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AgFocus

Land Values 2014: At the Tipping Point

Rabobank International

Food & Agribusiness Research and Advisory

Sterling Liddell
sterling.liddell@raboag.com
+1 314 317 8000

www.rabotransact.com
www.rabobank.com/f&a

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Agricultural land in the U.S. has experienced a 12-year run in steep annual value increases. Over that time, the major fundamental drivers were high agri commodity prices, low interest rates, and limited sales relative to demand. However, in 2014, key indicators are signalling that the long-term growth pattern needs to change or risk the development of an asset bubble by extending the value/cost of land beyond its economic capacity to generate returns. We maintain the view that as of 2012/13 land values, on average, have responded to fundamental drivers and are therefore not currently the result of an asset bubble. However, with the prospects for increasing interest rates and falling commodity prices an adjustment is needed beginning in 2014/15 to avoid the future development of an asset bubble.

The Midwest is the Key Region for Monitoring Changes in Row Crop Land Values

In the United States (U.S.), each geographic area has its own unique market drivers that can cause slight variations from the macro regional trends. However, conditions in the Corn Belt states have been good indicators for land value changes for most of the primary row crop production states in the Midwest and Plains regions[1]. To simplify the analysis of land values, key changes in the Corn Belt—which is the epicentre of the land value boom—need to be understood to better assess the impact on other row crop states (*see Figure 1*).

Figure 1: Percent Change in Farm Land Values (2005 vs 2013) Most Dramatic in Corn Belt and Plains States

Source: USDA, Rabobank, 2014

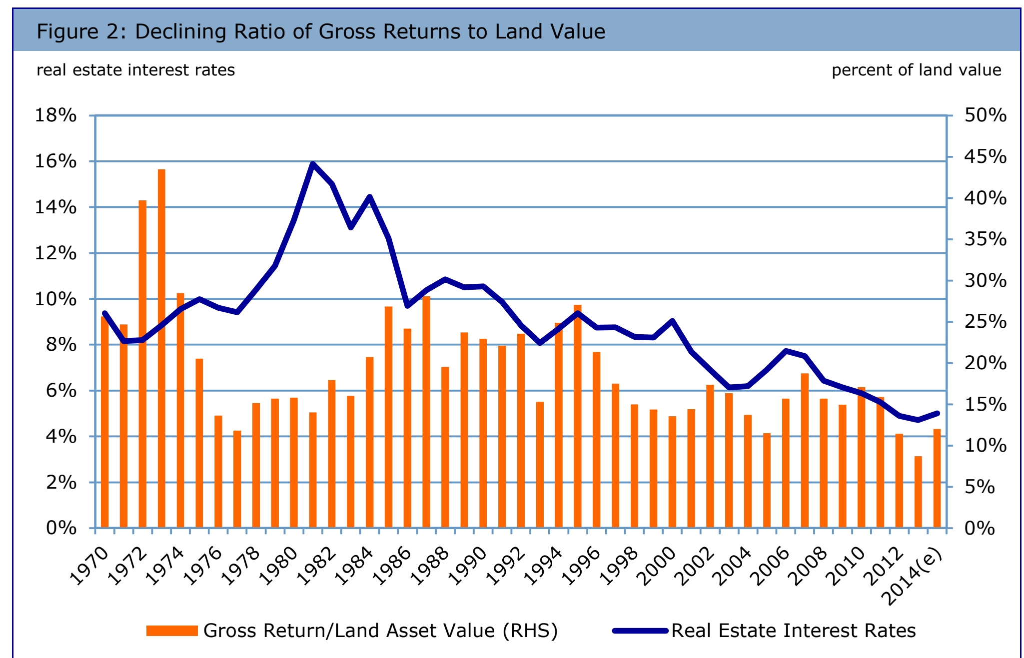
A Sharp Decrease in the Gross Income to Land Value Ratio Is a Signal for Caution

A decrease in the revenues to value ratio is signalling that, due to falling commodity prices, continued growth in land value over the 2013/14 and 2014/15 seasons is out pacing economic returns generated by farming the land. The average gross revenue from Midwest row crop production operations in 2013/14 and 2014/15 is expected to drop below 10 percent of average Midwest land values. Until 2013, rising Midwest land values were generally supported by similar increases in the gross revenue generated from producing

commodities. For the past 15 years, the ratio of gross revenue to land value has generally remained between 12 percent and 15 percent (*see Figure 2*).

