Agricultural Land Prices, Supply, Demand and Current Trends (AEC 2013-06)

By Cory Walters and John Barnhart

Farmland market price discovery is difficult due to many factors influencing farmland market price (for example: parcel production capabilities, size and shape) plus the fact that a majority of transactions take place behind closed doors. What we do know is that, over the past decade, average U.S. farmland values have more than doubled (NASS, 2012). Particularly for corn and soybean producing regions, farmland prices have risen largely because of increased demand from market participants attempting to capture financial gain through expected future production profits and asset appreciation. Changes in factors influencing farmland market values influence buyer and seller decisions. The purpose of this article is to describe the incentives faced by farmland buyers and sellers in a supply and demand framework explaining the reasons why farmland values are relatively high.

We present a historical representation of average U.S. farmland values in Figure 1. The line titled current dollars represents the actual value at that point in time. The line titled 2011 dollars represents the farmland values deflated by the Consumer Price Index (CPI) with the base being 2011 dollars. This allows us to discount for monetary inflation and provide a comparison point for historical values in current monetary value. Following the 2011 dollars line we note first that current average U.S. farmland values represent a record high. Second, there are three times since the early 1900’s where farmland values have declined, during the great depression of

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1920’s through 1930’s, during the farmland price bubble in the early 1980’s and a small reduction during the financial crisis between 2007 and 2009. In 2011 dollars, the collapse in the 1980’s was extremely dramatic with a 41% decline between the high in 1981 and low in 1987. Predicting these events is extremely difficult but understanding the market dynamics underlying these events is necessary to make selling and purchasing decisions.

Farmland does not often change hands with estimates indicating 0.5 percent of U.S. farmland selling annually (Sherrick and Barry, 2003). Farmland sales are typically due to death or retirement rather than financial concerns (Raup, 2003). Markets with a limited number of active buyers and sellers relative to potential participants result in prices that are highly sensitive to changes in demand and supply conditions.\(^2\) In these types of markets, both the supply and

\(^2\) Excluding alternative farmland uses such as developmental potential near metropolitan areas.
demand curve will be quite steep. Small changes in quantity supplied, or quantity demanded lead to large price changes.

Buyers and sellers negotiate price based upon expectations of future earning capabilities and farmland attributes. As a result, farmland sale values typically take on a large range within a small region. For example, using county courthouse transaction data between January and July 2012 in Henderson County, KY, there were fifteen sales of row crop ground of at least 35 acres. The average price was $5,900 per acre, with a maximum of $8,100 per acre and minimum of $4,000 per acre. With $4,100 dollars difference from the minimum to the maximum or around 33% price difference from the average, up or down, reporting averages does not necessarily provide accurate information on farmland market dynamics. Factors such as production ability and risk, drainage, relationship of potential farmland to buyers farmstead, competition for types of land, etc., all play a role in determining the market clearing price for a piece of farmland.

Overall, investors view farmland as a safe, tangible asset, producing goods needed to feed the world. Positive returns from agricultural production over the last number of years influence farmland values. Higher returns from agricultural production increase the demand for farmland and therefore, farmland price. Lower returns from agricultural production reduce farmland demand and price. Interest rates impact farmland values by changing buying costs. Lower interest rates reduce buying costs, allowing these savings to be bid into the purchase price. The opposite is also true; higher interest rates increase buying costs, leading to lower purchase prices.

Positive agricultural production returns and low borrowing costs have resulted in an increase in demand for farmland, represented by an outward shift in demand from Demand to Demand1 (Figure 2). Additionally, demand for a prime piece of land, because of location, high productivity or size, that comes up for sale results in interested buyers lining up with
extraordinarily high bids knowing that this land may not be back on the market for years to come. The new demand schedule results in a new equilibrium price, $P_2$, which is higher than the original price, $P_1$, and a new equilibrium quantity, $Q_2$ which is higher than the original quantity, $Q_1$. An outward shift in demand results in a higher price and a slightly higher quantity of farmland selling. We expect land sale data to support both higher prices and additional acres of farmland selling.

**Figure 2. Outward Shift in Demand for Agricultural Land.**

![Graph showing the outward shift in demand](image)

**Land Sale Data**

Using farmland sale data from nearly 4,000 county courthouse transactions between January 2008 and July 2012 in Western Kentucky, Western Tennessee, and Southern Ohio we identify the price and number of acres sold. Results indicate, as suspected, that farmland prices have steadily risen (figure 3). The average price in 2008 was $3,564 per acre, and from August
2011 to July 2012 the average price had risen to $4,596 per acre, a 29% increase. Government policy can impact the selling decision. In the fourth quarter of 2010, there exists are large spike in the number of acres sold because sellers were concerned with potentially higher capital gain tax rates in 2011. As a result, producers expecting to sell were likely to do so in 2010 to take advantage of lower tax rates.

How can we explain that the number of acres sold has declined while prices have risen?

A clear explanation is that potential sellers are withholding from selling farmland because of higher returns from ownership and positive land appreciation values. Fewer acres available for sale causes the supply curve to shift back (Figure 4). The new equilibrium price is $P_3$, which is higher than the original price $P_1$ and higher than $P_2$. The quantity of farm land sold, $Q_3$, is slightly less than the original quantity, $Q_1$. 
Now we would like to explore the factors that could lead to a crash in land prices. In the supply and demand framework, demand would need to shift back, and supply would need to shift out for prices to decrease (Figure 5). These changes in demand and supply would be accomplished by a significant reduction (or loss) in future expected returns to agricultural production and/or increases in borrowing costs, i.e., higher interest rates, increases in capital gains tax policy, increases in returns to other investments and reductions in government agricultural support programs. The largest price decline would take place if all of these events took place at the same time.

For additional information on agricultural cycles see “Is this Farm Boom Different” by Jason Henderson, Vice President, Omaha Branch Executive. Available at: http://www.kansascityfed.org/publications/research/mse/index.cfm

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Figure 4. Outward Shift in Demand and Inward Shift in Supply for Agricultural Land

Steps: 1) Demand shifts out to Demand1.
2) Supply shifts back to Supply1.

Result: Prices increase by a large amount to P3 and quantity decreases by a small amount to Q3. The intersection of P3 and Q3 is the new equilibrium price and quantity.
Conclusions

Incentives faced by market participants, farmland buyers and sellers, are driving farmland values. Farmland agricultural markets are thinly traded, meaning small changes in quantity sold result in large price changes. Current grain market conditions are providing large returns to farmland holders through strong profits and appreciation values. Land sale data suggests that the response by farmland holders is to hold on to land that otherwise could have come up for sale. The event that would send farmland prices plummeting would occur when holders of farmland begin to put more land up for sale AND the number of interested buyers decreases. Factors that could lead to this outcome are: significant declines in returns to agricultural production, increases in interest rates, negative changes in the federal government capital gains tax policy, increases in returns to other investments, and reduction in government agricultural support.
programs. Currently all factors are indicating strong farmland fundamentals. Anticipating a farmland value decline and its size is difficult. The decline may not start for years to come or possibly next year. When the decline comes, significant capital losses will occur and could place producers in an extremely difficult financial situation.
References

http://usda01.library.cornell.edu/usda/current/AgriLandVa/AgriLandVa-08-04-2011.pdf

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