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Deconstructing Wheat Price Spikes: A Model of Supply and Demand, Financial Speculation, and Commodity Price Comovement

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What Is the Issue?

Over the last 5 years, wheat futures prices spiked and then crashed along with prices for other agricultural and nonagricultural commodities. Market observers offered theories to explain this common movement, or comovement, in prices: macroeconomic shocks, correlated supply disruptions, and the influence of nontraditional speculative firms known as commodity index traders (CITs). The perceived role of speculators in the recent price spikes led market participants, policymakers, and economists to call for restrictions on the trading activity of CITs. This study examines the degree to which a comprehensive set of economic factors, including the trading behavior of CITs, contributed to recent dynamics in wheat futures prices.

More acreage is planted to wheat than any other commodity in the world, and wheat is used to make flour, bread products, cookies, cakes, and pasta. Wheat is also a significant source of animal feed. So, understanding wheat price spikes is an important step toward understanding food price spikes more generally. Since food in developed countries is heavily processed, wheat price shocks have only a small effect on U.S. consumers. However, these shocks can affect wheat producers everywhere, as well as consumers in developing countries who spend a large share of their household budgets on less processed cereals.

What Did the Study Find?

Supply-and-demand shocks specific to the wheat market were the dominant cause of price spikes between 1991 and 2011 in the three U.S. wheat futures markets (hard red winter, hard red spring, and soft red winter wheat). Focusing specifically on the February 2008 wheat price spike, the study finds that, depending on the market, wheat prices in that month would have been 40-62 percent lower in the absence of current crop year supply-and demand-shocks, such as unexpected weather events that lower wheat yields. Wheat prices would have been

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11-36 percent lower in the absence of precautionary demand shocks—which represent an anticipatory buildup of commodity inventories—associated with expectations about future prices.

To put these estimates in context, at the same time, per-bushel wheat prices increased by 300 percent on the Minneapolis Grain Exchange, from around \$8 to \$24. Alternative explanations for wheat price spikes had minimal impact in February 2008. Broadbased demand shocks associated with fluctuations in global economic activity had a 9- to 12-percent price impact. In contrast, similar studies have found that changes in real economic activity (inflation-adjusted production and consumption of goods and services) accounted for most of the recent price spikes for corn and crude oil. CITs contributed minimally to recent price spikes: the peak wheat price in February 2008 would have been only 1 percent lower in the absence of shocks attributable to financial speculators like CITs. Even at its maximum price impact between 2006 and 2011, financial speculation increased wheat prices by only 5-8 percent. These findings suggest that wheat futures markets have performed efficiently in the sense that wheat futures prices have reflected fundamental factors. Consequently, restrictions on commodity index trading are not likely to prevent future price spikes.

How Was the Study Conducted?

The study uses a structural vector autoregression (SVAR) econometric model to decompose observed wheat prices into a set of factors and to explain the relative contribution of each factor to observed price changes. These factors include: (1) real economic activity affecting the demand for all commodities, (2) passive or financial speculation by CITs based on a desire to hold baskets of commodities as part of a larger investment portfolio, (3) precautionary speculation related to expected prices in future periods and the incentive to hold wheat inventories, and (4) current crop-year supply-and-demand shocks specific to the wheat market. Structural shocks associated with each explanation represent the change in the wheat price caused by that factor, conditional on all past information about prices and other relevant economic variables. The model allows CIT-driven shocks to take precedence over wheat market-specific shocks; if the latter are found to drive more of the variation in prices, one can be confident that the CIT effect was given the best chance to reveal itself in the data.