The Ag and Energy Connection

July 25, 2024

The Kansas City Fed explored this link during its Agricultural Economic Summit, hosted at the Omaha Branch in May. More than 50 executives and industry experts from the agriculture and energy sectors gathered to share their perspectives with the Fed on current trends and long-term expectations.

Agricultural markets depend on the strength of global demand, and increasingly, demand for energy has become a key element.

The Kansas City Fed explored this link during its Agricultural Economic Summit, hosted at the Omaha Branch in May. More than 50 executives and industry experts from the agriculture and energy sectors gathered to share their perspectives with the Fed on current trends and long-term expectations.

Historically, energy served primarily as an input to agricultural production as mechanization and advances in technology led to a more efficient and productive farming industry. Over time, advances in technology and environmental policies also positioned the ag sector to be an important source of energy alongside growing global demand for renewable fuels and power generation.

Looking back at the expansion of ethanol following the adoption of the Renewable Fuels Standard (RFS) in 2006 shows the impact.

In the early 2000s, there wasn't a lot of movement in agricultural commodity prices from month-to-month or even year-to-year. Following the implementation of the RFS, alongside other demand drivers such as growth in China, commodity prices began to take off. Prices for corn, the commodity used for ethanol in the U.S. and blended with gasoline, became more connected with energy prices. Corn prices spiked in 2008, farm income began to rise significantly, and farm real estate values also began to soar.

"Between 2006 and 2012, we expanded our corn acreage in the United States by about 25%," said Nate Kauffman, senior vice president, Omaha Branch Executive and the Kansas City Fed's lead expert on the agricultural economy. "The increase in demand for corn led to tangible changes in the decisions made by farm producers, not just increasing acreage, but also changes in farming practices that resulted in even higher yields, and more sophisticated marketing strategies."

Following the surge, agriculture went through a period of stabilization and subdued growth between 2015 and 2019. There were few expectations there would be another significant shift in demand for agriculture rivaling those of previous years. All that changed with the pandemic.

"The last three years, similar to where we had been more than a decade ago, have looked to be some of the strongest we've seen in agriculture in recent memory," said Kauffman.

Demand from China and the war in Ukraine contributed to the recent increase in agricultural prices during 2021 and 2022, but stronger connections between ag and energy, through renewables and sources of energy such as wind and solar, may fundamentally change the ag sector going forward.

New technologies and policy efforts to reduce emissions across the transportation sector have incentivized substantial increases in the production of biomass-based diesel, spurring heightened demand for soybean and other oils used to produce these fuels. Similar to changes in corn acreage due to demand for ethanol, soybean acreage has increased by about 13% since 2012.

Agricultural land has also become an increasingly important source for harvesting renewable energy, and adoption of solar lease contracts has emerged as an opportunity for a modest but growing share of agricultural producers. Adding to the ag and energy intersection, environmental considerations such as carbon also appear likely to have a significant long-term effect.

There is still some uncertainty about the exact path of the ag and energy connection, largely because of the effects of government policy. The use of biomass-based diesel in sustainable aviation fuel (SAF) may be a primary source of increased demand for soybeans, but its future production and use remains dependent on national and state subsidies.

The emerging frontier of carbon collection and abatement also presents an opportunity, but many unknowns remain. Despite some lingering uncertainties, ag and energy linkages have deepened in recent years, and there might be more to come.

"With large investments underway at the intersection of ag and energy, it seems clear that developments related to energy will have a significant influence on the future structure of agriculture and commodity markets," Kauffman added.
