Comparing the stock market and Iowa land values: A question of timing

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This article examines which is a better investment - the stock market or farmland. It is an update of earlier comparisons.

The Iowa farmland market is showing weakness following significant increases in value over the past decade. Based on the Iowa State University Farmland Value Survey, 2015 Iowa land values have decreased two years in a row since 2000. However, despite these decreases, current Iowa farmland values are still more than double what they were 10 years ago, 75 percent higher than the 2009 values and 14 percent higher than the 2011 values.

The Standard & Poor Index (S&P) has experienced double digit changes since 2000. There have been seven years with double digit increases (2000, 2004, 2010, 2011, 2013, 2014, and 2015), as well as three years with double digit decreases (2001, 2003, and 2009).

To determine which option provided the better investment, this article compares the returns to farmland and the stock market since 1950. It also discusses some of the important factors to consider over the next few years.

Background

The returns to land or stock shares are composed of two parts. The first is capital gains or the increase in value. Obviously, this also could be a capital loss if values decrease. The second component is yearly returns.

Owning land has an unavoidable annual ownership cost not associated with stocks. Property taxes must be paid and should be included in a comparison of owning stocks or farmland. Additionally, if farmland is held as an investment and not by an owner-operator, there could be a professional farm manager involved and the fee for this service would have to be considered. There is also a need for maintenance and insurance

with farmland not associated with owning stocks.

The data used for this analysis comes from various sources. The Iowa land values and rental rates come from USDA National

Handbook updates

For those of you subscribing to the handbook, the following new updates are included.

Historical County Farmland Values – C2-72 (10 pages)

Farmland Value Survey (Realtors Land Institute) – C2-75 (2 pages)

Strategic Planning Terms – C6-40 (4 pages)

Please add these files to your handbook and remove the out-of-date material.

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Agricultural Statistical Service (NASS) QuickStats. The average land tax per acre is calculated using data from USDA Economic Research Service (ERS) State-Level Farm Income Statements data, from which taxes per acre were calculated as the yearly Iowa farm real estate taxes and fees paid divided by the total farmland acres for that year.

The value used for the stock market is the composite value of the S&P's Index average each December, and the September dividend value for each year is used. Data for 1950 to 2015 was obtained on the website (www.econ.yale.edu/~shiller) of Dr. Robert J. Shiller, a Nobel Prize-winning economist at Yale University.

A few assumptions are necessary to determine which option provides the best investment. It is assumed $1,000 is invested in each alternative at the end of the year before the analysis begins. The amount of land or stock purchased will depend on the existing value. For example, in 1949 the average farmland value in Iowa was $158 per acre. So, for $1,000, 6.33 acres could have been purchased.

A second assumption is that all the net land rent or the dividend earned in any year will be reinvested in the land or the stock market. This will increase the number of units held. To continue the example above, average Iowa farmland rent in 1950 was $10.99 per acre. Average taxes in 1950 were calculated to be $2.09 per acre. Subtracting taxes, a 7 percent gross rent management fee and a 6 percent gross rent charge for insurance and maintenance, the net return per acre in 1950 was $7.47.

The net rent in 1950 represented a 4.64 percent return ($7.47/$161 = 4.64%). For the $1,000 investment, this would be a net return of $46.40 to the investor. In 1950, the average land value was $161 per acre. If the entire net return were invested back into land, .29 acres could have been purchased ($46.40/$161 = .29). So, at the end of 1950 the investor would have 6.61 acres worth $1,066 ($1,066 = (6.33+.29)*161). This process is repeated each year in the analysis.

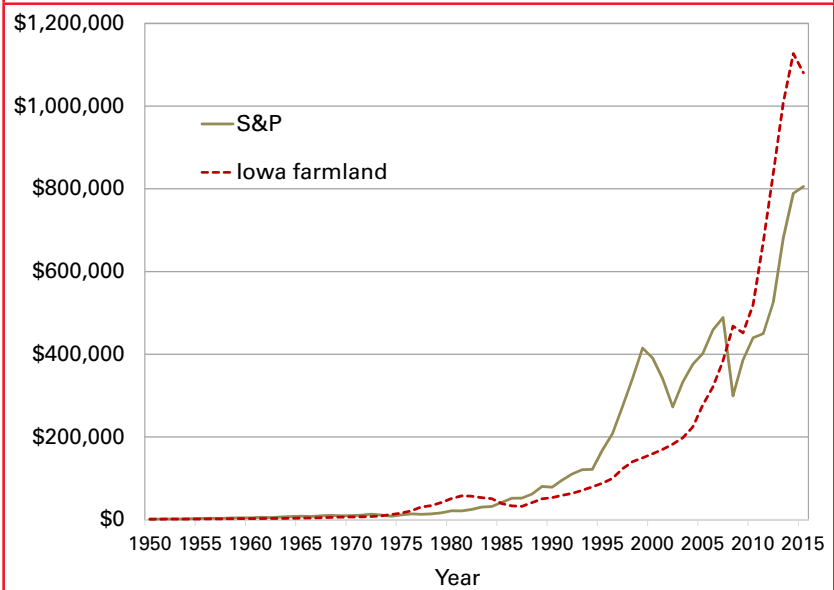The December 1949 S&P was $16.88. This means 59.24 shares could have been purchased for $1,000. The

