitive positioning of soybean producers in both countries. The findings are particularly relevant for policymakers, investors, and agricultural producers who seek to navigate the complexities of the global soybean market and make informed decisions based on current and projected trends in production costs and profitability. Ultimately, this analysis sheds light on the dynamic interplay between production efficiency and market competitiveness, offering insights on the future landscape of soybean production.

Gross margins, revenue and profitability

According to S&P Global's Costs and Margins product, from 2020 to 2030, gross margins—calculated as revenue minus variable expenses— give the U.S. a consistent advantage for soybean production on a per unit of land basis, with the exception of 2021 and 2022, where margins were equal (see Figure 1). This parity can be attributed to a higher growth rate for crop prices in Brazil than the U.S. (up by 74% and 25% in 2021 respectively) and better yields (up by 6% in Brazil and down by 6% in U.S. in 2022) during those years. Looking ahead, U.S. gross margins are projected to be higher than Brazil, on average by $87 USD/HA ($35 USD/Ac) annually, driven by significantly lower operating costs (approximately one-third less, on average).

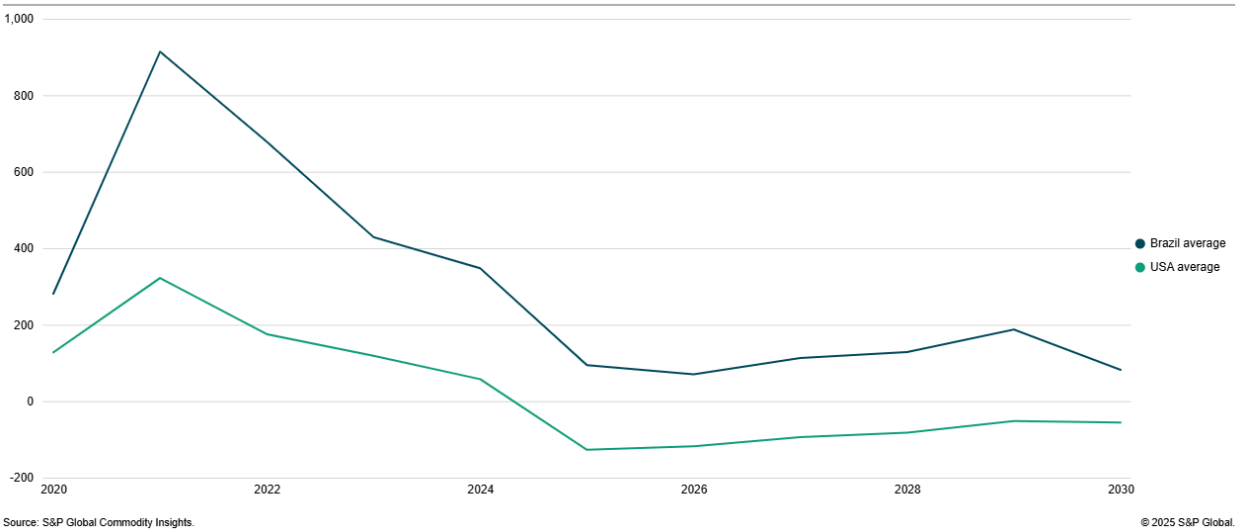
Figure 1: Gross margin (USD/Ha) for soy production in Brazil (grey line) and U.S. (green line) between 2020 and 2030



In terms of revenue—comprising yield and price—the U.S. surpassed Brazil by $353 USD/HA ($143 USD/Ac) in 2020. However, this trend reversed in subsequent years, with Brazil expected to generate higher revenues on average by $152 USD/HA ($61 USD/Ac) through 2030, primarily due to increased crop prices, which are projected to exceed U.S. prices by an average of $39 USD/MT ($35 USD/ST).

When examining overall profitability through net margins (the difference between revenue and total costs), Brazil emerges as the stronger performer compared to the U.S. (see Figure 2). This advantage is linked to higher prices in Brazil, alongside the U.S.'s higher fixed costs, which average $434 USD/HA ($175 USD/Ac) more between 2020 and 2030. Notably, the disparity in net margins is projected to narrow significantly over time, decreasing from $592 USD/HA ($239 USD/Ac) in 2021 (when the gap was widest) to $138 USD/HA ($56 USD/Ac) by 2030, with an average yearly difference of $290 USD/HA ($117 USD/Ac).