As the scarce primary asset used to produce agricultural commodities, the value of land is naturally very sensitive to changes in gross revenue generation. A ratio below 10 percent for 2013/14 and 2014/15 means that in the past two years on average, land value has grown more rapidly than the economic return generated from farming the land. This revenue to value shift is not only represented in the balance sheet solvency of land owners, it also has a negative impact on the cost/return of land renters. Over the long term, the additional net cost to land renters will drive economic margins below breakeven and force rental payments lower. Land prices should decline to the point where costs become sustainable relative to returns over the long term. As this occurs, an asset bubble[2] will develop if land purchases continue to be financed below the 10 percent gross revenue to value level.

Figure 2: Declining Ratio of Gross Returns to Land Value



Source: USDA, Rabobank, 2014

At our long-term price outlook for corn, between USD 4.50/bushel and USD 5.00/bushel, land values would need to contract by over 10 percent from current levels to allow revenue to regain the historic balance of 12 percent of land value. If this outlook holds, either revenues would need to be elevated through commodity price increases or land values must decrease to correct the imbalance between value and economic returns. For example, the average land value in Iowa, the center of the growth trend, was estimated by Iowa State University's annual survey to be USD 8,716/acre at the end of 2013. At trend line yields (182 bushels/acre by 2016), land values would need to contract by over 10 percent to bring Iowa's gross revenue to land value ratio back above the historic low near 12 percent[3].

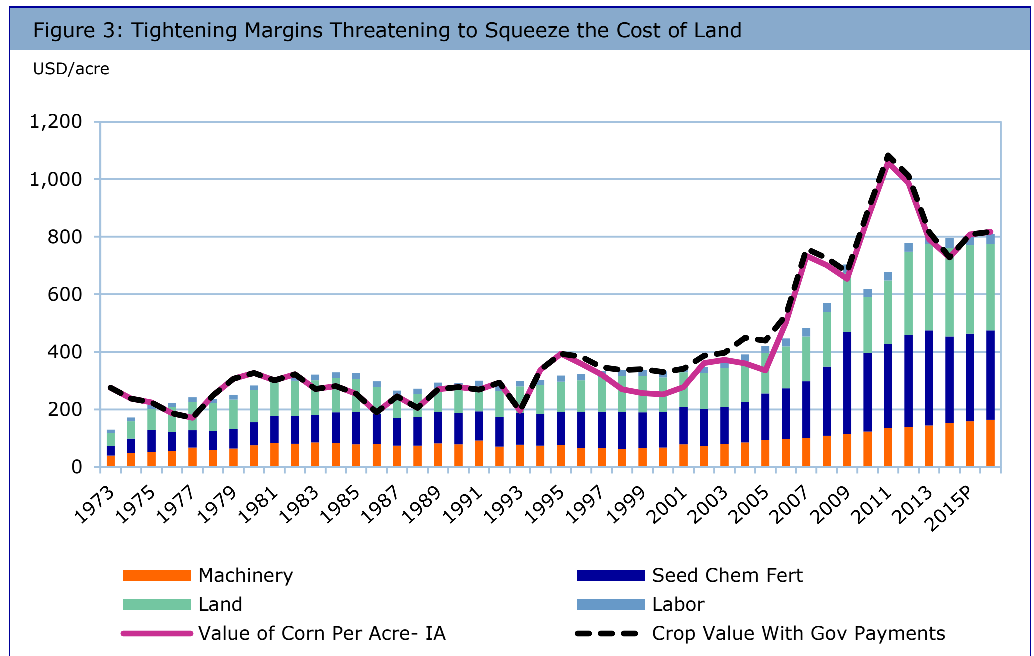
Expectation of Lower Margins Will Flatten Growth of Land Rental Rates

Significant commodity price declines in 2014/15 are likely to drive decreases in Midwest and Plains rental values as margins tighten. Although there are scenarios which would result in higher near-term grain prices, our baseline estimate over the next two years is for corn, soybean and wheat prices to remain near to below breakeven with the cost of production. Good yields in 2014/15 will likely constitute the second consecutive year of increasing availability of corn stocks and a potential record level of soybean production. With expected global stocks 9 percent higher for corn, 26.9 percent higher for soybeans, and 2.8 percent higher for wheat, it is more likely that we will see lower prices over the next two years. Historically, costs for inputs such as fertilizers, chemicals, and seed tend to increase quickly; if they decrease at all, they do so slowly. In both of these cases, land is the cost category which is generally squeezed as farm managers are forced to negotiate lower rental contracts to secure sustainable margins.

