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Corn and Soybean Production Costs and Export Competitiveness in Argentina, Brazil, and the United States

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What Is the Issue?

Competitiveness in commodity markets is influenced by resource endowments and agro-climatic conditions, as well as the efficiency of institutions, the adequacy of infrastructure, the impact of policies, and the structure and magnitude of input costs. This report examines farm production costs and the export competitiveness of Argentina, Brazil, and the United States for corn and soybeans—together, these three countries represent an average of 88 percent of world soybean exports and 73 percent of corn exports.

Comparisons of production costs among countries are useful because they allow decision-makers to infer how the export competitiveness of each country and crop could be affected by changes to factors underlying production and marketing costs—e.g., land, fertilizer, seed, fuel, chemicals, transportation, handling, etc. This information also sheds light on how a country's infrastructure and export taxes and restrictions affect its export competitiveness.

What Did the Study Find?

Comparisons of international costs of production are made under the assumption that data and accounting formats, among other issues, can be harmonized across countries. Moreover, effects of agricultural policies are not explicitly quantified in such comparisons, although they are reflected in prices and costs faced by producers. This study, comparing the differences between Argentina, Brazil, and the United States in corn and soybean *production costs* over the 2008/09-2012/13 period, finds that:

- Average farm-level production costs *per acre* for corn and soybeans in Argentina and Brazil were between 11 and 28 percent below those in the United States, largely because of higher land and capital costs. The United States had higher yields per acre than Argentina and Brazil, particularly for corn, which helped offset the higher costs.
- Average production costs *per bushel* for soybeans were lowest in Brazil—8.5 percent below the U.S. cost.
- Average production costs *per bushel* for corn were lowest in the United States, followed by Argentina and then Brazil, with costs 3 and 25 percent above U.S. costs, respectively.

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Regarding the competitiveness of Argentina, Brazil, and the United States in corn and soybean *export markets* over the 2008/09-2012/13 period:

- Paraná in Brazil, a coastal State, was the lowest cost exporter of both corn and soybeans, primarily due to its location and low internal transport costs. The U.S. Heartland was the next lowest cost exporter, but has a much larger production capacity than Paraná. About 75 percent of U.S. corn and soybean production is from the Heartland, compared with no more than 25 percent of Brazilian production from Paraná.
- Despite higher inland transport costs, the Mato Grosso region of Brazil was competitive with the U.S. and Argentine Heartlands in the export of soybeans. Its competitiveness with other countries results from lower soybean costs of production. Improvements in overland transportation infrastructure would enhance the competitive position of Mato Grosso.
- The Argentine Northern Heartland would be the lowest cost exporter of both corn and soybeans were it not for policy-related export costs. Changes in Argentina's export policies will significantly alter the relative competitiveness of these countries in world corn and soybean markets, improving the Argentine position.

Other factors affecting the relative production and export competitiveness of these countries follow:

- Expected profits from production, as well as government payments, are capitalized into land values, so it may not be appropriate to include the opportunity cost of land as part of production costs when comparing export competitiveness. Since land costs are much lower in Brazil than in the United States and Argentina, excluding land costs greatly improves the competitive position of these two countries relative to Brazil in both corn and soybean production.
- Lower shipping costs (including marketing, handling, and transporting) have helped the United States remain competitive with South America in international markets. However, recent changes in currency values, notably a strengthening of the U.S. dollar, have made U.S. commodities more expensive on world markets.
- The new Argentine Government recently reduced export taxes for soybeans by 5 percent (to 30 percent), eliminated export taxes for corn, and eased export restrictions. These new policies, combined with a devaluation of the Argentine currency, are improving the export competitiveness of Argentine crops. Improvements in the transportation infrastructure in Brazil has reduced inland transportation costs. These factors will further pressure U.S. competitiveness in world corn and soybean export markets.

How Was the Study Conducted?

Export competitiveness of crop production in Argentina, Brazil, and the United States was examined by comparing farm-level production costs, as well as the cost of marketing, internal transportation, and shipping to a common export destination. The comparison is based on available production cost data for all three countries in 2010/11. In order to make the comparison less sensitive to annual price and yield variations, per-bushel costs and returns are compared using 5-year average prices and yields. The 5-year average includes marketing years 2008/09 through 2012/13, 2 years before and after the year of cost-of-production data.

Crop production costs are separated into their variable- and fixed-cost components. Farms typically consider variable costs for short-term decisions, and both variable and fixed costs for long-term planning. Costs associated with exporting crops, including internal transportation, handling, and ocean freight rates to destination ports, are added to the farm price, which includes farm production costs. Policies that support exporters in various ways are reflected in costs and prices without being explicitly quantified.