

# CHOICES

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## Implications of Macroeconomic Instability for Agriculture Income and Land Values

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*JEL Classifications: Q12, Q14, N50, E60*

From 2006 through the first half of 2008, U.S. Agriculture enjoyed a period of economic prosperity not seen since the 1970's. World economic growth was robust, stimulating food demand; the growing use of major crops such as corn in the production of biofuels increased demand and contributed to overall upward pressure on commodity prices; and a reduced value of the U.S. dollar helped expand exports to record levels. This achievement was reflected by new records for most income and balance sheet measures. Even after adjusting for inflation, 2008's forecast of net farm income rivals the all-time record established in 1973. Escalating land values and conservative borrowing resulted in consecutive years of record farm equity and historically low debt-to-asset ratios. The economic environment changed quite dramatically in the latter months of 2008. After reaching unprecedented highs during the summer, commodity prices receded to postharvest 2007 levels, prior to the run-up. Input costs continued their surge, with each year's crop costing more to produce. And perhaps generating the most concern; the emergence of a worldwide financial crisis that has shown no signs of abating so far this year.

Financial and commodity markets worldwide have grown more interdependent, which has strengthened the linkages between the United States and our major trading partners. Because of this increased globalization, international macroeconomic conditions affect the relative demand for and competitiveness of U.S. exports. Fiscal and monetary policies that encourage high domestic growth rates tend to increase our demand for foreign goods relative to the foreign demand for U.S. products, causing a trade deficit. Macroeconomic policies also inform investors worldwide about the future performance of the U.S. economy. These signals influence investors' willingness to invest in U.S. assets, thus impacting the demand for U.S. dollars.

Beyond greater dependence on world markets, there are many other important differences between 21<sup>st</sup> century agriculture and the sector that endured the last major financial crisis in agriculture more than 20 years ago. Production is more consolidated on large and complex operations. The production of agricultural commodities is more integrated, with a large share of poultry and hog production taking place under production contract arrangements where risk is shared between the farm operator and the sponsoring firms. Today's farmers produce higher valued products as a result of technological improvements in agricultural production, food processing systems, and better information on changing consumer preferences. Technological advances also have spurred productivity growth through higher yields. Farmers have improved control over their operations by spending more on management services and increasingly adopting cost saving technologies such as biotechnology seed, water-saving irrigation platforms, and electronic yield monitoring devices.

One outcome of consolidation in the banking industry is that today, large, diversified, commercial banks hold a greater share of total agricultural loans than was the case two decades earlier (Cofer, Jr. 2008). Farm lending has shifted from a primarily collateral basis to greater consideration on the ability to meet debt service commitments. Farm operators have adopted a more conservative approach to financing their operations. Many more farmers now are paying cash for land, equipment, and inputs. Farmers also are reducing their debt load by leasing assets such as land and machinery. A variety of government policies are now in place that provide farms with income support and risk management opportunities. Although revitalized with passage of the Federal Crop Insurance Act of 1980, participation rates were quite low throughout most of the financial crisis of the mid-1980s. Today, federal crop insurance is

provided through public and private sector involvement yielding greater participation. Moreover, new and innovative products offer expanded protections against losses from unanticipated events for a wider array of agricultural commodities.

A great deal of uncertainty exists about the impact of macroeconomic policies adopted by the United States and other countries in response to the current crisis. The macroeconomic assumptions underlying USDA's forecasts of farm income and land values anticipate an eighteen month recession during which time the world economy structurally adjusts. In addition to slower GDP growth throughout the world, low levels of inflation, lower levels of commodity prices, and no major realignment of exchange rates would prevail under the reference scenario. Two alternative scenarios were developed that delineate distinct recovery paths out of financial crisis. Alternative one considered macroeconomic policies that favor a strong U.S. dollar. Capital inflows continue to finance U.S. investment and global imbalances remain. The major differences between this scenario and the base assumptions are a higher U.S. exchange rate, higher U.S. and world GDP growth, lower inflation, and higher oil prices. The second alternative is characterized by a slower recovery than normal which leads to a declining dollar value and lower GDP growth. Compared with the reference scenario, the exchange rate would be lower, inflation higher, and the oil price lower. More specifics on the macroeconomic scenarios can be found in Shane et al. (2009).