[1] See AgFocus *Land Values Peaking Out—But Not Down,*
[2] An asset bubble refers to an asset which has been inflated beyond its economic value,
[3] 2014 Revenue = Trend yield (177 bu/acre)*USD 5.00/bushel

In the mid-1980s, declining margins had a negative impact on the cost of land for a median Midwest farm, and as farmers are currently facing a similar situation of tightening profit margins, it is unlikely that land rent will see further increases (*see Figure 3*). Farmers are likely to be more cautious as net revenues tighten and liquid assets are tapped to help cover operational expenses other than land.

Figure 3: Tightening Margins Threatening to Squeeze the Cost of Land



Source: USDA, Rabobank, 2014

With the pressure of tight to negative margins, our outlook for rental values is flat to slightly lower over the near term. While it may require one to two seasons of tight margins to fully incentivize renegotiation of rental agreements, rental rates are not expected to increase for the 2015/16 growing season.

Flat to decreasing rental rates indicate a lower movement for overall agricultural land values

Due to the negotiability of rental rates, any changes are a critical indicator of the value of land as an economic asset. Thus, rental rates should also provide a guideline for the amount of mortgage payment which is sustainable under current circumstances. If land values continue to rise despite flat to lower rental rates, it is generally a result of decreasing interest rates that allow mortgage payments to remain competitive with rental rates. Under these conditions, farmers are likely to buy land on debt and gain the benefit of long term ownership rather than rent. As rates increase, a return to renting over buying will likely have the inverse effect.

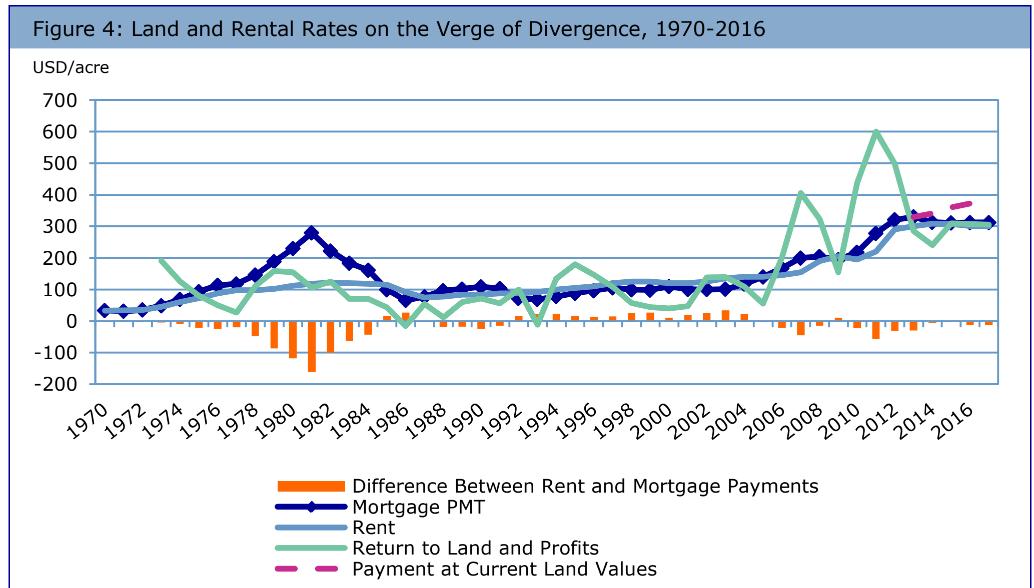
Expected Interest Rate Growth Is Likely to Lower Land Values

It is very difficult to determine exactly how much interest rates will increase over time. But recent announcements by Federal Reserve Chair Janet Yellen regarding plans to cutback interest-suppressing quantitative easing programs and move from a monetary system to a regulatory system of economic control suggest that increasing interest rates could be on the near horizon.

Historically, low interest rates have accommodated higher land values by keeping mortgage payments competitive with rental payments. However, increasing interest rates from current historically low levels will mean land values will need to decrease in order to keep mortgage payments competitive with rental payments. While mortgage payments have increased to slightly higher levels than average rental rates in recent years, the difference has not been enough to deter land purchases in favour of land rental. However, as interest rates increase, mortgage payments will also increase unless there is a compensatory decrease in the actual value of the land being financed. If the value of land does not decrease, the resulting gap between the mortgage payment and rental payments will represent an asset bubble where land values extend beyond the economic value of the land.

