

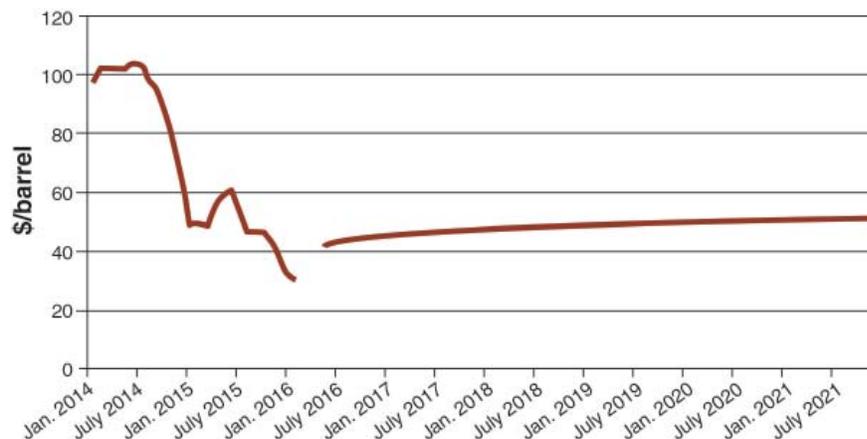
# Crude Oil Prices and US Crop Exports: Exploring the Secondary Links between the Energy and Ag Markets

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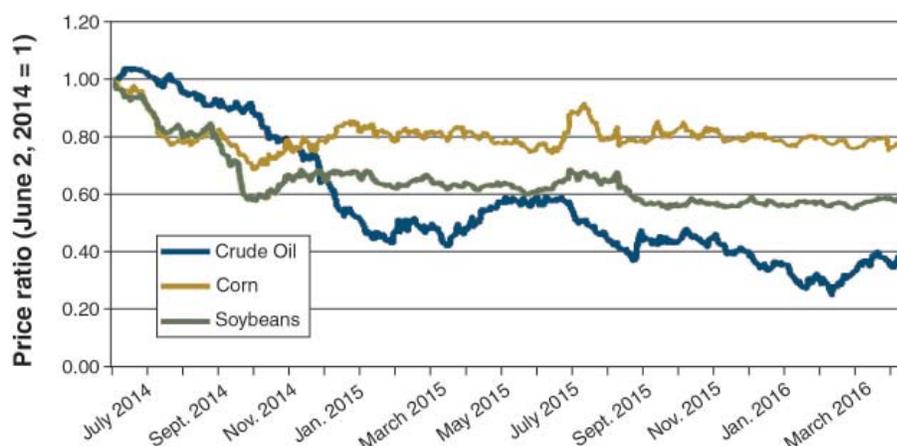
**A**S THE biofuel industry has developed, there has been a lot of discussion about the linkages between the energy and agricultural markets. The growth of the ethanol and biodiesel sectors bolstered the connection among the oil, gas, and crop markets. As crop-based biofuels compete in the energy market, crop prices are directly impacted not only by the relative standing of biofuels in the fuel hierarchy, but also by general shifts in energy supplies and demands. However, there is another distinct way energy markets can impact crop markets—many US international trade partners are reliant on the energy sector as a major source of income. Thus, energy market swings can translate into significant income movements for those countries, influencing their ability to purchase US agricultural products. In this article, we examine the robustness of treating a key energy commodity—crude oil—as an indicator for income for those oil-reliant countries and investigate how that affects their demand for US crop exports.

Global energy markets have experienced an astounding downturn in prices in recent years. As Figure 1 highlights, crude oil prices have fallen from over \$100 per barrel in early-to-mid 2014 to below \$30 per barrel in early 2016. This drop in oil prices has been driven by several components including a slowdown in energy demand with the weakness in the global economy, as well as positive production shocks, in part due to new technology that allows oil extraction from new sources (shale oil, oil sands, etc.), and increased competition from biofuels. As Figure 1 shows, projections of future



**Figure 1. Crude oil prices since January 2014**

Sources: EIA and CME, as of April 15, 2016



**Figure 2. Commodity price movements since June 2014**

Source: Barchart.com

oil prices (taken from CME crude oil futures) indicate prices will remain well below recent highs for quite some time.

While the focus of the crude oil market tends to be the global supplies and the role OPEC played in driving oil prices down, it seems that the recent plunge in oil prices has as much to do with stagnant demand. However, the oil market wasn't the only market under pricing pressure through 2014 and 2015—crop markets exhibited a similar phenomenon. Figure 2 displays relative price movements for crude oil,

corn, and soybean markets since June 2014. While oil suffered the largest price drop, 50 percent before 2015, corn and soybean prices also retreated in the second half of 2014. Since that decline, crude oil has continued to work its way lower, while the crop markets have been relatively steady. Based on April 2016 prices, the corn market is 20 percent below June 2014 price levels, while the soybean and oil markets are 40 and 60 percent below, respectively. Agricultural commodity prices, while lower, have not fallen as

far as oil prices, possibly affecting the ability of countries reliant on energy market income to import US crops.

