

FARMLAND VALUES: CURRENT AND FUTURE PROSPECTS

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Executive Summary

Farmland is a critical asset in the agricultural sector. Recent increases in farmland prices have generated considerable discussion of the level of farmland values. This paper describes some of the key characteristics of the farmland market, the market forces impacting farmland values, and how farmland values are determined.

There are several unique characteristics of the farmland market. The market is much less liquid than agricultural product markets, meaning that transactions take longer to occur and are often more complex than most agricultural products. One key factor driving the farmland market is the return to agricultural production. However, some land markets can also be influenced by a number of factors such as the potential conversion to urban development, qualification as like-kind property in section-1031 tax exchanges, and capital gain tax policy. It is important to recognize that the amount of total farmland transacted is typically small and uncertainty around future earnings potential can significantly reduce the amount of transactions that take place in the market.

Because farmland will generate returns for many years into the future, the perceived future income potential associated with the land has an important impact on the price that people are willing to pay for farmland. Crop production has been quite profitable in recent years. This has been driven by increased demand associated with biofuels, a weak U.S. dollar, and increasing demand for agricultural commodities from developing countries. These strong fundamental factors have helped to significantly increase the value of farmland.

High agricultural returns have coincided with low interest rates which support capital asset prices. Lower interest rates reduce the rate at which expected future returns are capitalized. This decline in the capitalization rate means that every dollar of future income is worth more today. This can be seen in the farmland market where the ratio of farmland value to cash rent has steadily increased since the late 1980s. Today, the value to rent ratio for average quality Indiana farmland is at an all-time high, slightly over 27.

Whether such values are warranted will ultimately depend on future events. The analysis in the paper suggests that at their current levels, farmland values indicate investors expect continued high levels of earnings, strong growth in crop returns, and interest rates to remain relatively low.

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Introduction

Recent Federal Reserve Bank survey reports indicate an increase of 9 percent in irrigated farmland values in Nebraska, and a 13 percent increase in values in Iowa from Fall, 2009 to 2010.^{2,3} This increase follows a long-term trend of rising farmland values – since 1985 Indiana land values have increased by 270 percent, a compounded growth rate of 5.4 percent per year. These large increases have created considerable debate about the level of farmland prices.

Do we have the potential for an asset bubble like that experienced in the farmland market in the 1970-80's, or like in the housing market more recently? What are the fundamental drivers and determinants of farmland values and how do they shape land prices? How important are not just current farm incomes, but current low interest rates in shaping current and future land values? Our discussion will first briefly describe the fundamental drivers of farmland values. Then we will review the recent history and current levels of income, one of the most important drivers of land values. But income or return to the land investment is not the whole story of valuing land or any asset – interest rates and the cost of capital matter as reflected by the income capitalization concept. After introducing this concept, we will review the history and current levels of interest rates which drive the cost of capital. Finally we will present numerical estimates of farmland values for different levels of the fundamental drivers of income and interest/capitalization rates.

Let's be clear up front – our goal is not to predict future farmland values – few have been successful in doing that. But we can provide insight into what they might be by assessing the fundamental drivers and expectations of those drivers. In essence, our approach is to answer questions about the fundamental drivers of farmland values. For instance, what specific levels of farmland returns (and therefore crop prices, costs and productivity/yields) and interest/capitalization rates (and therefore interest rates, risk premiums, and expected growth in incomes) result in various levels of farmland values? Are future expectations of those fundamental drivers supported by historical evidence, as well as by the current and future expected business climate? In other words, what conditions have to exist for land to be overpriced and how close are we to those conditions?

