



Economic Report

Office of Regulatory Policy Agricultural and Economic Policy Team

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Summary

U.S. agricultural exports have rebounded sharply from the downturn during the 2007-2008 global financial crisis, setting new records for the past four years and reaching an all-time high of \$150 billion in 2014. With over a third of U.S. farm cash receipts tied to exports, agriculture’s strong trade performance has provided support for farm incomes and farmland values, contributing to healthy loan portfolios and strong financial conditions at America’s agricultural lenders.

The depreciation of the U.S. dollar against the currencies of its key trading partners from 2002 to 2011 helped fuel the very strong growth in the U.S. agricultural exports during this time. Since then, the U.S. dollar has been slowly appreciating in value, which has contributed to the slowdown in U.S. agricultural exports the past few years. If the U.S. dollar continues to appreciate, the U.S. will find its products less competitive on world markets, which could lead to a drop in agricultural exports and further dampen an already weak farm income situation.

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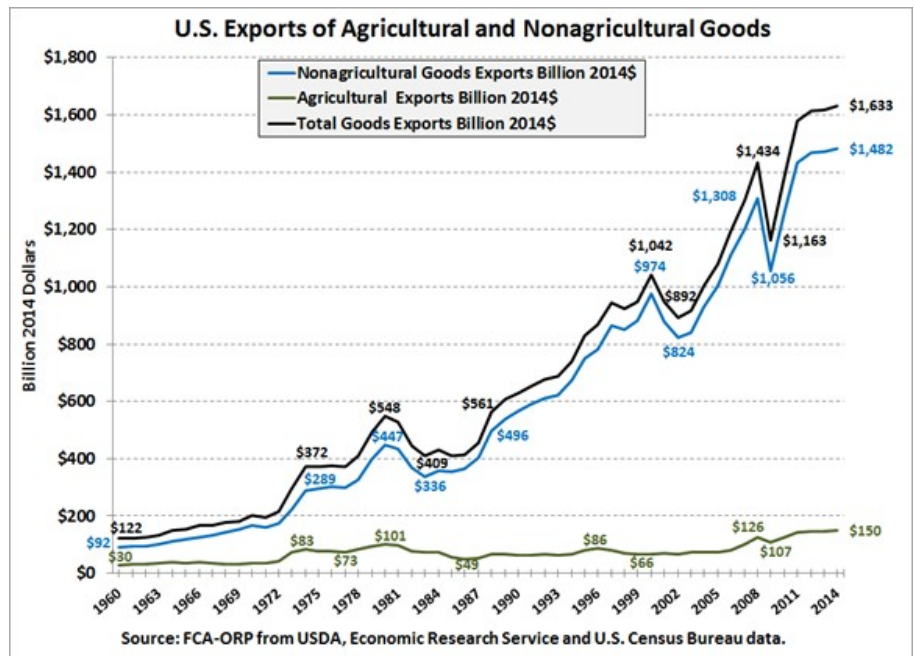
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The Importance of Agriculture Exports to U.S. Trade and the Farm Economy¹

This is the third in a series on the strong dollar and its implications for U.S. agriculture and the Farm Credit System. In this report we look at historical trends in agricultural and nonagricultural exports and the important role that agriculture exports play in the U.S. farm economy. We then look at how closely agricultural exports and exchange rates vary over time and measure the strength of that relationship.

U.S. Exports of Agricultural and Nonagricultural Products

The following chart illustrates the trend in total U.S. exports of goods for the period 1960 to 2014 (black line) along with two of its subcomponents: agricultural goods (green line) and nonagricultural goods (blue line). Because of the length of the time series, the export data has been adjusted for inflation using the U.S. GDP Price Index, a popular deflator used in economic analysis. The export figures are expressed in billions of 2014 dollars.



Total U.S. exports have been on a long-term upward trend, with significant peaks in 1974, 1980, 2000, and 2008 followed by several years of declining trade before heading upward again. Agricultural exports have also trended up but at a much slower pace, with various peaks and troughs along the way. Over this 55 year period, agricultural exports expanded fivefold to a record \$150 billion by 2014, while nonagricultural exports increased 16 fold to a record \$1.48 trillion. On an annual basis, agricultural exports grew at an average annual rate of 4.0 percent since 1960, 1.7 percentage points slower than nonagricultural exports, which grew at an average annual rate

¹ This report was prepared by ORP Senior Economist Walt Gardiner. The author wishes to thank Chief Economist Stephen Gabriel for reviews and helpful suggestions