This article provides an analysis of the implications of alternative recovery paths from the current macroeconomic financial crisis. Results for 2009 net income and farmland values are presented along with implications for longer term trends relative to the USDA reference scenario.

## **Behind the Recent Surge in Farm Real Estate Values**

Farmland values have risen dramatically over the past several years raising concerns about their long-term stability and risks associated with a sudden drop in prices. Many remember the last major devaluation of U.S. farmland where inflation adjusted values fell by almost 50% between 1981 and 1987. Farmland values did not begin to grow again until 1993 and after adjusting for inflation had steady increases of 3% per year over the next 10 years. The rate of increase after adjusting for inflation has accelerated significantly since 2004, averaging 10% per year through 2008. A milestone was reached in 2005, with inflation adjusted values fully recovering from the farm financial crisis of the 1980s.

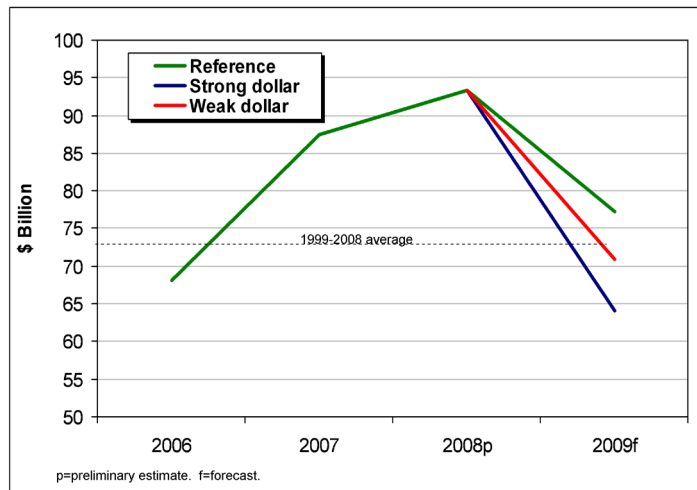
Land markets are inherently local where participants are heavily influenced by nearby social, financial, and economic factors. Generalizing recent events on a national scale obscures many of these local influences, but does reveal some of the most common and strongest influences. Robust growth in farm income during most of this decade buoyed by government support payments is consistent with the expectation of higher returns to farmland from agricultural production reflected in higher land values. Nonfarm factors such as recreation and urbanization potential also influence market value. In states where farmland is in great demand for conversion to urban use, IRS code section 1031 exchanges were an important facilitator for many land transactions. The 1031 exchange provides a tax incentive to farmers who make a profit from selling their land. They can make a like-kind exchange for land elsewhere and forgo paying capital gains. More recently, farmland has attracted investors seeking a shelter from the stock market or looking to hedge against future inflation.

## **Recession Duration and Recovery Path has Differing Implications for Farm Income and Land Values**

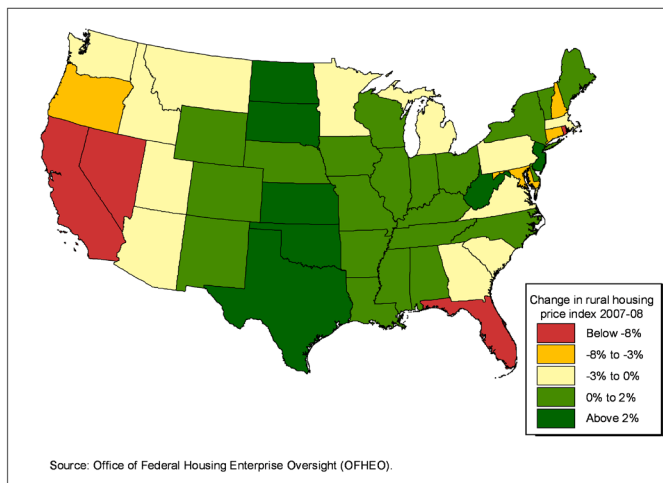
Under both alternative scenarios, the recovery to positive domestic GDP growth takes longer than the 18 month period assumed in the reference scenario. In addition, the scenarios have different assumptions for the amount of contraction in the U.S. economy in 2009, with weak dollar scenario at -2.2% and the strong dollar scenario at -3%. As a result, the alternative outcomes for 2009 characterized the downside risk associated with the effectiveness of the U.S. and world macroeconomic policy response to the crisis. The alternative scenarios also have two distinct recovery paths which influence the potential 2009 outcomes, but more importantly, have dramatically different outcomes over the long-term.