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² “Survey of the Tenth District Agricultural Credit Conditions.” Third Quarter, 2010, Federal Reserve Bank of Kansas City. Available at: <http://www.kansascityfed.org/publicat/research/indicatorsdata/agcredit/AGCR3Q10.pdf>

³ “The Agricultural Newsletter from the Federal Reserve Bank of Chicago.” Number 1950, November 2010, Federal Reserve Bank of Chicago. Available at: http://www.agecon.purdue.edu/commercialag/currentissues/november_2010%5B1%5D.pdf

Understanding the Farmland Marketplace

As with other goods and services, important determinants of farmland prices are those items that influence the amount of farmland offered to the market (supply) and the amount of farmland desired from the market (demand). However, the farmland market is different than the markets for products such as corn, soybeans, fertilizer, or even equipment. First farmland is not mobile. No matter how much is being paid for farmland next to Chicago or any other city or town, farmland cannot be relocated to the high price area to take advantage of these higher prices. While farmland markets are influenced by national and international events, they are local markets.

Second, the total quantity of farmland is not increasing in the U.S. While there are still some areas in the U.S. that could be converted to cropland through irrigation or other land improvement projects, the total quantity of land in farms in the U.S. has been declining for decades (NASS/USDA).⁴ The decline in crop acres could easily be misinterpreted to suggest that there is a shortage of cropland. However, it is partially due to innovations that have increased yields and reduced the need for cropland. While the quantity of land is fixed, there is potential to use current land more intensively and to bring additional land back into cultivation. In fact, in 2009 the Conservation Reserve Program currently held slightly more than 30 million acres of land.⁵

Third, determining a “fair” price for farmland is a difficult process because of the need to make assumptions about several future events. While managing any business requires making decisions without complete information, it can take several years to determine if a farmland purchase was a good decision. This complexity can make buyers and sellers hesitant to transact in rapidly changing economic times and can result in a thinly traded farmland market.

Related to this point, the farmland market is an illiquid market. Sales take time. Commodities such as corn or soybeans can be sold almost any day we decide to do this. It may take weeks or even months for the buyers and sellers of farmland to find each other and then agree on a price. For most, real estate transactions are infrequent. Farmland transactions are also large transactions. If we make a mistake, it can have significant long-term implications. These characteristics tend to make buyers and sellers cautious.

Demand for Farmland

As to demand, the typical approach to an asset valuation problem like farmland is to start with an income capitalization model. As will be discussed in more detail later, this basic model suggests that farmland values are positively impacted by higher net incomes or margins (resulting from higher productivity, higher product prices, or lower cost of production). The second major driver in the income capitalization model is the capitalization rate – a higher “cap rate” resulting from higher interest rates, higher risk premiums or lower expected rates of growth in income will result in lower land values.

⁴ Historical data on land in farms is available from the National Agricultural Statistics Service, Quick Stats Database, http://www.nass.usda.gov/Data_and_Statistics/index.asp

⁵ Farm Service Agency, USDA. “Contract, Extension, Expirations, and Enrollment Update.” Available at: <http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=crp>

While farm income and interest rates influence demand for farmland, there are also other factors. Development potential also impacts demand. During the housing boom of recent times, developers were eager to buy farmland for residential and business development purposes. Even farmland not physically located near urban centers was impacted by this demand through the IRS Section 1031 exchange provisions. These provisions allow sellers to defer capital gains taxes when they exchange high priced property with significant capital gains for lower priced property not impacted by urban pressures. Recreational demand also impacted farmland prices for those properties near urban centers that could be converted from farming to recreational uses.

An additional demand factor in the farmland market is the return on farmland investments compared to alternative investments. Historically, farmland has generated a very competitive total return (cash and capital gains) compared to other real estate and financial investments with similar risk characteristics. Furthermore, the variability of returns for farmland has traditionally been lower than the variability of returns for stocks and similar risk financial assets. An additional benefit is that the returns to farmland have not been highly correlated with the returns to most financial assets. Consequently, farmland is a very attractive “portfolio” asset – it has attractive returns and it provides investment portfolio diversification when combined with financial assets. Investors such as pension funds and insurance companies who are interested in longer life assets and want to balance their portfolio with real estate as well as diversify their portfolio holdings sometimes view farmland a very attractive investment.

