



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

The World Economic Crisis and U.S. Agriculture: From Boom to Gloom?

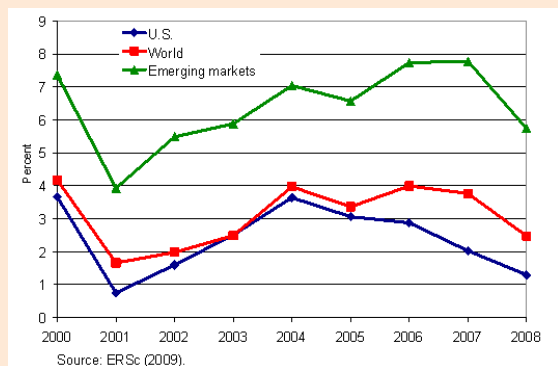
William M. Liefert and Mathew Shane

JEL Classifications: E32, F4, Q17

Before the economic crisis hit in 2008, the 2000s had been a good decade for world economic growth. Over 2000–07, world gross domestic product (GDP) grew by 3.2% a year, exceeding annual growth of 2.5% during the 1990s (see Figure 1). Emerging market economies, which include China, India, and Russia, expanded at an especially high 6.5% a year, in part because of the economic reforms many enacted over the past two decades. U.S. farmers benefited from rising world prosperity, which contributed to the growth in real (inflation-adjusted) farm income over 2000–07 of 43% (ERSb, 2009).

The financial crisis that struck the United States in 2008, and quickly spread to the overall U.S. economy and the world, has led to recession in many countries. How might the world financial crisis and ensuing economic downturn affect U.S. agriculture, especially given how important exports are to the sector? This article first examines the cause of the economic crisis, and then its consequences for U.S. agriculture. In the rest of the article, the financial crisis and economic downturn will often be referred together as the *economic crisis*.

Figure 1. GDP Growth



The Cause of the Economic Crisis

The high world growth of the 2000s had two significant features. The first feature is that growth put upward pressure on prices for energy and agricultural goods, whose production can't be quickly increased in the short run. This is one reason why world energy and agricultural commodity prices soared in 2007–08 (Trostle, 2008).

The second feature is that the growth involved major macroeconomic imbalances between two different groups of countries, mainly the United States and Great Britain on the one hand and various Asian countries on the other, such as China, South Korea, and Taiwan (see Council of Economic Advisors, 2009; Wolf, 2008). (When we discuss this issue in the rest of the article, we'll usually refer to the two groups of countries as just the United States and the "trade surplus" countries, for reasons that will be explained.) Coinciding with the buildup of the macroeconomic imbalances were major developments in the U.S. and Western financial system, such as the rise of new financial products and practices and reduced regulation. These changes diminished transparency and increased risk. The main cause of the economic crisis was the combination of the macroeconomic imbalances and growing problems in the financial world.

The fundamental world macroeconomic imbalance before the crisis is that the United States undersaved and overconsumed, while the trade surplus countries oversaved and underconsumed. The latter pushed production and exports at the expense of domestic consumption, mainly by keeping their currencies undervalued against those of their major export markets, especially the United States.

The imbalances became self-sustaining. The United States ran large negative trade balances, and the surplus countries large positive ones. These countries also lent the United States their accumulated foreign exchange surpluses,

which helped finance the U.S. trade deficits and kept their currencies from rising in value (appreciating) against the dollar. The capital inflows lowered U.S. interest rates and increased business investment, boosting GDP, consumption, and imports. The capital inflows also expanded investment in equities and property, which led to an asset price boom. The rise in asset prices increased consumer wealth, which further stimulated U.S. consumption spending and imports, and thereby helped sustain the trade deficit.

The big influx of money into the Western financial system enlarged the supply of funds available for loans and investment relative to the profitable opportunities available. Investors and banks responded by making riskier loans, such as for subprime home mortgages in the United States. The increase in delinquent loans for U.S. home mortgages in 2008 precipitated the U.S. financial crisis.