With exports declining more than under the reference scenario, the first alternative results in lower commodity receipts. Livestock receipts are projected to be almost 8% below the base 2009 forecast of \$135 billion and crop receipts just over 1% below the 2009 reference scenario forecast of \$162 billion. Dairy and beef cattle account for most of the decline in livestock receipts, which for dairy represents additional contraction beyond an already bleak 2009 outlook for the reference scenario. Under this scenario, higher feed costs lead to a modest increase in expenses above the reference scenario, as some of the impact is offset by lower interest expense and energy costs. Net cash income is projected to be \$64 billion, representing a \$13 billion decline from the reference scenario (Figure 1). At this level, net cash income would be \$8 billion below the 1999–2008 average. Net farm income is projected to be about \$60 billion under this scenario, which would be 16% below the reference case and about \$5 billion below the 1999–2008 average.

**Figure 1. 2009 Net Cash Income under Alternative Macroeconomic Assumptions**



**Figure 2. Change in Rural Housing Price Index, Q42007–Q42008**



[Place figure 1 here]

The second alternative, which represents a slightly longer and initially deeper recession than does the reference scenario, is characterized by a weaker dollar, higher interest rates, and higher costs of foreign inputs. In comparison with the base 2009 results, there were very minimal changes in the 2009 outlook for commodity receipts. Expenses, on the other hand, would be more than 2% higher than under the reference scenario. The outcome under this scenario would be about a \$6 billion decline from the reference case for both net

cash income and net farm income.

The results of these alternative macroeconomic scenarios also have important implications for farm real estate values. Farm real estate, while influenced to some degree by factors not related to agricultural returns, is sensitive to changes in farm profitability, interest rates, and the rate of inflation. However, at the national level, the decline in farm income is not substantial enough to create major differences from the reference scenario projection of a 2% increase in farm real estates values for 2009. Nonetheless, beginning in 2008, cer-

tain areas of the country saw stronger adjustments. In several northeastern states, where nonagricultural factors influence farm real estate more heavily, farm real estate values have dropped by 2 to 5%. California, Florida, and Nevada have experienced some of the largest declines in the rural housing market (Figure 2). Farm real estate values have not grown and some have declined. States where corn and soybeans constitute a major share of agricultural production have seen double digit increases in land values because of bio-fuels expansion. In the strong dollar scenario, where prices and receipts for corn and soybeans fall below those in the reference case, real estate values in states like Illinois, Indiana, and Minnesota, are expected to moderate in 2009. Farm land in these areas is still viewed as a viable counter inflationary investment, and any downward pressure could be buoyed by demand from large pension funds and institutional investors.

Tighter cash margins over the course of the U.S. and world recession will impact debt repayment ability for some farmers. The most severe effects are expected for dairy farms for which relatively large reductions in cash earnings are projected. In 2007, 5% of dairy farms had debt repayment problems, and in the reference scenario that figure could more than double to 13%. In the strong dollar scenario, repayment problems could jump to more than one in five for dairy farm businesses.

Long-term projections for commodity production and prices and for input costs indicate that cash and profit-based net income measures will begin to recover in 2010. The strength of the recovery varies considerably across the alternative scenarios. In the reference scenario, net farm income increases by 11% to reach \$80 billion (Figure 3). The strong dollar scenario has a larger relative increase, but starting from a much lower 2009 projection, only reaches \$73 billion.