There is also a perceived inflation hedge benefit associated with farmland investment. Many investors perceive that real assets such as commodities, natural resources, and land provide better inflation hedge potential than financial investments. So if these investors perceive that inflation will increase, they are inclined to increase their purchases of real assets including farmland compared to financial assets.

Finally, tax considerations may be important in the demand for farmland. Farmland generally generates a significant proportion of its total return in the form of capital gains, and capital gains are taxed at a lower rate than ordinary income from earnings. If investors expect tax rates on capital gains to be reduced, the demand for favorably taxed assets such as farmland would increase. In addition, farmland qualifies for like-kind exchange treatment under the tax rules as noted earlier, which again gives it favorable tax treatment thus increasing investor interest in buying this asset. Alternatively, if tax rates on capital gains are expected to increase, this would reduce the demand for assets that exhibit high capital gains potential such as farmland.

Supply of Farmland

As with any product or resource, farmland’s price also depends upon the supply offered to the market. The key phrase with respect to farmland is “offered to the market” – the amount of acreage that is offered to be sold at a particular time. A recent survey in Nebraska indicates that farmland turnover (i.e. changes in ownership), which typically is 3-5% per year, is currently only about 1.5% per year, less than one-half the historical average.⁶

⁶ <http://www.agecon.unl.edu/Cornhuskerekconomics/9-8-10.pdf>

Offerings to the market depend significantly on the demographic and investment behaviors of landowners. Much of US farmland is owned by older individuals, and as they retire and/or die, that property is increasingly likely to be sold or transferred as a gift or bequest. Gift/bequest transfers typically do not have major impacts on land prices because they are in essence non-market transactions, but the recipient of the gift or bequest must decide either to sell that property or to continue to own it.

This decision is clearly impacted by the current financial position of the recipient, as well as the returns on alternative investments that might be made with the proceeds of the sale of the gifted/inherited land. If farmland generates a higher return than alternative investments, it is less likely to be offered to the market, whereas a lower return on farmland compared to alternative investments would suggest more property offered to the market by both retired farmers and their family members. One must be careful to not conclude as is often asserted that the aging demographic of farmers will result in significant amounts of farm property coming on the market for sale. Investment behavior combined with the returns from alternative investments will significantly impact whether retiring farmers and their families sell farmland or rent it to other farm operators.

Farmland is also owned by institutional investors such as pension funds and insurance companies as well as by individuals. In many cases institutional investors are perceived to not be as patient in their asset ownership as individuals. They are less inclined to continue to hold assets if returns are not competitive with alternative investments, and so may offer property to the market more readily during periods of lower incomes compared to farmers who own the property as part of a longer term business venture.

During periods of financial stress when lenders foreclose on mortgages, they frequently sell the property relatively quickly rather than maintain and manage it in a portfolio of acquired property – agriculture experienced this in the 1980s when lenders put significant amounts of property from farm foreclosures on the market, and the housing market continues to experience this phenomenon. These “forced sales” obviously increase the offerings to the local market and have the potential to depress local farmland values. If these actions are spread over a wide enough area, as in the case of the current housing crisis, there is the potential to depress state or national level prices.

Finally, tax considerations may be important in terms of the supply of land offered to the market. If current farmland owners perceive that capital gain taxes might increase in subsequent years and their property has significant taxable capital gain because it was acquired many years ago and thus has a low tax basis, they would be more likely to sell that land today rather than hold it for sale in subsequent years when tax rates might be higher. Alternatively, if tax rates are expected to decline, prospective sellers would be expected to hold the property until future years so that the sizeable taxable gain would be taxed at a lower rate.