Figure 2: Net margin (USD/Ha) for soy production in Brazil (blue line) and U.S. (green line) between 2020 and 2030

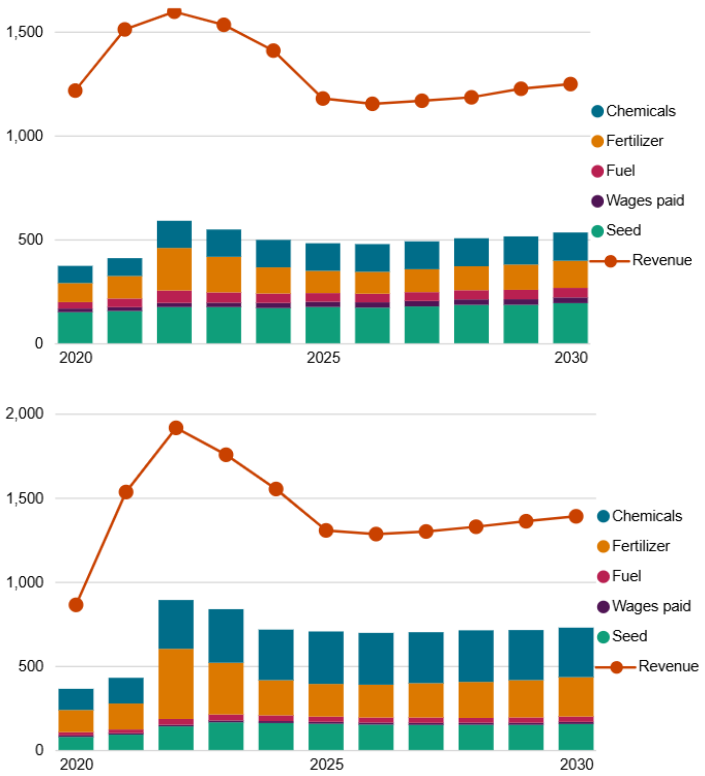


Cost structures

Financial performance is influenced by both revenue generation and cost structures. The closing profitability gap is partly due to the different rate of increase of cost estimates between the two regions during 2021-2030. Brazil's costs are expected to rise by approximately $687 USD/HA ($278 USD/Ac), while the U.S. sees a more modest increase of about $130 USD/HA ($53 USD/Ac). Significant cost hikes are primarily seen in variable expenses such as fertilizers, agrochemicals, and seeds (see Figure 3). In Brazil, these factors collectively account for roughly 41% of the total cost increase. Fertilizer costs alone are projected to rise by $80 USD/HA ($32 USD/Ac) due to a 70% price surge in nitrogen and a 62% increase in phosphate prices during this period, while U.S. fertilizer costs are expected to increase only by $22 USD/HA ($9 USD/Ac).

Moreover, agrochemical expenses in Brazil are expected to rise by $141 USD/HA ($57 USD/Ac), contrasted with a $50 USD/HA ($20 USD/Ac) rise in the US. Both countries exhibit a similar trend in chemical price increases around 2022, stabilizing at elevated levels from 2024 onward, with Brazil experiencing a more pronounced spike (92% vs. 58% in the US). Seed costs in Brazil are projected to increase by $63 USD/HA ($25 USD/Ac), while U.S. seed costs remain relatively stable with an increase of $38 USD/HA ($15 USD/Ac).

Figure 3: Evolution of variable cost components and gross revenue (USD/Ha) between U.S. (top) and Brazil (bottom) in 2020 to 2030.



Expanded perspectives

Nonetheless, disparity in profitability might be even more pronounced once successive cropping is factored in. Specifically, double cropping systems are prevalent in Brazil where for example soybean is followed by winter corn, in the same year. As such, certain fixed cost components like machinery depreciation are shared between crops, making these costs on a per unit of land basis smaller thus, further improving whole-farm profits (as the farmer would be receiving a second profit in the same year). Another consideration favouring revenues in Brazil, is the devaluation of Real (R$) against US dollar (US$), which means it takes more Brazilian currency to purchase one US dollar. This translates to higher revenues for farmers once their US dollar-denominated produce is converted back to R$.

Conclusions

The evidence presented indicates a growing cost environment enhancing the competitiveness of U.S. soybean production systems relative to their Brazilian counterparts. This shift is largely due to the typically higher total costs in the U.S. becoming more aligned with those in Brazil, owing to variable costs in Brazil expected to escalate more rapidly. Nevertheless, Brazil maintains its competitive edge in soybean production, bolstered by consistently higher crop prices (averaging 9% more annually from 2021-2030). Additionally, parameters like successive cropping and Brazilian currency devaluation can further improve revenues in Brazil. These dynamics should be contextualized within the broader landscape, as recent S&P Global market outlooks for 2025[1] suggest potential disruptions in global soybean trade balances. The introduction of new tariffs by the U.S. and corresponding retaliatory measures from China may create a more favourable environment for Brazilian soybean exporters, potentially leading to reduced revenues and margins for U.S. producers.

[1] S&P Global. (2025). Global agriculture and food: Our predictions for 2025. Retrieved from https://connect.ihsmarkit.com/agribusiness/food-agri-commodities-economics/dashboard/home

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