Another major cause of the economic crisis was innovation in the financial world during the 1990s and 2000s (Lewis, 2008; Council of Economic Advisors, 2009), combined with reduced government regulation of financial markets. The securitization (bundling) of different types of loans and development of other new financial products—such as mortgage backed securities, loan default swaps, and collateralized debt obligations, generally called derivatives—lowered transparency and increased risk. In 1999, the U.S. Congress repealed the law that prevented financial institutions from engaging in both commercial and investment banking. Many of the mortgage underwriters and other lenders were not subject to regulation or supervision by the Federal Reserve (Fed) or any other governmental body. To maximize short-run gains, financial firms became highly leveraged, meaning that they kept their reserves low relative to the magnitude of funds lent or invested. This behav-

ior was abetted by the Fed's policy of keeping the money supply high and interest rates low.

As the home mortgage problem developed, securitization and other derivative products made it very difficult for lenders to assess their own exposure and that of potential borrowers to bad debt. After the collapse of Lehman Brothers in September 2008, lending among banks and other financial firms was sharply curtailed and interest rate risk premiums rose rapidly. Because financial institutions could not borrow easily from secondary financial markets to raise funds, they had to sell assets. This led to a price crash for bonds and equities. All these problems were compounded by financial firms' earlier extreme leveraging of funds. Given the openness of U.S. financial markets and heavy participation in those markets by foreign banks and financial firms, the U.S. crisis quickly spread throughout the world.

The financial crisis also soon spread to the "real economy." The disruption to lending is hurting business investment and debt-financed consumer spending, such as for cars. The drop in equity and real property asset values throughout the world is sharply reducing consumer wealth, also causing consumer spending to fall. The drop in these major components of countries' GDP—investment and consumption—is driving the current world economic downturn.

Direct Effects of the Economic Crisis on U.S. Agriculture

The economic crisis can have direct and indirect effects on U.S. agriculture. The direct effects will come from changes within the U.S. economy alone. The indirect effects will occur from how the crisis impacts foreign income and trade and world energy prices.

The direct effect of the crisis on U.S. agriculture will probably not be

strong. On the demand side, the crisis will lower U.S. GDP, and thereby consumer spending on food. The Economic Research Service (ERS) forecasts a 2009 drop in U.S. GDP of 2.7%, though all macroeconomic forecasts of the crisis' effect on GDP in the United States and other countries are continually being revised downward. Nonetheless, the negative demand effect on food is likely to be small. Most U.S. consumers have a sufficiently high standard of living that demand for food is not very sensitive to changes in income. Consumers are more likely to eat out less at restaurants so that total consumer expenditure on food at home and away from home will fall, but not the amount of food actually consumed.

On the supply side, the disruption of U.S. financial markets might reduce lending to farmers, including for operating expenses. In recent years, farm borrowing has increased from large regional banks, some of which have moved toward riskier lending behavior (FDIC, 2008). Yet, most of the rural banks that lend to farmers are not closely tied to the financial world that created, and is now suffering from, the financial crisis. Agricultural borrowers and lenders tend to have secure long-term relationships, which should mitigate the crisis' effect on the flow of loans to farmers.

Indirect Effects

The main indirect effects of the crisis will come from its impacts on GDP and income in overseas markets, especially countries that are large importers of U.S. agricultural goods, on energy prices, which are falling because of the decline in world economic activity, and on the exchange rate of the U.S. dollar vis-à-vis foreign countries' currencies. Table 1 shows how the crisis is likely to change these and related factors and variables, and how those changes in turn will affect U.S. agricultural producers.

Table 1. Effect of World Economic Crisis on U.S. Agriculture

Variable	Direction of change	Effect on U.S. ag producers
World GDP	decreases	
Consumer income	decreases	unfavorable
Energy prices	decrease	
Bulk crop producers		
Output prices	decrease	unfavorable
Input prices	decrease	favorable
Livestock producers		
Input prices	decrease	favorable
U.S. dollar		
Short run	appreciation	unfavorable
Long run -- 2 scenarios		
	appreciation	unfavorable
	appreciation	favorable

Source: Economic Research Service, USDA.