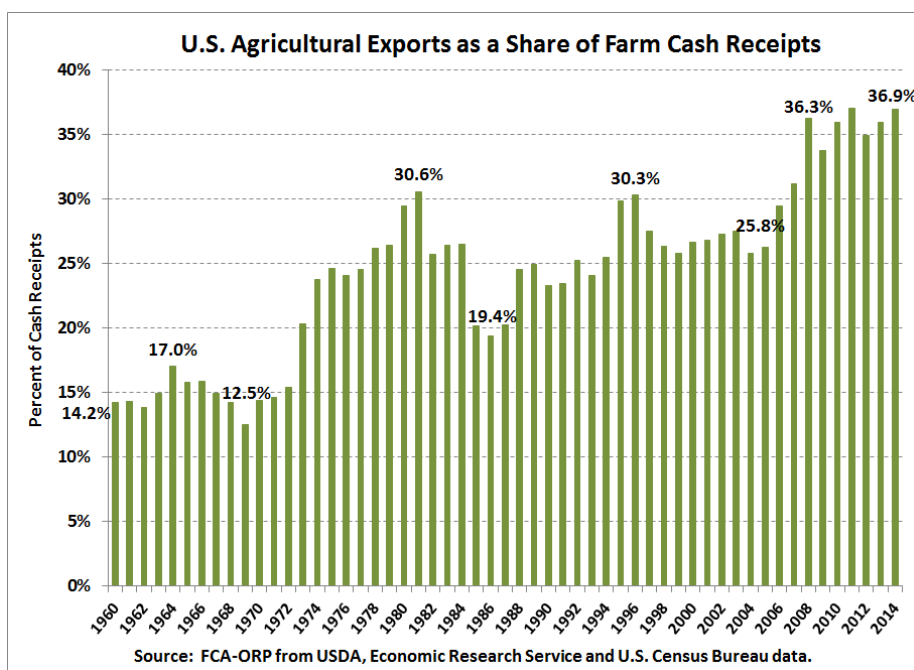
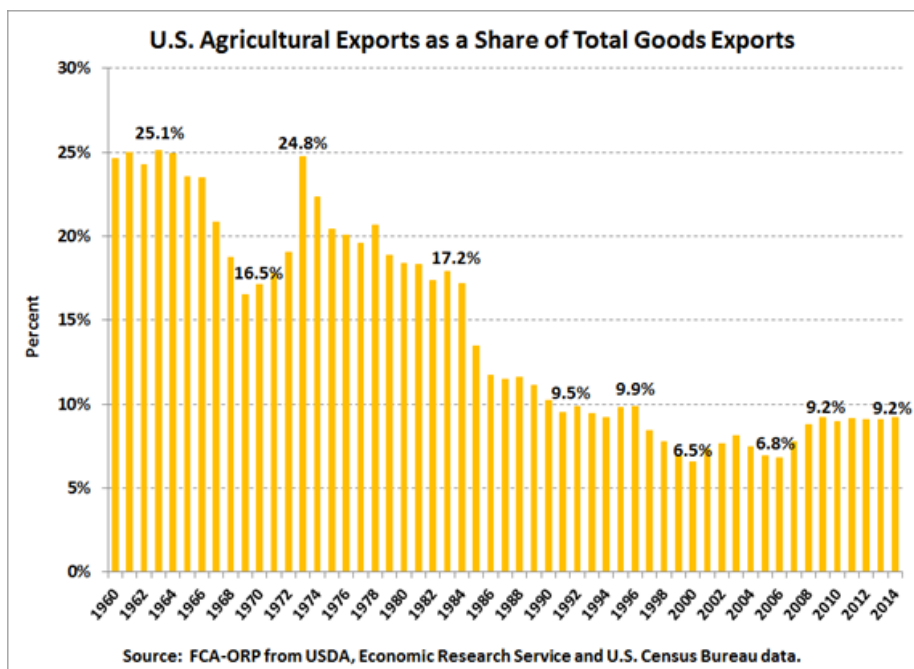
of 5.7 percent over this period. Since 2000, however, agricultural exports grew at a slightly faster clip: 6.2 percent annually versus 4.0 percent for nonagricultural exports. Rising global demand, primarily in developing country markets like China, combined with the dollar's competitive exchange rate (that is, a weaker dollar relative to the currencies of key trading countries) helped U.S. exports of agricultural products grow rapidly during the past decade (USDA, ERS).