September 1950 dividend was $1.33. This means an additional 4.42 shares and value of $1,105 at the end of 1950.

Land taxes, a management fee, insurance and maintenance are the only ownership costs considered for land. There is no ownership cost assumed for stocks. No transactions costs or other costs are considered in this analysis.

The annual percentage changes since 1950 in the S&P and Iowa land values reflect considerable yearly variation in both investments. The nominal Iowa land values changed an average of 6.7 percent with a standard deviation of 11 percent. Yearly percentage change for land ranged from a negative 28.1 percent to a positive 36.8 percent. Comparatively, the S&P's yearly closing value showed an average percentage change of 8.9 percent with a standard deviation of 16.3 percent. The yearly percentage change in the S&P ranged from a negative 40.7 percent to a positive 40.8 percent. Out of the 66 years from 1950 to 2015, Iowa land values saw an increase 53 times, while the S&P increased 47 times.

The yearly return to land after taxes, management fee, and insurance and maintenance has averaged 4.8 percent of land values since 1950. The standard deviation of the yearly return to land has been 1.2 percent. The maximum yearly return was 7.0 percent while the low was 2.2 percent. The S&P yearly September dividend has averaged 3.3 percent of the

Figure 1. Value in each year of $1,000 invested in 1950 in Iowa farmland or the S&P

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S&P closing level from 1950 to 2015. The standard deviation was 1.3 percent, the maximum yearly return was 7.4 percent and the lowest yearly return was 1.2 percent over the same time period.

Analysis

Figure 1 shows the return to $1,000 invested in 1950. At that time, $1,000 would have purchased 6.33 acres or 59.24 shares of the S&P. Using the assumptions discussed previously, an investor at the end of 2015 would have 131.80 acres worth $1,080,753. Alternatively, they would have 392.22 shares of the S&P worth $805,646. In other words, the value of the S&P investment would be 74.5 percent of the value of the land investment in 2015.
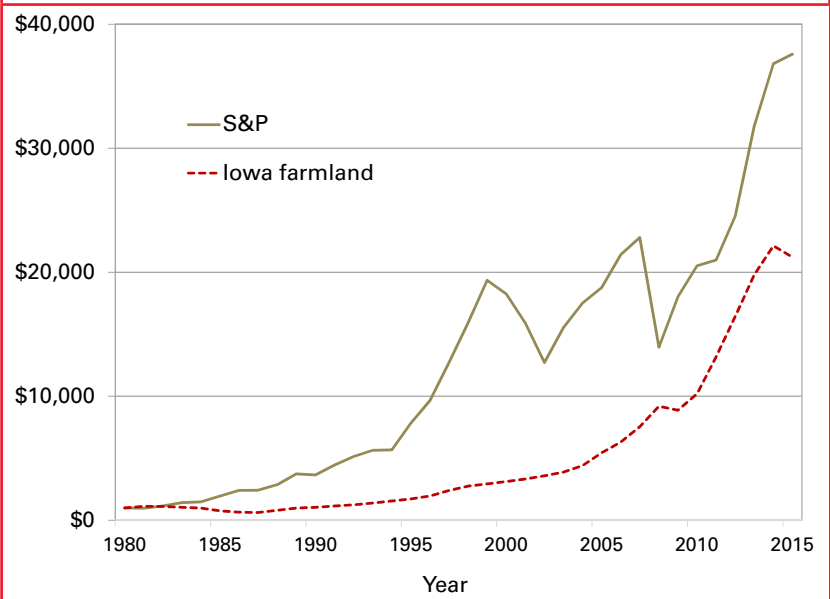
There have been periods since 1950 when the returns to the stock market have been higher. However, for the most part, land has shown higher returns over the past 50 years. Figure 1 shows the burst of the dotcom bubble in the early 2000s and the recent Great Recession in S&P as well as the dramatic increase in Iowa land values since the mid-2000s.