Examining crop export demand since June 2014, the international demand for corn and soybeans has fallen as well. As Figure 2 shows, overall corn export demand is down nearly 13 percent over the past year. The market shifts in Japan and Mexico, the two largest markets, have essentially offset each other.

Mexico has imported more US corn as the country expands its livestock industry and rebuilds its feed stocks. Meanwhile, Japan has purchased less US corn as other countries offer more competitive prices and domestic feed sources are utilized. Overall, the general trend for US corn exports has been lower, and soybean export demand has also shifted lower as shown in Figures 3 and 4. While China accounts for roughly 60 percent of US soybean exports, demand there and from other areas of the world has declined, including many oil-producing and oil-reliant countries. For Figures 3 and 4, the “Unknown” category lists export sales where the delivery destination has not been determined.

To explore the role that lower energy prices could be playing in export demand, we examine the corn and soybean demand from countries that derive a larger share of income from the oil market. We hypothesize that crude oil prices could serve as a proxy for the income of oil-reliant countries, and recent drops in oil prices could lead to a lower import demand for US crops. We use “Oil Rents” developed by the World Bank, which measure the percentage of a country’s Gross Domestic Product (GDP) that can be directly attributed to the oil industry, to determine if a country is oil reliant. Oil rents are computed as the difference

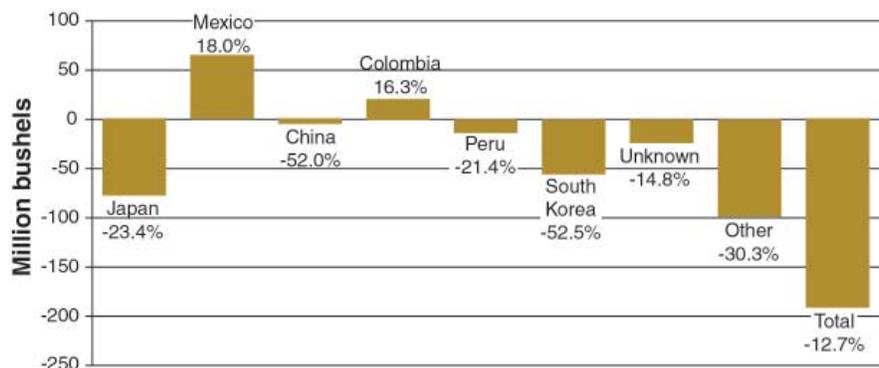


Figure 3. Corn export shifts April 2015–April 2016 (Source: USDA-FAS).

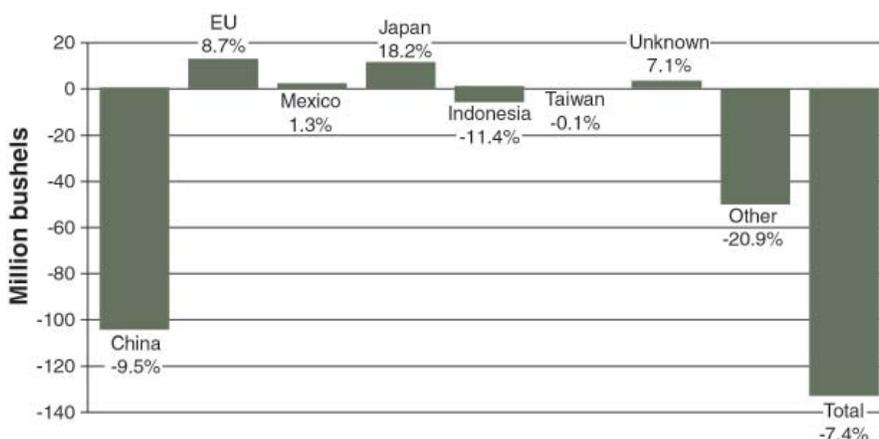


Figure 4. Soybean export shifts April 2015–April 2016 (Source: USDA-FAS).

between the value and cost of crude oil production divided by the country’s GDP. For example, Kuwait is currently the most oil dependent country with an oil rent of 57 percent, meaning that the net profits or rents of Kuwait’s oil makes up 57 percent of the country’s GDP. For Saudi Arabia and the United States, rents are 44 and 1 percent, respectively. Globally, the oil rent is 3 percent.

For our analysis, we consider a country to be oil-reliant if it has an oil rent above the world average of 3 percent. Of the 25 largest US corn export markets, 7 are oil reliant. The changes in US crop export demand from those countries are displayed in Table 1. Overall, oil-reliant countries are actually importing more US corn, showing 6 percent growth versus 25 percent decline from non-reliant countries. However, that is due to the influence

of Mexico, whose demand factors were briefly detailed earlier. Corn demand from oil-reliant OPEC member countries (Saudi Arabia and Venezuela) falls in line with demand from non-reliant countries. Thus, oil reliance does not seem to have much impact on the current corn export picture.

For soybeans, the story is slightly different—11 of the 25 largest US soybean importing countries are oil reliant. The reduction in demand from those countries is larger than from non-reliant countries. Overall, soybean demand from oil-reliant countries is down 12 percent, but only down 7 percent in non-reliant countries. Focusing on OPEC members, soybean demand is actually up by 36 percent; however, that is deceiving because of the entry of Iran. Due to sanctions imposed

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