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Commodity Price Levels in Poor Countries: Recent Causes and Remedies

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Two sets of policies in developed countries accentuated recent crop price swings (Thurow and Kilman, 2009) and contributed to a food crisis in poor countries. First, hundreds of billions of dollars in payments linked to cropland area, to production, or to low crop prices encouraged crop production in Europe and in other wealthy countries, driving world prices for grains and oil crops lower than they would otherwise have been. Beginning in about 2000, a second set of policies contributed in a "substantial" or "important" way to the doubling and even tripling of certain grain and oil crop prices by encouraging the use of corn and oil crops to produce biofuel (Abbott, Hurt, and Tyner, 2008). Researchers find that these biofuel policies could considerably raise future prices—up to 72% at the time of their study—for corn and for certain other crops (Rosengrant, et al., 2008). The lack of price stability created problems for farmers at or near subsistence levels, while the higher prices contributed to a food crisis, especially among the urban poor in the developing countries.

In contrast to the above income support programs, which are activated by farmers' need for assistance when crop prices are low, biofuel programs continue to support crop prices even when they are already high by creating a new source of demand. Income support and biofuel policies that contributed to recent gyrations in world prices now exist side by side in the United States and Europe and pose a formidable challenge to any effort to provide price stability for farmers and for consumers in poor countries.

Oil Prices, Government Programs, and Crop Price Instability

Today's prices for several major grain and oil crops are linked to oil prices (Babcock, 2008a; Tyner and Taheripour, 2008), which fluctuate widely and have increased in recent years. If oil prices move toward $160 per barrel, biofuel production accelerates and food becomes scarce; corn prices may reach over $6 per bushel. However, if oil prices fall below say, $40 per barrel, corn prices head toward $2 per bushel. This triggers crop subsidies throughout the developed world. These subsidies, in turn, encourage certain grain and oil crop prices to fall even lower. Thus, the "safety net" for farmers in wealthy countries can cause major setbacks for those producing food in poor countries.

In 1996, the United States partially decoupled commodity programs so that farmers could not increase their government payments by adding more cropland or by increasing crop yields (Ogg and van Kooten, 2005; U.S. Congress, 1996). However, beginning in 2002, this policy was revised so farmers again may break out native prairie and receive disaster and commodity program payments for crops grown on the new cropland. If oil prices fall low enough, and crop prices become low, these "coupled" commodity payments encourage production, undermine world market prices, and violate trade policies. Europe converted a substantial portion of their support for farmers to payments that are not linked to production on the farm, so some progress toward decoupling of farm programs in Europe has occurred, but more is needed.

During the biofuel boom, farmers all over the world benefited from higher crop prices. However, poor farmers in developing countries remain vulnerable to the price swings described above. During the periods of very low crop prices, poor farmers often lack the cash necessary to purchase fertilizer or even maintain work animals (FAO, 2008; Thurow and Kilman, 2009). Farmers who are pushed to subsistence levels during periods of low prices may be unable to exploit the periods of higher crop prices. The Food and Agriculture Organization (FAO) of the United Nations (2008) finds, that in most poor countries, poor households "seldom produce enough to feed themselves." In certain countries, three-

fourths of the rural poor remain "net food buyers."

For the world's urban poor, problems associated with high crop prices are much less ambiguous. In wealthy countries, such as the United States, people eat processed foods, and food expenditures generally make up a small share of our total purchases. In contrast, the world's urban poor spend most of their income on food, and their diet consists largely of basic commodities, such as cooking oil, beans, and flour. This makes billions (Babcock, 2008b) of the poorest consumers in developing countries vulnerable to periods of high crop prices (FAO, 2008).

Any remedy to hunger problems affecting the world's urban poor must address these powerful commodity program and biofuel program drivers. For example, one popular remedy to food scarcity problems focuses on increasing crop yields in major exporting countries, such as the United States. Yet, higher yields will increase the use of corn for biofuel (Abbott, Hurt, and Tyner, 2008). Increased biofuel production in response to higher yields and the resulting fall in crop prices raises the price of grain and oil crops, erasing some of the price reducing impacts of the enhanced yields. This link between crop prices and fuel prices may render this remedy of enhancing U.S. farmers' crop yields to satisfy food security problems for the urban poor somewhat obsolete. Analysis of any policy option to address food security by making more food available, such as by creating grain reserves, needs to address this tendency for biofuel producers to respond to the greater availability of what they perceive as potential biofuel feedstock by producing more biofuel.