Summary of the Supply and Demand for Farmland

As can be seen, there are several factors that influence the supply and demand, and thus price of farmland. Some factors like expectations about income and taxes influence both supply and demand. This makes it difficult to precisely measure the impact of a particular factor on land

prices. All of these factors have an important impact in the farmland marketplace. Their importance will change with time because of changes in the overall economic situation. However, it is clear that the returns to cropland (income) play a key role in determining farmland prices. Cropland returns have been volatile over the recent past, but in general have been high for a number of years. When interpreting farmland values it is useful to consider what has driven cropland returns and the likelihood that these returns will persist.

Factors Impacting Crop Returns

Higher crop prices and land returns are one of the most important drivers of higher land values. Increased demand for crops has been the driving force of higher crop prices in recent years. That demand increase has come from three primary sources: growing world incomes, the increased use of food crops for biofuels, and a general weakening of the U.S. dollar. In addition, poor yields in some years have contributed to higher prices and have generated price volatility. For instance, the substantial production shortfalls experienced by some major wheat producers in 2010 is a clear example.

World Income Growth

It is not just that the world has more income, but that some developing economies with large populations are seeing rapid income growth. China and India are prime examples where inflation adjusted incomes have been growing at near 10% a year. These countries have large populations and rapid income growth moves more people out of poverty. When this happens those individuals tend to eat more food, increase the amount of animal protein they consume, and improve the general quality of their food.

This plays out in many ways, but is nowhere larger than increased exports of U.S. soybeans to China as shown in Figure 1 which converts bushels of exports to the equivalent amount of acreage of soybeans. In the mid-2000s China was buying the equivalent of 8 to 10 million acres of U.S. soybeans. That demand is expected to reach 20 million acres from the 2010 crop. The 20 million acres of U.S. soybeans destined for China from the 2010 crop represents 26% of U.S. soybean acres. In contrast, just five years earlier soybeans from 12% of U.S. soybean acres were destined for China. From 2005 to 2010, the average annual growth rate of U.S. soybean exports to China has been 29% a year.

Biofuel Expansion

Along with Chinese soybean demand growth, there has been a second coincident demand surge in the past five years. That of course is the world's interest in using huge amounts of grains and oilseeds for liquid fuels known as biofuels. The amount of grains and oilseeds used has primarily been due to government policy. The U.S. policy most heavily relied on corn ethanol and to a lesser extent on soybean biodiesel, while European policy favored vegetable oils for biodiesel and limited amounts of ethanol. Although the U.S. and Europe were the largest adopters of the biofuels policies, other countries also implemented similar policies.