World GDP is Declining

The spread of the crisis beyond the United States is impacting economic growth throughout the world. ERS forecasts that world GDP in 2009 will drop by 1.2%, compared to about 2.5% growth in 2008 and 3% yearly average growth since 1970. Although demand for food in the United States and other rich developed countries is not very responsive to changes in consumer income, this is not the case for developing countries. A major hit to these countries' GDP could cut spending on food and industrial demand for agricultural products substantially. Countries that are large markets for U.S. agriculture could substantially reduce their imports. By the end of 2008 this was already happening in China, Taiwan, Mexico, Egypt, and Russia (FATUS, 2009).

Just as high world economic growth during the 2000s contributed to the spike in world energy prices in 2007–08, the economic crisis' negative effect on growth is reducing demand and prices for energy. After

peaking at \$147 a barrel in July 2008, the price of oil plunged to \$35 a barrel at the beginning of 2009 (EIA, 2008 and 2009).

The fall in energy prices will have a negative demand-side effect and positive supply-side effect on U.S. farmers. The negative effect is that prices for biofuels, and thereby for biofuel feedstocks, will drop, which will hurt producers of bulk crops, especially corn in the United States. For example, from July 2008 to January 2009, the price of ethanol decreased from \$2.90 a gallon to \$1.61 (ERSa, 2009), and the price of corn declined from a peak of over \$7 a bushel in summer 2008 to less than \$4 in January 2009.

A positive effect for agriculture is that prices will also likely fall for energy-based agricultural inputs, such as gasoline, diesel, electricity, and fertilizer. For U.S. bulk crop producers, energy-based inputs can account for half to two-thirds of operating costs, and a sixth to a third of total costs (ERSb, 2009).

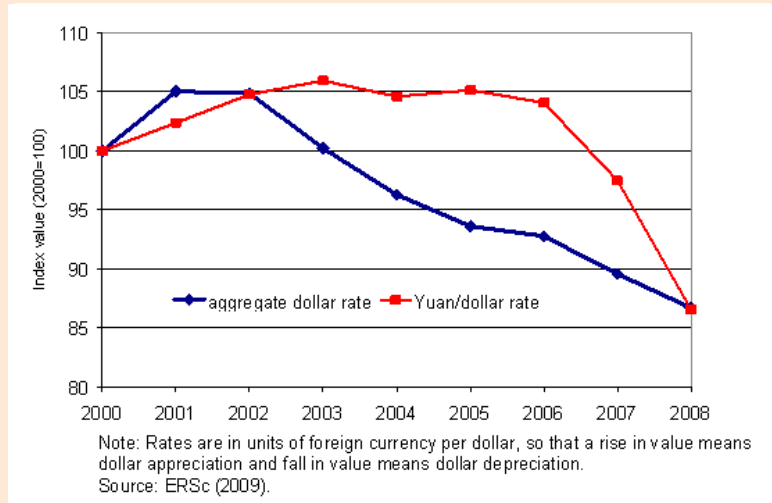
The drop in energy prices will not affect all U.S. agricultural producers uniformly. All farmers will benefit from the price decrease for energy-based inputs. Yet, crop producers who are part of the energy-biofuels relationship will suffer because their output prices will fall. They will probably be net losers, just as they were net gainers from the surge in energy prices over 2007–08. On the other hand, producers of meat and other livestock products will especially benefit, as prices will decrease for not only their energy-based inputs based but also their animal feed.

Exchange Rate of the Dollar

Another major indirect effect of the world economic crisis on U.S. agriculture will be how it affects the exchange rate of the dollar against the currencies of developing countries that are large importers of U.S. agricultural goods (see Shane, Roe, and Somwaru, 2008). Yet, predicting this effect is challenging.