Figure 2 presents the results of a $1,000 investment had it been made in 1980, near the previous peak in Iowa land values. In 1980, the $1,000 investment in land would have purchased only .65 acres of land or 9.99 shares of the S&P. By 2015, the land investment would have been worth $21,224 while the S&P investment would have been worth $37,589. The land investment would only be 56 percent of the stock market investment.
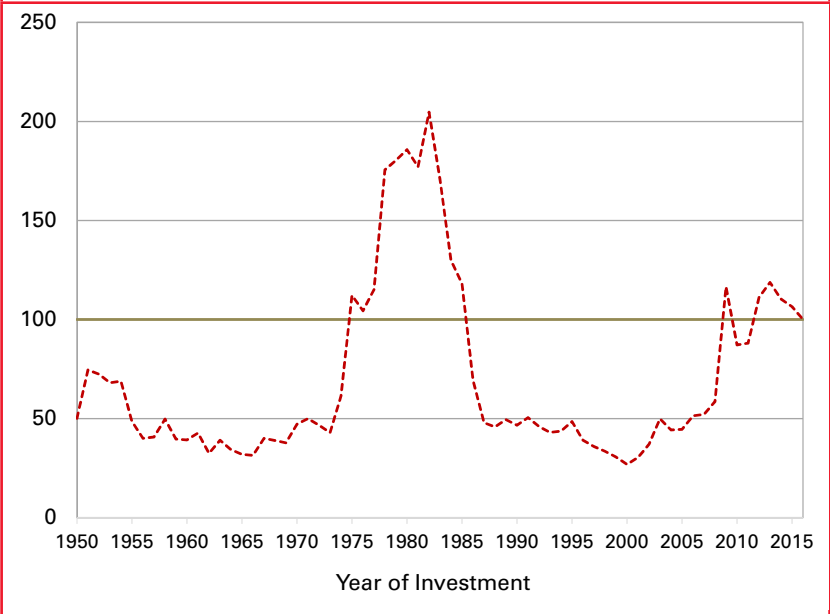
Figure 3 shows a comparison of the values in 2015 based on investing in each individual year. This figure presents the returns to S&P as a percent of the returns to Iowa farmland. In other words, the value for any year would be the present value of an investment in the S&P made in that year as a percent of an investment in farmland made that same year. In Figure 3 if the value is above 100 percent then the

Figure 2. Value in each year of $1,000 invested in 1980 in Iowa farmland or the S&P

Figure 3. Return to an investment in the S&P relative to an investment made in Iowa farmland by year of investment

S&P would have a higher value; conversely, if the value is below 100 percent, then the farmland would have a higher value for funds invested in that year.

Figure 3 shows that the timing of the investment makes a difference in which appears to be a better investment. Land would have been the better investment in almost all years except the period from 1978 to 1984 and most recently. This period coincides with the rise in land values during the 1970s. Land values in Iowa began their rapid rise