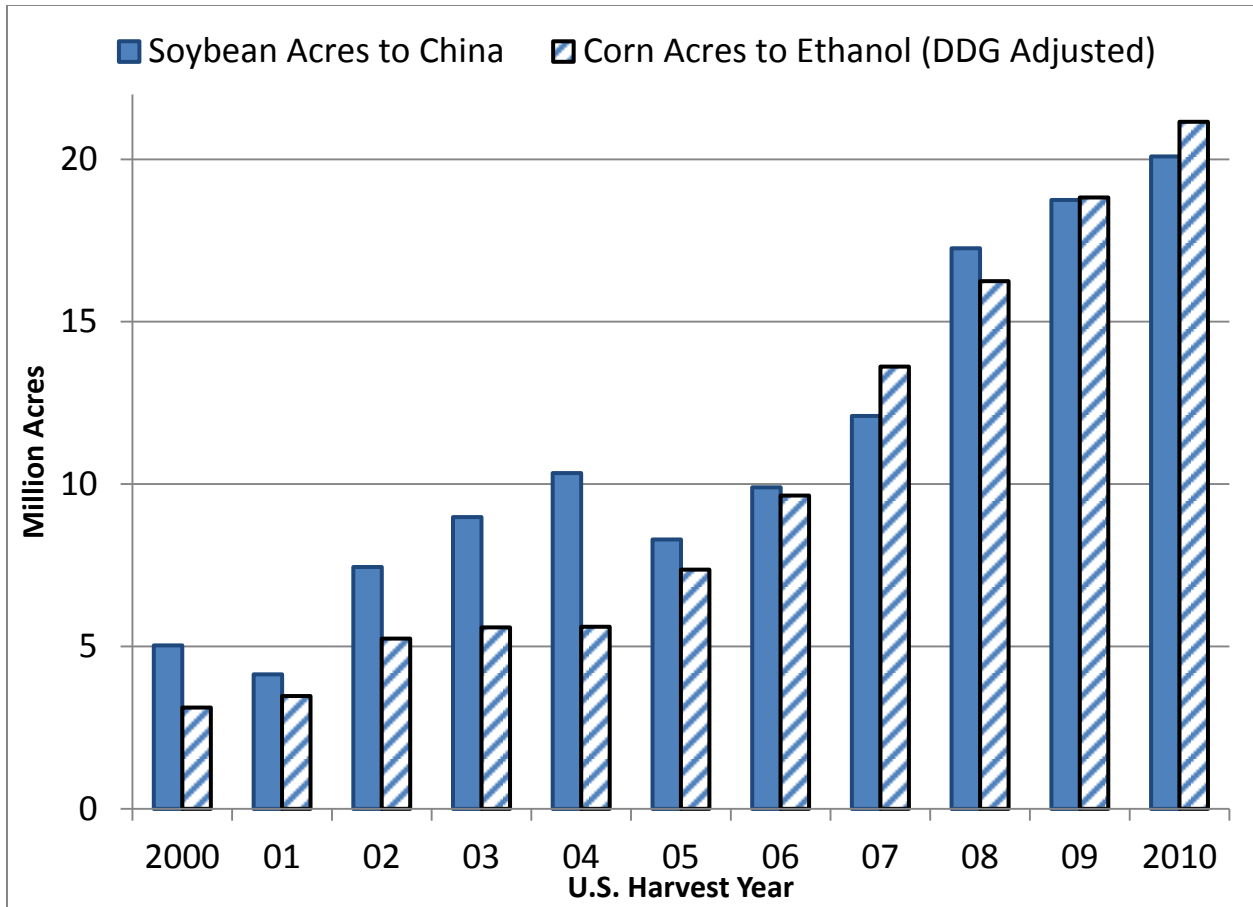


Figure 1. U.S. Soybean Acres Accounted for by Exports to China and Corn Acres Used in Ethanol Production (DDG Adjusted).

The striped bars in Figure 1 show the number of U.S. corn acres used for ethanol. These acres are adjusted downward to account for the fact that about one-third of the corn used to create fuel ethanol is returned in the form of distillers grains and used primarily for animal feed.

Since 2005, the majority of the increased corn usage in the entire world is due to increased use for ethanol. In the U.S., that point is even more dramatic. Using USDA data for the 2010 U.S. crop (November 2010), total U.S. corn usage has expanded by about 2.2 billion bushels since the 2005 crop. In addition to the use of corn for ethanol, about 6 million acres of soybeans will be destined for fuel from the 2010 U.S. crop (USDA: WASDE, November 2010).

Figure 1 demonstrates the parallel expansion of acres of corn for fuel that has occurred at the same time China was buying more acres of U.S. soybeans. The acres required for these twin events increased from 16 million in 2005 to 41 million in 2010. This is about 10% of the 250 million acres planted to the 8 largest U.S. non-hay crops. So planted acreage has shifted into corn and soybeans from other crops as shown in Figure 2.