For example, if land mortgage rates only increase from the current level of 5 percent[4] to the 2010 rate of 5.8 percent, mortgage payments at current values will begin an alarming separation from both rental payments and economic returns (*see Figure 4*). For land mortgage rates to remain in a competitive range with rental payments and economic returns at a 5.8 percent interest rate, we estimate that a 15 percent reduction in land value from current levels would be required.

Figure 4: Land and Rental Rates on the Verge of Divergence, 1970-2016



Source: Federal Reserve Board, Rabobank, 2014

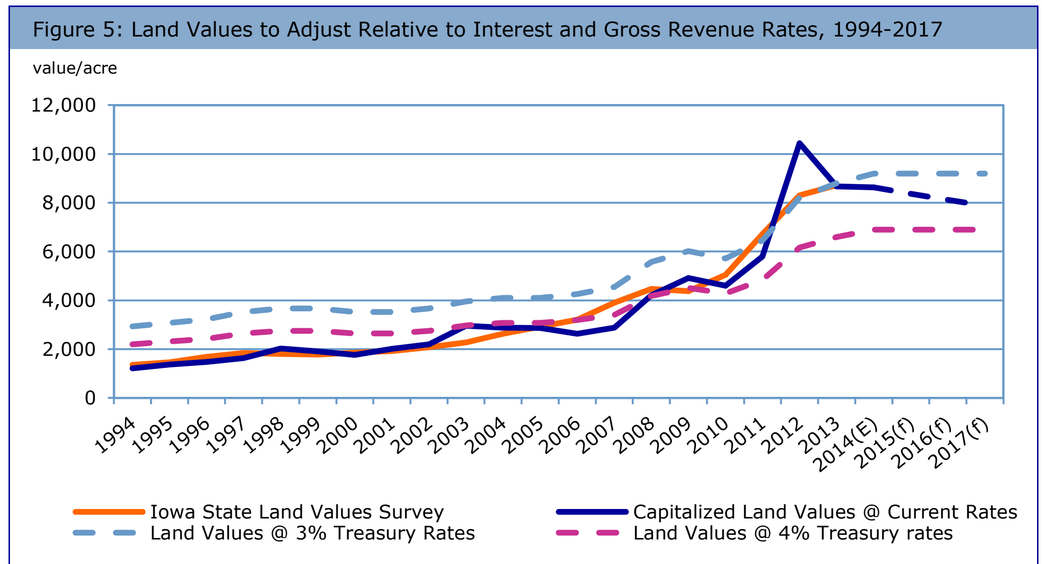
Contraction of Land Value Is Already Underway With No Collapse Expected

Over the past 12 months, land values have plateaued and in some areas declined as buyers show caution. The most recent Federal Reserve District 7 survey for Q1 2014 found that annual growth across the district was the lowest since 2009 at 1 percent, with Iowa showing the first annual decline in 2013 (2 percent) since 1998. The Iowa Realtors Land Institute confirmed the downward trend, reporting an average YOY decline of 4.2 percent in March. These results are consistent with recent land valuations and contacts from the land real estate industry that report an increase in no sales at auctions with less enthusiasm to buy in general. While land values have continued to grow in the other four District 7 states, the rate of growth has been between 16 percent and 84 percent slower than the three-year average. Based on these slowing signals, the USDA August 1 annual Land Value report is expected to estimate flat to lower growth in 2013/14.

A collapse in agricultural land values is not expected unless growth continues despite higher interest rates and lower commodity prices. Through 2012, land value growth was supported by high gross revenues and low interest rates. While we believe an adjustment of up to 10 percent would be healthy in bringing land values back in line with gross revenue, and additional decreases will be needed as interest rates increase, our long-term gross revenue projection and expectation for slowly growing interest rates is supportive of land values below the 15 percent to 20 percent adjustment rate (*see Figure 5*). However, the eventual level of interest rate growth remains a key unknown factor.