If higher yields can be achieved on subsistence farms in Africa and other poor countries, the rural poor, who account for most of the world's poorest people, eventually benefit (FAO, 2008). Support for small farmers in Africa and other poor areas is essential for achieving food security in poor countries. Unfortunately, raising yields in Africa has proved difficult and appears unlikely to solve hunger problems any time soon. One of many difficulties may be the price instability described above.

Why the Emphasis on Biofuel Policies

Many factors contributed to the current food crisis. For example, income growth, especially in China and India, led to increased consumption of meat and added to world demand. Although China and India do not trade much in food (Abbott, Hurt, and Tyner, 2008), their accelerated income growth added somewhat (Headey, Malaiyandi, and Fan, 2009) to world demand for crops and contributed to increased crop prices. Potential sources of price instability other than biofuels include unfavorable weather, the fall in the U.S. dollar, export restrictions in poor countries, and cost increases due to higher fuel costs (GAO, 2009). The present analysis focuses on addressing biofuel policies because 1) some of the other major sources of price instability, such as people choosing to consume more meat, appear less important than biofuels in causing the grain and oil crop price increases (Headey, Malaiyandi, and Fan, 2009) and 2) the other sources of price instability are much less amenable to near term policy remedies.

Analysis of the relative importance of biofuels as a cause of the run-up in grain and oil crop prices needs to consider the full sequence of events. Headey, Malaiyandi, and Fan (2009) find that "the oil-biofuels nexus was clearly the driving force behind the surge in food prices, but export restrictions and panic purchases turned a tightened market situation into a crisis." Analyses that focus only on the final year or so of the increase in grain and oil crop prices could be misleading, as they primarily would capture the effects of export restrictions and other government interventions which were reactions to the rising crop prices, as well as causes of further increases.

High oil prices influence crop prices by raising costs of production as well as by increasing biofuel production (GAO, 2009), which adds to the demand for crops. When the price of oil tripled between 2000 and 2008, from $40 to $120 per barrel, the price of corn went from $2 to $6 per bushel. About a dollar of this price increase was due to biofuel subsidies. The other $3 dollar price increase resulted from the high price of oil (Abbott, Hurt, and Tyner, 2008), but analysts cannot quantify the relative importance of increased biofuel production versus cost increases, as high oil prices added to fuel and fertilizer costs.

Focusing on the future, rather than the past, allows us to hold constant many of the influences on crop prices that complicated the above analyses of past changes in crop prices. Research shows that future prices of corn and oil crops largely will be determined by the price of oil (Babcock, 2008a; Tyner and Taheripour, 2008) and that biofuel policies can strongly influence prices of these and certain other crops (Rosengrant, et al., 2008).

Recent swings in rice prices also resulted from many of the above influences, but unlike grain and oil crop prices, rice prices were not much affected by biofuel production. Poor countries that rely on rice and other cereals as food staples could help their own farmers by removing price controls and export restrictions. Although avoiding price controls and export restrictions can help considerably in avoiding food crises, this may be hard to accomplish in situations where a crisis already exists because of the sense of panic often associated with food scarcity. Biofuels remain as the substantial contributor to price increases for certain grain and oil

crops other than rice, that are most amenable to policy tools available to policy makers in the United States and in Europe.

Biofuel Options

Current economic forces and engineering limits offer policy makers an opportunity to stabilize crop prices by limiting conventional biofuel expansion. Oil crops constitute a relatively costly source of fuel, dependent on substantial government subsidies or on enforcement of costly mandates (Babcock, 2008b). If policy makers become sufficiently concerned about food price instability or about food security, they can lower or remove the subsidies.

Corn ethanol enjoys much greater profitability, when prices are favorable, than either biodiesel or cellulosic ethanol. But it faces a ten % limit, or blending wall, on how much ethanol may be mixed with gasoline without risk of corroding fuel lines. The United States likely has reached this limit well before reaching the 15 billion gallon mandate (U.S. Congress, 2008) for producing corn ethanol.

Any future corn ethanol expansion depends heavily on government incentives that encourage production of flex fuel vehicles and development of distribution infrastructure. This encouragement is accomplished through fuel efficiency standards that treat flex fuel vehicles as if they greatly increase fuel efficiency and through subsidies to gasoline stations that install E85 pumps. Congress apparently intends that flex fuel vehicles will soon run on advanced biofuels, such as cellulosic ethanol, not corn ethanol (U.S. Congress, 2008). Cellulosic ethanol and certain advanced biofuels can be made from crop residues and other fuel stocks that do not affect food prices directly or contribute to the destruction of forest ecosystems (Tilman, et al., 2009). However, corn ethanol now is much less costly to produce compared to cellulosic ethanol (GAO, 2009), so when flex fuel vehicles become available in sufficient numbers, we may experience another round of corn ethanol expansion, not a switch to advanced biofuels. EPA is considering a request to raise the blending standard from 10 to 15%; if EPA grants the request, it could considerably increase biofuel use in the United States.