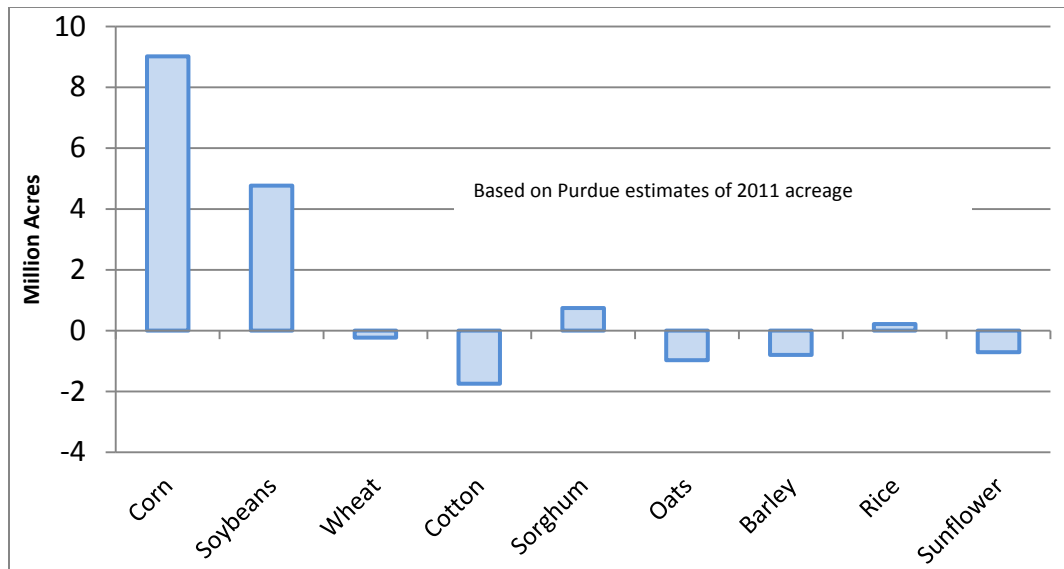


Figure 2. Change in Planted Acres of Various U.S. Crops since 2005, Million Acres.

Weakened Dollar

The value of the U.S. dollar is believed to be an important factor in helping to stimulate export demand. The U.S. is the world's largest exporter of corn, soybeans, wheat, sorghum, and cotton. A weak dollar is the same as saying foreign currencies are strong, or have superior buying power for items that are traded in U.S. dollars. As the dollar weakens, foreign buyers observe cheaper prices for these products.

The dollar weakened to 60% of its 2002 high relative to major currencies by the spring of 2008 (Figure 3). Corn, soybean, and wheat prices all peaked at about the same time the dollar was at its lowest level. This is consistent with the expectation a weak dollar tends to be supportive to high commodity prices denominated in U.S. dollars. Since the 2008 bottom, the dollar has traded in a range that is about 62% to 72% of the 2002 highs.

Since the value of the dollar is relative to other currencies, economic events and expectations both in the U.S. and foreign countries can influence its value. Since 2002, the U.S. has been running large federal budget deficits and large trade deficits, both considered unfavorable economic indicators for the U.S. relative to other countries.

Recently, the U.S. Federal Reserve has announced a program known as quantitative easing in an effort to stimulate the U.S. economy. The Federal Reserve will buy longer term U.S. treasury debt, thereby attempting to lower longer term interest rates and stimulate borrowing and investment. An additional stated concern of the Federal Reserve is deflation. After fighting inflation since the very late 1970's, the Federal Reserve now sees deflation as a potential threat and is increasing the money supply.

The Federal Reserve's actions have the potential to stimulate commodity prices. Price inflation is sometimes described as occurring "when too many dollars are chasing too few goods or services." Unfortunately the U.S. economy currently has many sectors where there are "too many goods" or an excess supply. Sectors with excess supplies will not tend to see immediate price

inflation. Consider that the labor market has major excess supply right now. Employers do not have to offer higher wage rates to acquire more labor, just offer an unemployed person a job. In the same manner there is major excess supply in manufacturing capacity, in idled equipment, and in both residential and commercial real estate. One area of the economy where there are current shortages may be commodities. Thus, there is the concern that the Federal Reserve's action will both drive grain prices higher over the coming years and drive interest rates lower. Both would be supportive of crop returns.