[4] 10th District Federal Reserve Board Q1 average

Figure 5: Land Values to Adjust Relative to Interest and Gross Revenue Rates, 1994-2017



Source: Iowa State University, Rabobank, 2014

Marginal Production Land Faces the Highest Risk

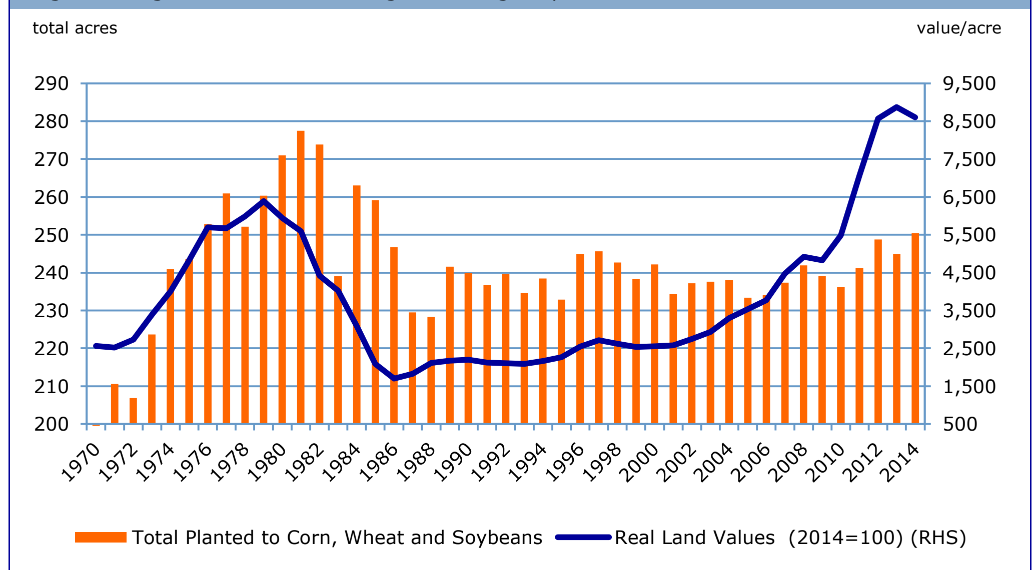
Cultivating lower yielding, marginal land was viable during high grain prices seen in recent years, yet these producers are expected to face the greatest challenge. While we estimate that production costs are expected to remain above USD 4.20/bushel for the median Midwest producer of corn, prices are expected to drop to the USD 3.50/bushel to USD 4.20/bushel range through 2015/16. Depending on production in the fall of 2015, prices could remain below the USD 4.20/bushel range for two to three years. In this scenario, the cost of production is likely to contract as demand weakens for fertilizer and chemicals. However, until land costs contract, production costs are expected to remain above the USD 4.20/bushel (including the cost of land) range for the median US corn producer and USD 11.10/bushel for the median US soybean producer. In comparison, the costs for corn producers on marginal land are expected to be even higher, in the range of USD 4.80/bushel to USD 5.00/bushel. As such, producers on marginal land will face further challenges to remaining economically viable.

As prices remain below breakeven levels, a contraction in acreage planted to primary crops will be required. Over the past five years, higher prices have stimulated a 5 percent increase in planted area, leading to the most acres planted to corn, wheat, and soybeans since 1985. Under normal yield conditions, 4 million fewer acres could be planted and stocks would still continue to build for all three crops. With the assumption of normal yield conditions and growth over the next three years, 4 million to 5 million acres will need to be forced out of production. Until this happens, margins are likely to remain low and land values will be faced with downward pressure.

Yield is the key to economic viability of land in tight margin conditions. To produce at breakeven levels, farmers will seek to control efficiency of production and maximize yields to bring down the cost per bushel produced. Marginal land with limited yield potential is likely to face the most economic pressure to convert to other uses.

Since 2009, 11 million additional acres have been planted to the three major crops (*see Figure 6*). Of this increase, over 40 percent came from additional acres planted in North Dakota (12 percent), South Dakota (9.4 percent), Nebraska (5 percent), Kansas (5 percent) and Missouri (8.8 percent). The Corn Belt states made up a much lower percentage, accounting for only 20 percent of the additional acreage. Much of the land in non-Corn Belt states is likely to have been converted from other uses, with 1 million fewer acres of hay ground reported in North and South Dakota alone. Other crops with lower revenue per acre, such as barley (down 1 million acres in North Dakota) also decreased. With little history of production and the potential for much lower yields on average, these newer acres are expected to be at the highest risk of being economically forced out of production.

Figure 6: Higher Land Prices Driving Increasing Crop Acres



Source: USDA, Rabobank, 2014

Yield Volatility is a Key Risk to the Future Direction of Land Value Growth

In our baseline outlook, a normal yield assumption is used to determine the level of acres needed to produce adequate grain and oilseed to supply demand. The likelihood is that yield will continue to be volatile in both the U.S. and an ever increasingly global market. While the potential for decreased prices over the next two years remains high, a cycle of high volatility can impact the revenue sensitive land market. However, over time, commodity prices will find an equilibrium which will drive the number of acres needed keep up with demand year to year. The result is likely to be some volatility in the agricultural land markets.