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in 1973 and peaked in 1981. Due to historically low interest rate and strong agricultural demand, Iowa farmland values have been at record-high levels since 2003. However, due to declining commodity prices and farm income, Iowa farmland values have decreased following the peak in 2013. As a result, an investment in Iowa farmland in 2013 would not yield a better outcome than the S&P.
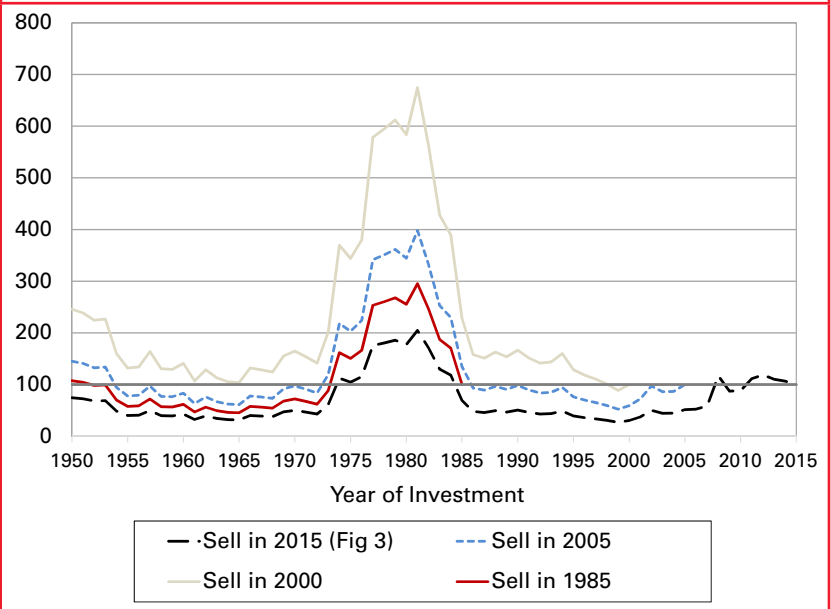
While Figure 3 provides a useful perspective on the relative return of the value of the S&P and farmland investment, it assumes that you hold the asset until 2015 and then base the comparison on the terminal value of these assets in 2015. A further ex-amination of Figure 1 shows that if you compared the value of the 1950 farm-land and S&P investments in 2000, the S&P would be viewed as a better alternative. In other words, the holding period matters for the relative performance of the farmland vs. S&P investment. As a result, Figure 4 shows the percent of value of S&P relative to farmland investment sold in 1985, 2000, and 2005 as opposed to 2015 shown in Figure 3. In particular, the purple line shows that if you bought the farmland in 1980 right before the Farm Crisis and sold it in 2000 right before the farmland values really took off, the value of S&P investment relative to the farmland investment would be more than 6 times. In contrast, the blue line shows that if you bought the farmland in late 1990s and sold it in 2005, you will have a better return compared to holding S&P stocks for the same period. Figure 4 reveals the volatility in the relative return of the two investments depending on when you buy and sell these assets.

Figure 4. Return to an investment in the S&P relative to an investment made in Iowa farmland by year of investment and year of selling that investment

Discussion and conclusions

Which is the better investment, Iowa farmland or the stock market, is a complicated question and one for which there is no best answer. Several factors need to be considered when trying to answer this question and several assumptions have to be made.

In this article, real estate taxes, a management fee, insurance, and maintenance were subtracted from the return to land. These were the only ownership costs assumed for land. There would be other costs that would vary with the individual circumstances. This study also assumed there would be no transaction costs. There would be costs associated with either the purchase of land or the purchase of stocks.

Investing $1,000 in the stock market would not be difficult but investing only a $1,000 in the Iowa farmland market would be. Although the methodology employed here could be scaled up to any level of investment, it is simply not possible for the majority of people to find the wherewithal to purchase enough land for a viable farm operation or more likely, it is more difficult to find small enough farmland parcels for sale.

The majority of farmland is purchased by existing farmers. They purchase the land for a variety of reasons that may or may not fit with traditional investment. The analysis presented here compares the value of an investment based on the value of the asset at that time. Many farmers don't intend to ever sell their land. Land becomes a means of security, their estate and it has a certain prestige associated with ownership. Gains in value are only recognized if the asset is sold.

What will happen to the value of farmland over the next several years? The future is hard to predict, but in this case it is especially difficult. There are several factors that will have an immediate impact on land values and other longer-term factors that will determine the future performance of land.

The value of land is determined by its income earning potential. For the most part, in Iowa, that means the returns to corn and/or soybeans. Returns will be influenced by a number of factors over the next several years. Oil prices, ethanol prices, crop yields, costs of production, economic recovery, alternative biomass sources, and a host of other things will have an influence on the price of land.

Another uncertainty in the land market is the changing landowner demographics. In 1982, 12 percent of the farmland in Iowa was owned by someone over 75 years old. By 2012, this percentage had more than doubled to 30 percent. It appears that the majority of the land will be passed on to the children, usually in equal shares. This means there will be more land-owners and more out of state owners. Whether they will want to continue to own the land or sell it is unknown. Too much land being offered for sale is not a problem at this time but it could become one if the next generation doesn't want to hold on to the land.

The performance of the stock market for the next few years is also not clear. The U.S. stock market will be impacted by what happens in the European Union and China, among other places in the world. We are no longer insulated from the economic conditions throughout the world.

A complete discussion of all the factors that could influence the land or stock market is beyond the scope of this article. Suffice it to say, there is considerable uncertainty as one looks ahead. While uncertainty about the future is not new, there is a level of concern for both the land market and the stock market.

Land and the stock market are different types of investments and assets. This simple comparison was based strictly on averages. Deviations from average performance would produce different results. There are a number of individual stocks that perform better than the S&P. But, there are some that don't perform as well. Anyone contemplating which is a better investment, needs to know his or her goals.