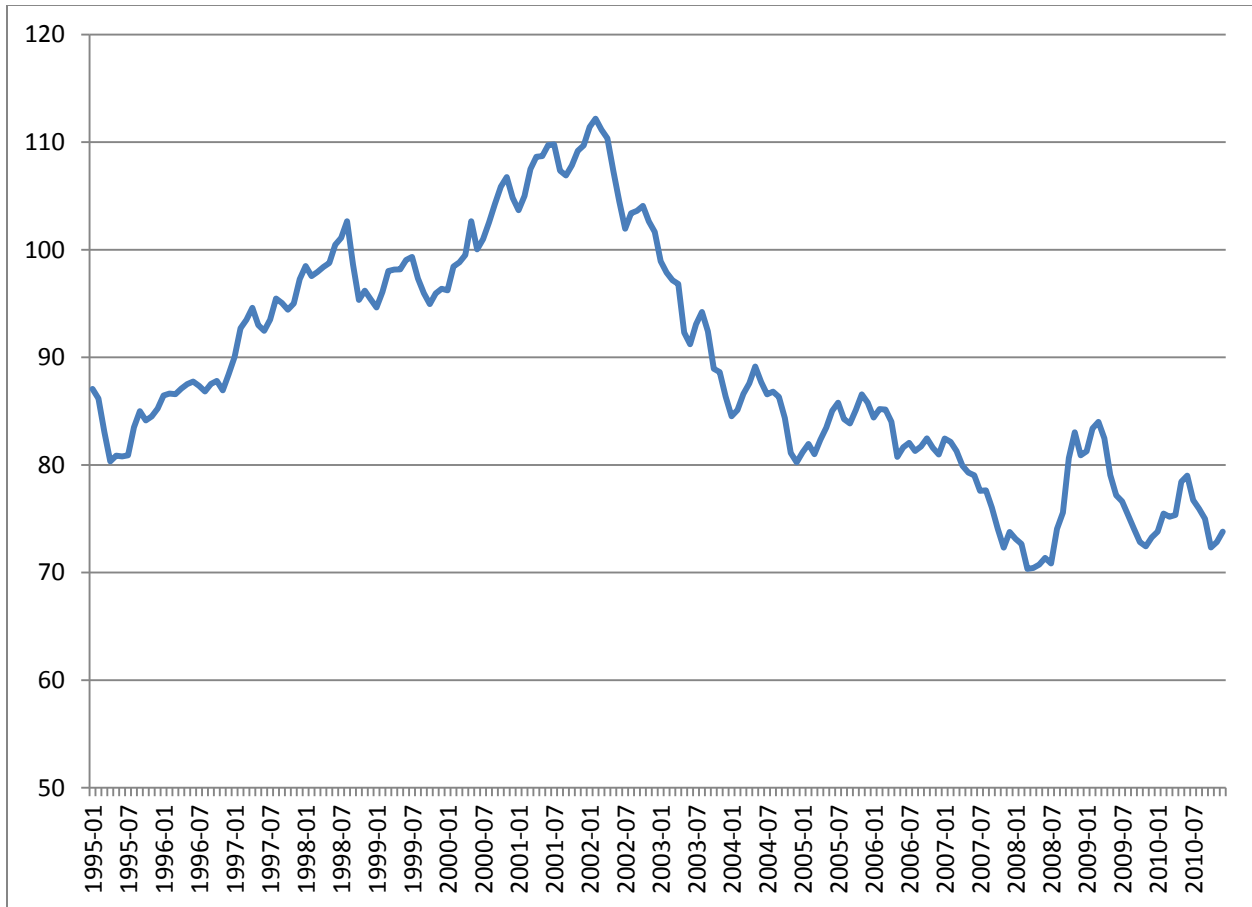


Figure 3. The Monthly U.S. Nominal Dollar Index Versus Major Currencies, 1995-2010.
Source: Board of Governors of the Federal Reserve System.