Strong Financial Conditions Decreases The Potential For A Collapse In Land Prices

Strong Farmer Financial Position a Potential Support for Land Value Levels

Over the past five years, we estimate that the median row crop farmer had the opportunity to accumulate one and a half to two years of working capital from liquidity generated from farming operations. While some of that liquidity was clearly reinvested in the farming businesses, a substantial amount of liquidity is likely still available in 2014. Solvency for farmers continues to be positive in general with USDA estimating a slight .1 basis point YOY improvement to the already historically low farm debt to asset ratio.

As a result of positive financial conditions, the trend of existing farmers being the major buyer of land continues, with nearly 80 percent of farmland purchases going to farmers, according to the Iowa State survey. This trend is up from close to 50 percent in 2005. While the high liquidity will remain supportive of values, especially for high quality land, we expect farmers to become more conservative with investments when faced with tight margins. Consequently, market forces are likely to be effective in driving needed land value decreases.

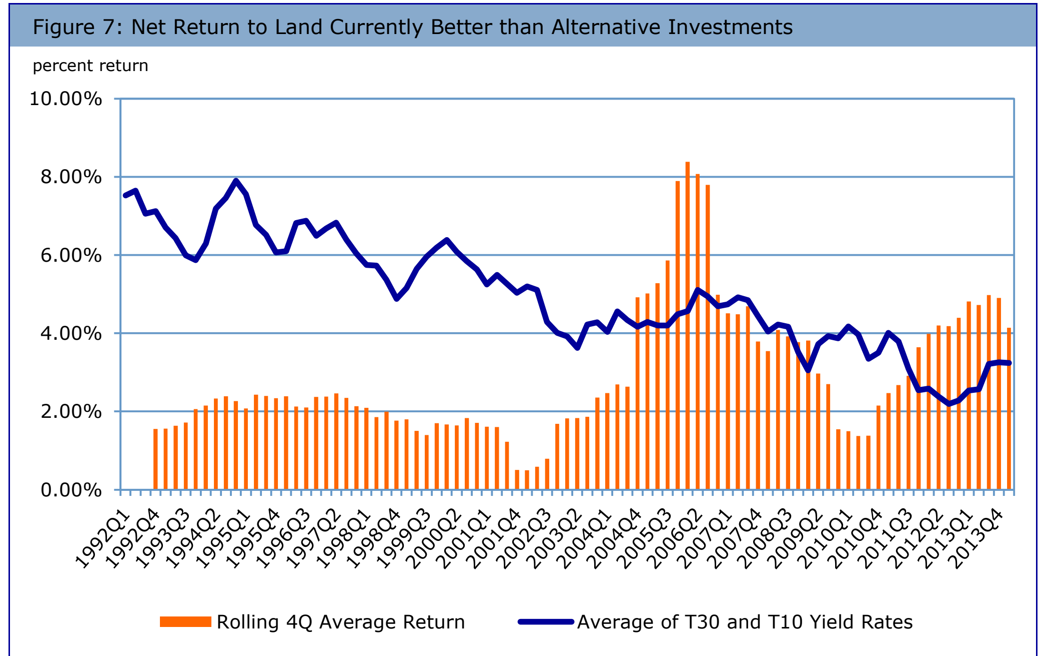
Investors Still in the Market under the Right Conditions

While farmers are still the dominant bidder, investors continue to seek deals that return competitive rates. Despite the indicators for a downward adjustment, land in the right circumstances remains a competitive investment. The National Council of Real estate Investment Fiduciaries continues to report returns from land investments, which are competitive with alternative safe investments such as ten-year treasuries (*see Figure 7*). While we expect returns from commodity production to decrease as a result of tighter margins and capital gains adjustments, land values are also showing signs of adjusting to fundamental drivers. Key factors to consider when investing are as follows:

- The long-term capability of land to generate reasonable returns relative to the investment level using conservative commodity prices.

- Land payments should be in a range similar to rental rates in the same geographic area.
- The critical variables of commodity price used for valuation should be in a conservative range (i.e., between USD 4.00/bushel and USD 4.50/bushel for corn).
- Estimated annual gross revenues should be at least 10 percent of the value financed with a preference for 12 percent or higher.

Figure 7: Net Return to Land Currently Better than Alternative Investments



Source: USDA, Rabobank, 2014