Figure 3 raises an interesting question regarding the situation we are currently experiencing. The last time the stock market appeared to be a better value was the last time the land market was booming. What will this chart look like in 20 years relative to the current time period?

Land's performance relative to the stock market over the past few years has been spectacular until more recently. With the decline in farm income and a possible increase in interest rates, we might see farmland values continue to recede in the foreseeable future. The S&P market is also increasingly influenced by the global economy especially emerging markets like China, oil, and world security. Will this trend continue and how will it change in the future? Time will tell. Which is the better investment? As the old saying goes, timing is everything in the success of a rain dance.

Why USDA NASS yields are not used to project ARC-CO payments

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On February 22, 2016, the USDA National Agricultural Statistical Service (NASS) released the final county crop production estimates for 2015: 73 Iowa counties had higher corn yields in 2015 than in 2014, 22 had lower yields, and 2015 corn yields were not reported for Mills, Monroe, Taylor, and Union County; 86 counties had higher soybean yields, 11 had lower yields, and 2015 soybean yields were not reported for Taylor and Mills County.

Knowing that higher county yields reduce the likelihood and the potential amount of ARC-CO payments, the NASS release spurred the interest of producers to recalculate their own projected ARC-CO payments for the 2015/16 crop marketing year. However, two important details often overlooked when calculating projected ARC-CO payments are (1) that county yields are determined on a per planted acre basis, as opposed to a per harvested acre basis; and (2) that the official county yields used in the final calculation of ARC-CO payments are

Why USDA NASS yields are not used to project ARC-CO payments, continued from page 5

published by the USDA's Farm Service Agency (FSA), as opposed to NASS.

NASS yields are calculated as production (in bushels) divided by harvested acres. Since they are not determined on a per planted acre basis, they cannot be used to calculate ARC-CO payments.

FSA yields are only available after the end of the crop year and are calculated on a per planted acre basis. Therefore, most of the difference between FSA and NASS yields is explained by failed acres. The average difference between FSA and NASS county corn yields in Iowa for 2014/15 (the only year for which both yields are publicly available), amounts to 4.75 bushels per acre.

In an effort to reflect the impact of failed acres on the yield used to project ARC-CO payments, the **ISU Projected ARC-CO Payment Calculator** uses "corrected" yields in the calculation of the 2015/16 actual county crop revenue. The "corrected" yields are based on NASS production data and obtained by dividing production (in bushels) by planted

acres. For 63 Iowa counties the "corrected" yields in 2014/15 were closer to the official FSA yields than NASS yields were. For example, the corn yield used by FSA to calculate ARC-CO payments for Lyon County in 2014/15 is 149 bushels, while the NASS yield is 172.9 bushels, and the "corrected" yield is 155 bushels. The average difference between FSA and "corrected" corn yields amounted to 0.42 bushels per acre.

Judging by the release date of 2014 county yields by FSA in October 23, 2015, it can be expected that FSA will release final 2015 county yields in October 2016, at about the same time as the 2015 ARC-CO payments. Until then, the **ISU ARC-CO Payment Calculator** will use a "calculated" yield and projected marketing year price until the price for the marketing year is finalized at the end of September.

All ISU Farm Bill decision tools are available online at: **www.extension.iastate.edu/agdm/info/farmbill.html**.

Updates, continued from page 1

Internet Updates

The following Information Files and Decision Tools have been updated on **www.extension.iastate.edu/agdm**.

Organic Crop Production Enterprise Budgets – A1-18 (7 pages)

Organic Crop Production Enterprise Budgets – A1-18 (Decision Tools)

ARC-CO Payment Calculator for 2015/16 – A1-32 (Decision Tool)

ARC-CO Payment Calculator for 2016/17 – A1-32 (Decision Tool)

Ten Ways to Reduce Feed Costs in Cow-calf Operations – B1-77 (3 pages)

How Often Can Cattle Feeders Hedge a Profit with Futures? – B2-54 (4 pages)

Fine-tune Management Decisions with Enterprise Accounting – C6-34 (4 pages)

Current Profitability

The following tools have been updated on **www.extension.iastate.edu/agdm/info/outlook.html**.

Corn Profitability – A1-85

Soybean Profitability – A1-86

Iowa Cash Corn and Soybean Prices – A2-11

Season Average Price Calculator – A2-15

Ethanol Profitability – D1-10

Biodiesel Profitability – D1-15