After reaching just over \$100 billion in 1980, U.S. agricultural exports declined through the rest of the 1980s as a result of the global financial crisis that impacted key U.S. customers abroad. It would take another 27 years until 2007 before U.S. agricultural exports would reach \$100 billion again. It would take just eight years for nonagricultural exports to recover to its 1980 high mark. Agricultural exports jumped 25 percent the next year to \$126 billion in 2008, but then dropped 15 percent and remained below this level for the next two years due to the global financial crisis. For the next four years, 2011 to 2014, the U.S. would set back-to-back records for both agricultural and nonagricultural sales abroad, pushing total U.S. goods exports to a record \$1.63 trillion.

The Importance of Agricultural Exports to U.S. International Trade and the Farm Economy

Agriculture's importance to the overall U.S. trade profile has been on a long-term decline since the early 1960s, when it hovered around a quarter of total U.S. goods exports, as shown in the chart below. This downward trend bottomed out at a historic low of 6.5 percent for 2000 and then exhibited somewhat of a roller coaster pattern over the next 15 years. Agricultural exports' share of total goods exports has rebounded somewhat from its low mark in 2000 to 9.2 percent in 2009, and has remained at or near that level since then.

Another way of viewing the important role that agricultural exports play in the U.S. farm economy is to look at its value relative to U.S. farm cash receipts. In the 1960s, agricultural exports as a percent of total farm cash receipts hovered around 15 percent but then dropped to 12.5 percent in 1969 as exports declined while cash receipts rose that year. Exports as a percent of cash receipts rose dramatically during the 1970s as exports took off to feed a fast growing world population. The ratio rose to a new high of nearly 31 percent in 1981 and then took a sharp downward turn to a low of around 19 percent in 1986 due to financial difficulties in key importing countries and the U.S. farm crisis at home. For the six year period from 2008 to 2013, exports hovered



around 36 percent of cash receipts, reaching nearly 37 percent in 2014. Roughly speaking, a little over a third of cash receipts received by U.S. farmers and ranchers are currently tied to sales abroad, so what happens in Paris and Beijing doesn't always stay there!

Agricultural Exports and Exchange Rates are Closely Linked

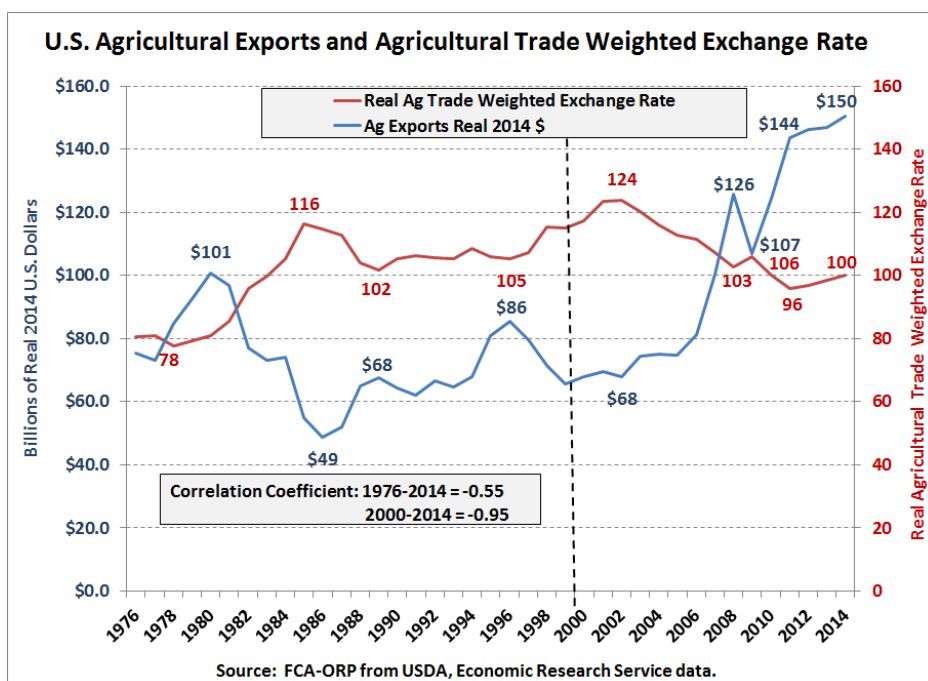
So far, we have looked at trends in exchange rates in the second report of this series and have just reviewed trends in U.S. agricultural exports, past and present. So what happens when we put the two of them together? Researchers at USDA's Economic Research Service (ERS) have demonstrated that, while long-term growth in U.S. agricultural exports is largely driven by growth in population and income, year-to-year variations in agricultural exports are largely driven by changes in exchange rates (USDA-ERS, Shane, et al).