As we discussed earlier, one of the main causes of the economic crisis was the macroeconomic imbalances that accompanied world growth, in particular undersaving and overconsuming by the United States and oversaving and underconsuming by the trade surplus countries. The main way to correct this problem would be with a realignment of exchange rates, in particular for the currencies of the trade surplus countries to appreciate against the dollar. This would raise prices of their exports in the United States and lower prices of U.S. exports in their countries. U.S. imports and consumption would fall and exports to the trade surplus countries rise, while trade surplus country exports would drop and their imports and consumption rise. The U.S. trade deficit would shrink. In the early and mid-2000s, exchange rates in fact moved in this direction. For example, between 2001 and 2007 the dollar depreciated against the South Korean

Figure 2. The dollar's exchange rate



Won by 40% in real terms (after correcting for inflation), between 2005 and 2008 it depreciated against the Chinese Yuan by 18% (real terms), and between 2002 and 2008 the dollar fell in real terms against all foreign currencies by 17% (see Figure 2).

Yet, the crisis' short-run effect on the dollar has been, perhaps ironically, to appreciate rather than depreciate it against the Chinese Yuan and most other currencies. Although the crisis originated in the United States, financial investment here in U.S. government securities or banks is considered less risky than in most other countries, so money throughout the world is seeking a U.S. safe haven from uncertain conditions. From July to December 2008, the dollar overall appreciated in real terms by 17% (ERSc, 2009), and ERS forecasts that in 2009 the dollar will increase in real terms by a further 5%.

The inflow of funds into the United States has the benefit of helping the U.S. government finance the policies needed to stimulate the economy, to the advantage of the entire world. On the other hand, the dollar appreciation is delaying the correction of the world macroeconomic imbalances that helped spawn the economic crisis in the first place. The dollar is appre-

ciating against the currencies of most other countries, developed as well as developing. This means the appreciation is hurting U.S. agricultural exports by making them less price competitive compared to output produced not only by importing countries but also by export competitors, such as Canada, Australia, and Brazil.

In the longer term, there are two possible scenarios involving the dollar's exchange rate. The first is that the dollar continues to appreciate against the Chinese Yuan and currencies of other countries with which the United States has large trade deficits. The trade surplus countries continue to invest the dollars they earn from their positive U.S. trade balance back into the United States. By keeping the dollar strong, this behavior would prevent market forces from eliminating the U.S. trade deficit through dollar depreciation. In this scenario, the world could rebound from the economic crisis, with the financial system strengthened, though with the same general patterns of growth and trade as before. U.S. agriculture would benefit from resumed world growth, unless or until another crisis hits, but not from the benefits that could come from dollar depreciation.

In this scenario, the macroeconomic imbalances between the United States and the trade surplus countries go uncorrected in both the long and short run. The scenario carries the risk of an equally or even more serious economic crisis in the future. The crisis would be sparked not by weaknesses within the world financial system, but rather by worries about the sustainability of the dollar's value, which could trigger large-scale capital flight from the United States. The United States could have an economic crisis similar to that suffered by various emerging market economies during the last 15 years, such as Thailand and Indonesia in the late 1990s, which could pull the entire world economy down with it.

The second scenario is that the dollar depreciates against the Yuan and other trade surplus country currencies. What allows this to happen is that the trade surplus countries reduce their investment of surplus dollars from U.S. trade back into the United States. This would let the U.S. trade deficit decline through dollar depreciation. An argument in favor of this scenario is that before the crisis the dollar was depreciating, in the aggregate and against the trade surplus countries' currencies. In this scenario, U.S. agriculture would benefit doubly from renewed world growth and dollar depreciation, both of which would increase foreign demand for U.S. products.

Concluding Comments

The economic crisis will strongly impact U.S. agriculture in the short run. The fall in world GDP and dollar appreciation will significantly reduce agricultural exports and prices, which in turn should lower farm income and employment. However, the crisis will not affect all agricultural producers in exactly the same way. The drop in world energy prices will decrease prices for certain bulk crops because of the biofuels relationship, but the

livestock sector will benefit from lower feed costs. Energy and fuel-related costs for all farmers will decline.

For the longer term, the main element of uncertainty is the dollar exchange rate, especially vis-à-vis the Chinese Yuan. The dollar could continue to appreciate, or it could depreciate. If the latter happens, then when the crisis ends, the resumption of world growth combined with a depreciated dollar should create high foreign demand for U.S. agricultural goods.