Figure 3. Net Farm Income under Alternative Macroeconomic Assumptions

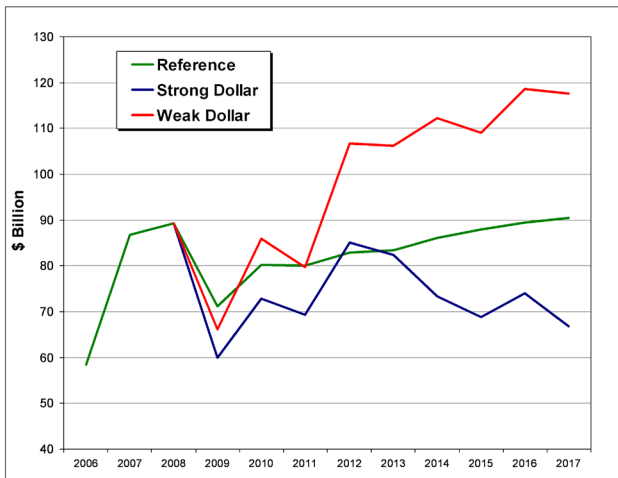
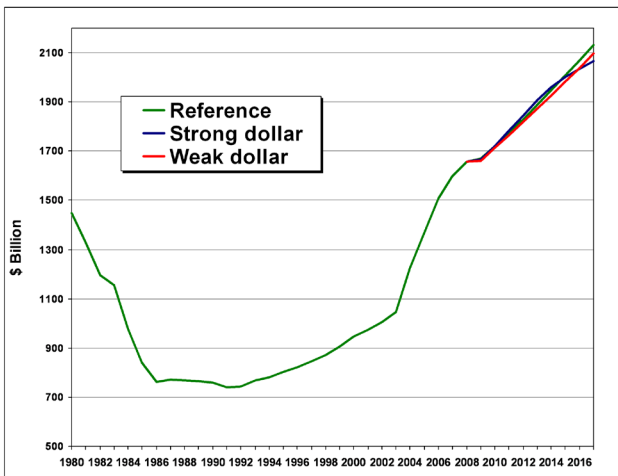


Figure 4. Value of Farm Real Estate Adjusted for Inflation (2000=100)



In the weak dollar scenario, net farm income exceeds the reference case in 2010 by \$6 billion. The correspondence between the two alternative scenarios and the reference scenario, in relation to net farm income, is maintained until 2012. The strong dollar scenario implies a more dramatic reduction in incomes for 2009 and a slower recovery through 2012. The weak dollar scenario also entails lower income than the reference case in 2009 and 2011, while it trends significantly higher after 2012. In essence, both of the alternative scenarios capture the effects of a prolonged

recession relative to the reference scenario assumption.

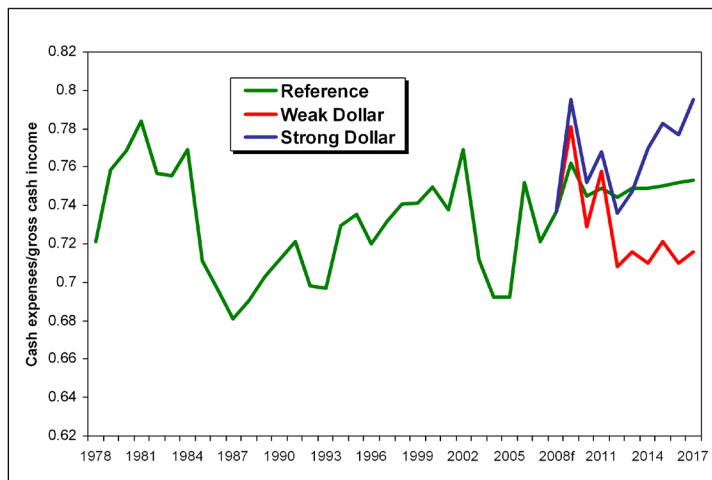
Macroeconomic policies that prevail during the recovery for the United States and other countries will have a significant impact on farm income growth after 2012. The weak dollar scenario essentially represents a return to the environment that prevailed prior to the credit crisis in 2008 and as a result income growth resumes the path implied under circumstances that promote strong U.S. exports. Meanwhile, the stronger dollar scenario further exemplifies how important exports are to the farmer's

bottom line. Nominal cash receipts in this scenario level off after 2012 and net farm income moves downward. This is primarily the result of a high exchange rate which, in turn, reduces export demand that American farmers rely on to support agricultural prices.