Some companies are striving to produce biofuels compatible with existing infrastructure, allowing them to avoid the blend wall (GAO, 2009). For example, expansion in the use of corn for fuel could occur once producers are successful in converting corn ethanol plants to production of biobutanol (Gold, 2009), for which there is no blend wall. If companies succeed in producing biobutanol or similar products at a competitive cost, biofuel production could consume a much larger portion of the U.S. corn crop.

If policy makers remain committed to switching from producing corn ethanol to producing large quantities of advanced biofuels that do not greatly affect availability of food or harm the environment, a cap on use of corn for ethanol (Babcock, 2008b), or for other fuels such as biobutanol, may need to be part of the policy mix.

Crop Price Impacts and Policy Choices

FAO (2008) cited high prices as an important cause when FAO added some 75 million more people to its "undernourished" category in 2007. If another period of increased oil prices occurs, it could considerably exacerbate the current food crisis—or create another one—because high oil prices both raise farmers' costs and encourage more biofuel production (Babcock, 2008a; Tyner and Taheripour, 2008).

Current farm income support policies and biofuel policies considerably benefit crop farmers in developed countries but constitute a major barrier to providing crop price stability for farmers in poor countries and to assuring food security for the world's urban poor. Relatively simple remedies could address these sources of price instability and food security problems, including: 1) the partial decoupling of commodity program payments as occurred in 1996, 2) elimination of biodiesel subsidies and mandates, and 3) capping use of corn for biofuel production at the 15 billion gallon level. Unlike other threats to food supplies, such as weather variability, crises related to the fuel/food linkages are preventable.

For More Information

Abbott, P., Hurt, C., and Tyner, W. (2008). What's driving food prices? Farm Foundation Issue Report. Oak Brook, Ill.

Babcock, B. (2008a). Statement before the U.S. Senate Committee on Homeland Security and Government Affairs. May 7, 2008.

Babcock, B. (2008b). Breaking the link between food and biofuels. *Iowa Ag Review*. 14(3).

Food and Agriculture Organization of the United Nations (FAO). (2008). *The state of food insecurity in the world.* Available online: www.fao.org/catalog/inter-e.htm.

Gold, R. (October 1, 2009). Makers of ethanol ponder alternative. *Wall Street Journal*.

Headey, D., Malaiyandi, S., and Fan, S. (2009). Navigating the perfect storm: Reflections on the food, energy, and financial crises. International Food Policy Research Institute. IFPRI Discussion Paper 00889, Washington, D.C.

Ogg, C. and van Kooten, G. (2005). Severing the link between farm program payments and farm production: Motivation, international efforts, and lessons. *Choices.* Available online: http://www.choicesmagazine.org/2004-4/grabbag/2004-4-11.htm.

Rosegrant, M., Zhu T., Msangi, S., and Sulser, T. (2008). Global scenarios for biofuels: Impacts and implications. *Review of Agricultural Economics,* 30(3), 495-505.

Thurow, D., and Kilman, S. (2009). *Enough: Why the world's poorest starve during an age of plenty*. New York: Perseus Books Group.

Tilman, D., Socolow, R., Foley, J., Hill, J., Larson, E., Lynd, L., Pacala, S., Reilly, T. Searchinger, T., Somerville, C., and Williams, R. (2009). Beneficial biofuels—The food, energy, and environment trilemma. *Science* 325(5938), 270-271.

Tyner, W., and Taheripour, F. (2008). Biofuels, policy options, and their implications: Analyses using partial and general equilibrium approaches. *Journal of Agriculture and Food Industrial Organization*, 6, Article 9: Available online at www.bepress.com/jafio/vol6/iss2/art9.

U.S. Congress. (1996). Federal Agricultural Improvement and Reform Act of 1996. P.L. 104-127, 4 April, 1996. Washington, D.C.

U.S. Congress. (2008). Energy Independence and Security Act of 2007. H.R. 6, 110 Congress, 1st session. Washington, D.C.

U.S. Government Accountability Office (GAO). (2009). Biofuels: Potential effects and challenges of required increases in production and use. GAO-09-446, Washington, DC.

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