Historically, when the value of the U.S. dollar has been high relative to our trading partners' currencies (periods of dollar appreciation), U.S. agricultural exports have tended to decline or have been limited. In contrast, when the value of the dollar has been relatively low (periods of dollar depreciation), exports have tended to expand.

This pattern is illustrated in the following chart over the period 1976 to 2014, which shows:

- U.S. agricultural exports expressed in real (inflation adjusted) 2014 dollars, represented by the blue line with units shown on the left vertical axis; and
- the agricultural trade-weighted exchange rate, represented by the red line with units shown on the right vertical axis.

The agricultural trade-weighted exchange rate was developed by ERS and is based on the foreign currencies for the United States' major trading partners weighted by their relative exports shares. A rise in the trade-weighted exchange rate indicates that the U.S. dollar is strengthening or appreciating, on average, against the currencies of its key trading partners; a decline in the trade-weighted exchange rate indicates that the dollar is weakening or depreciating against the currencies of its key trading partners.



The cyclical trends exhibited in the chart by both of these measures indicate that they generally move together but in the opposite direction, or, in economic terms, they are negatively related; that is, as the dollar strengthens against the currencies of its trading partners, U.S. agricultural exports become more expensive to foreign buyers and should therefore decline, and vice versa. We can see this pattern in the chart from 1996 to 2002, when the U.S. dollar strengthened from 105 to 124, while U.S. agricultural exports declined from \$86 billion to \$68 billion. The opposite pattern occurred over the period 2002 to 2011, when the trade-weighted exchange rate fell from 124 to 96 and U.S. agricultural exports increased from \$68 billion to \$144 billion. Since 2011, the trade-weighted exchange rate has increased slightly from 96 to 100, and

while agricultural exports continued to rise, they increased at a substantially slower pace (from \$144 billion to \$150 billion). As mentioned earlier, exchange rates are only one of the factors that determine trade patterns.

The correlation coefficient is a statistical measure that indicates the strength of the relationship between two variables over time. For the entire 1976-2014 period, the correlation coefficient had a value of -0.55, which means about 55 percent of the changes in U.S. agricultural exports were associated with changes in the exchange rate index and in the opposite direction. When limited to the most recent 15 year time period, 2000 to 2014, the strength of the relationship is much greater as the correlation coefficient increases to -0.95. Thus, if the dollar continues to strengthen relative to the currencies of key importing and exporting countries, we can expect to see U.S. agricultural products become more expensive on world markets, reducing our competitiveness and leading to a decline in our exports. This in turn could put downward pressure on U.S. commodity prices, contributing to the decline in U.S. farm sector profitability, with net farm income forecast to drop 36 percent for 2015, the largest decline since 1983 (USDA, ERS).

While exchange rates are an important determinant of agricultural trade, other factors also play an important role particularly the incomes of the importing countries and population growth. Other factors that can cause abrupt or short-term adjustments to trade patterns include changes in domestic or trade policies of a particular country as well as changes in the supply situation for both importing and exporting countries. Recent examples of these will be discussed in a later report.

What's Next?

The next report in this series on the strong dollar will cover recent trends in U.S. agricultural trade, factors behind the recent changes, U.S. trade prospects going forward, and what this could mean for certain producers and their lenders.

References

Shane, Mathew, Terry Roe, and Agapi Somwaru. "Exchange Rates, Foreign Income, and U.S. Agricultural Exports," *Agricultural and Resource Economics Review* 37/2, Oct. 2008, pp. 160–175.

U.S. Census Bureau. Foreign Trade Statistics, Historical Series: U.S. International trade in Goods and Services. [Link](#)

U.S. Dept. of Agriculture, Economic Research Service. Agricultural Exchange Rate Data Set, Documentation. [Link](#)

U.S. Dept. of Agriculture, Economic Research Service. Farm Income and Wealth Statistics. [Link](#)

U.S. Dept. of Agriculture, Economic Research Service. Farm Sector Income & Finances, "Farm Sector Profitability Expected To Weaken in 2015." [Link](#)

U.S. Dept. of Agriculture, Economic Research Service. U.S. Agricultural Trade. [Link](#)

U.S. Dept. of Agriculture, Economic Research Service. U.S. Agricultural Trade: Exports. [Link](#)