



Synopsis of Research Reports:

“Farmland Returns and Economic Conditions: A FAVAR Approach”

Given the prominent role that farmland plays in the financial health of the agricultural sector, a number of empirical studies have examined the degree to which farmland prices change in response to changes in economic conditions. Taken in aggregate, the existing literature shows that farmland prices are intrinsically linked to a number of key factors, including the returns to agricultural production, potential for land development, and macroeconomic conditions. One of the primary challenges for constructing a quantitative model of farmland price changes is selecting an appropriate measure of these key factors. For example, the returns to agricultural production is typically measured by a single proxy variable, such as average cash rental rates or imputed farm revenues.

The purpose of this study to reexamine these relationships using modern techniques developed in an era of “Big Data.” Farmland market participants currently have access to a vast array of economic and financial information when making decisions, and as a result, the quantitative models used to predict farmland price movements could be greatly improved by incorporating a broader set of economic indicators. The techniques employed in this study, called factor-augmented vector autoregression (FAVAR), were developed by academics and central bankers interested in the world economy using a very broad set of economic variables.

The model developed in this study uses four indexes constructed to represent economic conditions of the agricultural sector, the non-farm real estate sector, financial markets, and the broader economy. Each index is constructed by estimating the common information or common movement of a wide set of economic variables. For example, the agricultural sector index draws information from 14 variables, including commodity prices, production volumes, and international trade flows, and the macroeconomic index is constructed from 16 variables, including measures of inflation, monetary policy, and international trade. In total, the model incorporates information from 52 economic variables collected annually from 1973 to 2008.

After the model was estimated, simulations were conducted to examine how the annual percentage change in aggregate farmland values would respond to an unforeseen shock in the key drivers of farmland prices as measured by the four indexes. The simulations suggest that an unforeseen positive shock in financial market conditions is associated with an instantaneous decline in farmland returns, and the impact dissipates after four years. Similarly, an unforeseen positive shock in macroeconomic conditions yields an immediate decline to farmland returns, yet the effect dissipates after two years. A shock in either the agricultural sector or non-farm real estate markets does not appear to have statistically significant impact on farmland market returns.

Available at: [Kuethe, Todd H., Todd Hubbs, and Mitch Morehart \(2013\) “Farmland Returns and Economic Conditions: A FAVAR Approach” Empirical Economics, forthcoming.](#)