In either long-run scenario involving the dollar exchange rate, world economic growth restarts. If renewed growth is at a sustainable level where it does not outrun resource availability, then prices of agricultural goods, energy, and other raw materials will not rise at a rate much higher than overall inflation. However, if growth resumes at a level and composition where the demand for agricultural and energy products outstrips existing supply, it will put renewed price pressure on these commodities. As in 2007–08, the price rise would hurt agricultural consumers throughout the world, but help producers, though not uniformly. The difference between the dollar depreciation and appreciation scenarios is that the latter would carry the risk of another world economic crisis, triggered by flight from the dollar. A second crisis would again temporarily reverse any previous rise in world energy and agricultural prices.

In the very long run, sustainable world growth depends on discovery of new energy deposits, technological advances in alternative energy sources, and efficiency gains in the production and use of energy, agricultural goods, and other primary resources. In such a world, agriculture could continue to provide a plentiful supply of food at reasonable prices.

For More Information

Council of Economic Advisors (2009). Housing and financial markets. In *Economic Report of the Council of Economic Advisors*, pp. 61–96. Office of the President, Washington, DC.

Economic Research Service (ERSa, 2009), USDA. Bioenergy briefing room. Available online: <http://www.ers.usda.gov/Briefing/Bioenergy/>

Economic Research Service (ERSb, 2009), USDA. Farm Income and Costs briefing room.

Available online: <http://www.ers.usda.gov/Briefing/FarmIncome/>

Economic Research Service (ERSc, 2009), USDA. Macroeconomics and Agriculture briefing room. Available online: <http://www.ers.usda.gov/Briefing/Macroeconomics/>

Economic Research Service, USDA (2000). *International Agriculture and Trade Reports: International Financial Crises and Agriculture*, WRS–99–3, Washington, DC.

Energy Information Agency (EIA, 2008). *International Energy Outlook, 2008*. U.S. Dept. of Energy, Washington, DC. Available online: www.eia.doe.gov/oiaf/forecasting.html

Energy Information Agency (EIA, 2009). *Weekly All Countries Spot Price, FOB*. U.S. Dept. of Energy, Washington, DC. Available online: <http://tonto.eia.doe.gov/dnav/pet/hist/wtotworldw.htm>

Federal Deposit Insurance Corporation (FDIC, 2008). *FDIC Quarterly*, 2(4). Available online: http://www.fdic.gov/bank/analytical/quarterly/2008_vol2_4/FDIC139_QuarterlyVol2No4_Web.pdf

Foreign Agricultural Trade of the United States (FATUS, 2009), USDA. Available online: www.ers.usda.gov/Data/FATUS/

Lewis, M. (2008). *The End of the Wall Street Boom*. Conde Nast Portfolio.com. December issue, New York.

Shane, M., and Liefert, W. (2000). The international financial crisis: macroeconomic linkages to agriculture. *American Journal of Agricultural Economics*, 82(3), 682–687.

Shane, M., Roe, T., and Somwaru, A. (2008). Exchange rates, foreign income, and U.S. agricultural exports. *Agricultural and Resource Economics Review*, 37(2), 160–175.

Trostle, R. (2008, May). Global agricultural supply and demand: factors contributing to the recent increase in food commodity prices. Outlook No. WRS–0801, Economic Research Service, USDA, Washington, DC.

Wolf, M. (2008). *Fixing Global Finance*. Baltimore, MD: Johns Hopkins University Press.

William Liefert (wliefert@ers.usda.gov) and Mathew Shane (mshane@ers.usda.gov) are senior agricultural economists in the Market and Trade Economics Division of the Economic Research Service, USDA.

The authors thank Bill Coyle, Mark Gebhlar, Suchada Langley, Mary Anne Normile, Janet Perry, Terry Roe, Dave Torgerson, and Ron Trostle for helpful comments, and are responsible for any remaining deficiencies. The views expressed are the authors' alone and do not in any way represent official USDA views or policies.