

# Discussion: Exchange Rates, Energy Policy and Outcomes in Agricultural Markets

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These three invited papers examine the role that exchange rates may have in influencing commodity prices, input prices and farm income. The papers arguably represent one of the most important recent attempts to quantify and explain these new linkages. As U.S. and world agriculture moves from a period of high output prices to a period of lower prices, understanding the impact of macroeconomic variables on farm input costs and farm income will become more important. Further, it will be equally important for policy makers to undertake appropriate market interventions in order to have maximum effectiveness should this period of cost-price-squeeze continue to intensify. Each of the papers has something significant to contribute to the understanding and debate of these new linkages between agriculture, the macroeconomic environment, and the energy sector.

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The relationship between high oil prices and the declining value of the U.S. dollar has been cited as one of the primary reasons for the rising farm prices and higher input costs that have affected the farm sector during the last several years. The first invited paper on the relationship between oil, exchange rates, and commodity prices attempts to examine these relationships using cointegration. The authors succeed in this endeavor for corn, cotton and soybeans, but not for wheat. Exchange rates were found to be the crucial linkage among prices of oil and corn, soybeans and cotton. This new linkage between prices, oil and exchange rates began between 2004 and 2006, as oil prices were rising and ethanol and alternative energy were taking on added importance to agricultural producers. It may also indicate that as the constraints on corn

use in the Renewable Fuel Standards in the 2007 Energy Bill become more binding, this new linkage between corn and oil will weaken, leading to less upward pressure on corn prices and to less market volatility.

The declining value of the U.S. dollar was found to have significant positive impacts on agricultural commodity prices. For oil, however, the relationship was less important, with the results suggesting that oil prices influence the value of the U.S. dollar, but the dollar has no significant effect on the price of oil. While this is counter to much of what has been written in the popular press, it does have strong empirical support. It also raises questions about the most effective tools for policy intervention. Alternative energy policy is largely focused on increasing the supply of biofuels. Should these efforts prove ineffective, it appears that macroeconomic policy will also have little influence on oil prices, at least through the exchange rate linkage.

An alternative view, however, is worth mention. It was reported last year that when the

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change in oil prices was measured in U.S. dollars compared with other currencies, there appeared to be a major divergence (*Washington Post*, March 7, 2008). From March 2007 through April 2008, the price of oil in U.S. dollars increased 76%, compared with 47% in Canadian dollars. When oil was valued in euros, the increase was 50% and when oil was valued in Japanese yen, the price increase was 55%. While anecdotal, these data do suggest that the weakening U.S. dollar may lead to higher oil prices for U.S. producers, businesses, and consumers. If this is the case, the U.S. economy may experience a disproportionate share of the oil price burden, leading to more pronounced impacts on cost structure and markets. The crucial question to be addressed by policy makers is whether or not energy policy alone is adequate to mitigate these negative impacts, or whether short-term macroeconomic intervention could also play a positive role.

The paper on identifying exchange rate impacts on agricultural inputs using VAR estimates adjustment coefficients and time lags for chemicals, farm machinery, fertilizer, and feeds that were imported by U.S. firms. Exchange rate effects on input prices were significant (except for feeds), but relatively small. The exchange rate elasticities indicated that a 1% depreciation of the U.S. dollar relative to the Mexican peso resulted in a 0.22% increase in imported chemical input prices after one quarter. Farm machinery prices rose by 0.15% for a similar exchange rate change. These results are important for business decision making since they quantify the magnitude and adjustment time to exchange rate changes.

One drawback of this analysis is the focus on one country and the aggregation of farm machinery, chemicals and feeds. The extent to which the results may generally apply is questionable. An alternative is to examine similar relationships for potash imports from Canada, which totaled 10 million tons in 2007. Further, if

farm machinery is disaggregated into new and used equipment, significant results may result as the likelihood of intrafirm transactions is reduced. A similar argument could be made for processed feeds and feed ingredients, but intrafirm transactions would remain an issue.

In the final paper on the dynamic relationship between U.S. farm income and macroeconomic variables, the authors assess the short run and long run relationships between farm income (agricultural GDP), commodity prices, interest rates, and exchange rates. Interest rates and prices are significant short run factors affecting farm income, while exchange rates play a key role over the long run. The importance of these results is to quantify key macro linkages to the agricultural economy. The results also support Schuh's hypothesis that macro policy likely has more of an influence on farms than does farm policy.

One other important result of this paper is the potential to use the parameters to forecast the effects of exchange rate changes on prices and farm income. While this was not explored by the authors, it does have important implications for policy makers and business decision making.

In conclusion, this set of invited papers explores and quantifies the key linkages between the macro economy and agriculture. Their general findings are that these linkages have strengthened since 2004 and, with few exceptions, will remain significant forces for the future. U.S. agriculture has also become more closely linked to the energy sector through alternative energy production and policy. This new linkage is especially important for the prices of corn and soybeans, and less so for wheat and cotton. The strength of this linkage and the extent to which it may be permanent are debatable. Finally, these papers emphasize the importance of considering coordination among policies related to agriculture, energy and, most importantly, the macro economy.