Farm real estate values are projected to return to 5% annual growth over 2010–17 in nominal terms in both the reference and weak dollar scenarios (Figure 4). The annual rate of growth over 2010–17 is projected to be slightly lower in the high dollar scenario (4%). Differences between the scenarios for U.S. farm real estate values are consistent with variation in the key variables that influence the model. For example, growth rates in crops receipts plus government payments are expected to be just over 1% annually in the reference case, slightly lower for the high dollar scenario and over 2% for the weak dollar scenario. When viewed relative to historical trends, crops receipts plus government payments averaged 10% annual growth during 2004–08 and 2.7% during 1994–2003. Interest rates show some differences between scenarios, but by historical standards remain well below the levels of the 1980s.

When adjusted for inflation, the U.S. value of farm real estate does not rise as high, or as uniformly across scenarios. Annual growth over 2010–17 in the reference and weak dollar scenarios is about 3%, while in the strong dollar scenario real estate values fall towards the end of the period, so that average growth rates over the entire period are lower by comparison. During 2004–2008, the value of U.S. farm real estate averaged 10% annual increases when adjusted for inflation. For each of the alternative scenarios, real estate values return to the more modest growth rates experienced during the 1994–2003 period. Inflation adjusted real estate values are consistently below the reference

Figure 4. Cash Operating Margin under Alternative Macroeconomic Assumptions



case for the weak dollar scenario with the gap widening towards the end of the period. Real estate values do not rise as much in the weak dollar scenario because this scenario generates higher inflation than the reference and high dollar cases. Inflation is higher because the weaker dollar increases U.S. domestic prices for all tradable goods. Conversely, the strong dollar scenario is the least inflationary of the three cases and consequently inflation adjusted real estate values are projected to rise faster than the reference and weak dollar scenarios until 2015 when agricultural returns decline more rapidly, offsetting the benefits of lower inflation.

### Uncertainty Prevails

U.S. farmers, like most businesses, are facing a great deal of market uncertainty. Ever since the development of the scenarios, economic events have been extremely dynamic. Agriculture enters this challenging time in a relatively strong financial posi-

tion and has available a variety of risk management tools to help guard against detrimental economic events. Two historical indicators of economic crisis for agriculture, the operating margin and debt-to-net-cash income, both reach alarming levels near the end of the estimation period under the strong-dollar scenario (Figure 5). These measures also are indicative of the severity of the initial impacts from the recession in 2009, suggesting a difficult, but manageable year for the sector as a whole. However, some commodity sectors will experience greater financial difficulty, with dairy being the most prominent example.

The analysis of alternative macroeconomic assumptions identifies the susceptibility of production agriculture to the current world recession. The initial depth of the recession has implications for 2009 financial prospects with the downside risk to farm earnings estimated at \$11 billion. The types of policies used to combat the

recession along with the response by the rest of the world economies suggest two distinct paths after the U.S. recovery. A path in which the U.S. dollar remains low relative to other currencies extends the type of growth achieved prior to the recession, but at the cost of higher inflation. In real terms, the value of farm real estate would return to rates of annual growth experienced during 1994–2003 period. Under a strong dollar recovery regime, farm earnings would not recover until 2012 and then decline steadily through the remainder of the estimation period. Farm real estate values would initially increase, when adjusted for inflation, primarily because of the low inflation environment brought about by the high dollar, but decline below the alternative scenarios near the end of the period.

### For More Information

Cofer, Jr. R., Walser, J. and Osborne, T. (2008) Do Record Farmland Prices Portend Another Steep Downturn for Agriculture and Farm Banks? *FDIC Quarterly*, Volume 2, No.4.

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