THE IMPACT OF THE RECENT FEDERAL RESERVE LARGE-SCALE ASSET PURCHASES ON THE AGRICULTURAL COMMODITY PRICES: A HISTORICAL DECOMPOSITION

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Introduction

- After the Great Recession of 2007/2009, the U.S. Federal Reserve has followed unprecedented expansionary monetary policies in order to stimulate the economy, stabilize financial markets, and restore confidence in the economy.
- The Fed implemented policy of purchasing large amounts of assets to get liquidity into the economy. This policy is called quantitative easing (QE). In this study, we evaluate the effects of the recent Fed's large-scale asset purchases(LASPs) on prices of agricultural commodities.
- The first LASP was announced at the end of 2008, and the second LASP was announced in November of 2010.

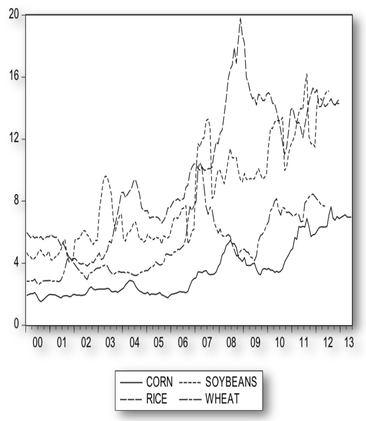


Figure 1. Prices of Cereal Grains: Corn, Soybeans, Rice, and Wheat, 2000:01-2012:12

Figure 2. Prices of Meats: Beef, Broiler, and Pork, 2000:01-2012:12

Figures 1 and 2 show that agricultural prices have seen great volatility since December 2008 and it is not clear that monetary policy and QE has had no inflationary impacts, at least with respect to agricultural commodities.

Agricultural prices are particularly sensitive to monetary policy because they are more flexible than manufactured good or service prices. Many of them are storable and subject to large fluctuations due to weather and demand shocks. Their demand and supply elasticities are small in absolute value. So it is very difficult to distinguish short-run price changes from longer-run inflationary tendencies.

Objective

- The objective of this study is to investigate the impacts of recent monetary policy LSAPs on short-run agricultural commodity prices.
- No study has investigated the effects of both LSAPs on agricultural prices, though there has been a long history of empirical analyses of monetary policy on commodity prices.
- The commodities included in this analysis are:
  meats (beef, pork, and broilers)
  cereal grains (corn, soybeans, wheat, and rice)
  softs (sugar, coffee, cocoa, and cotton).

Data Description

Monthly dataset from Jan 2000 to July 2013

▪Meats:

Beef - USDA Market News

Pork- index mundi (courtesy of IMF)

Broiler- USDA ERS (sales-weighted average of whole chicken prices and chicken part prices).

▪Cereal Grains :

Corn, soybeans, wheat and rice price data are from the USDA Economic Research Service.

▪Softs:

Sugar - index mundi (courtesy of the World Bank)

Cocoa - index mundi (courtesy of the International Cocoa Organization)

Coffee - International Coffee Organization

Cotton - USDA market news.

Empirical Method

▪An historical decomposition analysis is used to estimate the dynamic short-run effects of the two LSAP announcements on each commodity price over a seven-month time horizon after each event.

▪Historical decomposition graphs measure the magnitude of price transmission due to the QEs. These decomposition functions track the evolution of LSAPs through the system and trace forecasted prices in the absence of LSAP versus actual prices which include the effects of LSAPs. Comparing the forecasted prices without LSAP with the actual prices provides an estimate of LSAP effects.

▪Historical decomposition graphs are based on partitioning the moving average series into two parts:

$$P_{t+j} = \sum_{s=0}^{j-1} \psi_s U_{t+j-s} + \left[X_{t+j}\beta + \sum_{s=j}^{\infty} \psi_s U_{t+j-s} \right]$$

where is the multivariate stochastic process for an agricultural price, is its multivariate noise process, is the deterministic part of and *s* is a counter for the number of time periods (RATS software 2006, Fackler and McMillin 2002). The first sum represents that part of due to innovations that drive the joint behavior of commodity prices for period to , the horizon of interest. The second part is the forecasted price series based on information available at time *t*, the date of an event (in this case the LASP) -- that is, how prices would have evolved if there had been no changes (RATS 2006).

Empirical Results

- The historical decomposition results show that QEs impacted commodity prices differently:

The effects of QE1 on the prices in 2008-2009 show very little positive impact of the QE for most agricultural commodities. The actual commodity prices (the solid lines) that include the impact of the QE are below or very close to the dashed lines for most commodities.

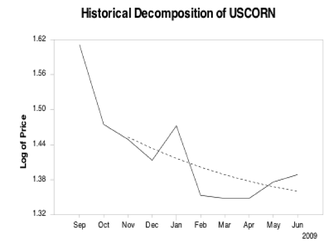
The historical decomposition graphs for QE2 in 2010-2011 tell a very different story. The historical decomposition graphs in the right column of figure 3 see a jump in actual prices (solid lines) of ten out of twelve agricultural commodities under investigation. Only wheat and broilers were not positively influenced by QE2.

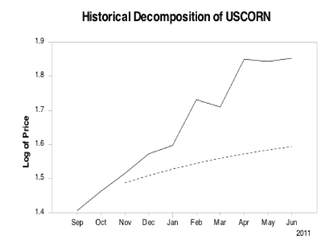
▪Figures 3 shows the historical decomposition graphs of the agricultural commodity prices under investigation for a seven–month time horizon, using RATS software. The left column shows the results for QE1 in 2008-2009, and the right column shows those for QE2 in 2010-2011.

▪The solid lines are the actual prices including the impact of the LSAPs.

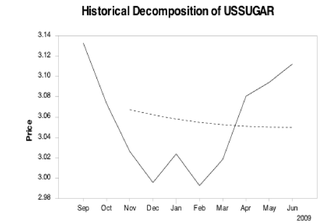
▪The dashed lines are the predicted prices excluding the effects of the LSAPs.

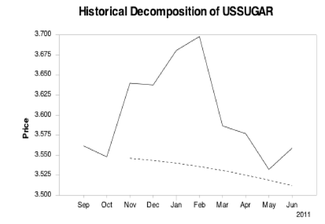
Cereal Grain: Corn



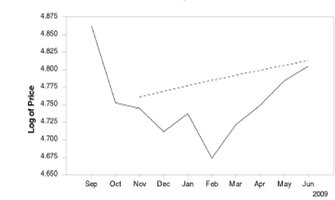


Soft: Sugar





Meat: Beef



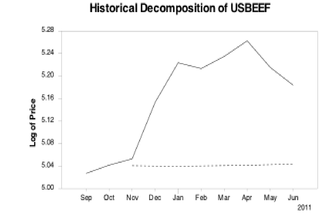


Figure 3: The Effects of the Recent Federal Reserve's Purchases of Long-Term Assets on Prices of Agricultural Commodities.

Conclusions

- Overall the two LSAPs events had different impacts on the commodity prices under investigation. The impacts of those announcements depend on the state of the economy at the time, the characteristics of the products, as well as perceptions of risks associated with the expansionary policy actions.
- With QE1 most prices were unaffected or fell with the announcement, while QE2 had just the opposite impact. With QE2, actual prices (solid lines that include the impact of the LSAP) were all higher (except for broilers and wheat) than forecast prices (dashed lines that exclude the effects), and the forecast prices did not get close to actual prices during the seven-month time horizon considered in this study.
- The conclusion from this study is that the new monetary policy changes can have important effects to agricultural commodity prices and can cause wide swings.