Current Crop Yields, Production, and Stocks

Production shortfalls in several major growing areas in the summer of 2010 were a significant contributor to higher grain prices, but a longer term-perspective over the past decade is helpful. Low returns for grain production in the early and mid-portions of the past decade generally kept world grain production below world grain use. As depicted in Figure 4, this occurred six of the seven years from 2000/01 through the 2006/07 crop marketing year. As a result of this long period of under-investment in world agricultural production, grain stocks tightened to very low levels by the close of the 2006/07 marketing year. With dangerously low grain supplies and

increasing crop prices, producers around the world responded. And, for three years the world was able to produce more grain than was used, increasing grain inventories to more comfortable levels by the close of 2009/10.

Looking back to May of 2010, prospects for world production to keep up with demand and maintain adequate stocks looked positive for 2010/11. However this began to unravel in the summer of 2010. The drought which occurred in Russia (and nearby countries) was one of the first signs of trouble. Then market participants realized that the Canadian wheat crop would be severely limited because of spring wetness. Next, the USDA's November corn production estimate showed a substantial production decline from the August report. These Northern Hemisphere weather events lowered world grain production by 82 million metric tons from expectations in the spring. More importantly, by November, world grain production was expected to drop under world usage, once again forcing stocks reductions.

The current world stocks situation is of most concern for corn and feed grains where ending stocks are similar to the lowest levels of the past three years. However, stocks for soybeans, wheat, and rice are all well above the panic levels of a few years ago (although somewhat less than a year-ago).

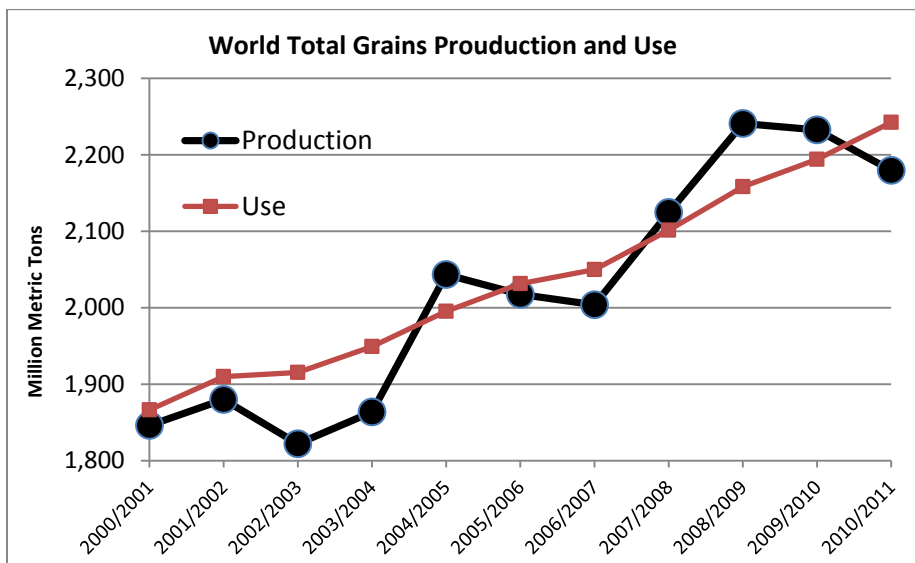


Figure 4. World Grain Production and Use, 2000-2011.

Input Costs

The price received for crops produced has a strong influence on the returns to crop production, but the net returns are also influenced by production costs. Increases in grain prices are often followed by increases in fertilizer, seed, chemical, and other input prices. In the recent past, crop price increases were quickly followed by input price increases. This is illustrated in Figure 5 which shows the budgeted contribution margin for rotation corn grown on average quality

Indiana farmland and corn prices from 2001 to 2011.⁷ In 2009, the budgeted price of corn was \$4.50 per bushel (left-hand axis), but because of increased input prices the contribution margin was \$202 per acre (right-hand axis) - much less than the contribution margin in 2007 and 2008 when the price of corn was lower. The estimated margin for 2009 was only about \$50 per acre more than the \$200 margin in 2003 with a corn price just over \$2.00 per bushel.

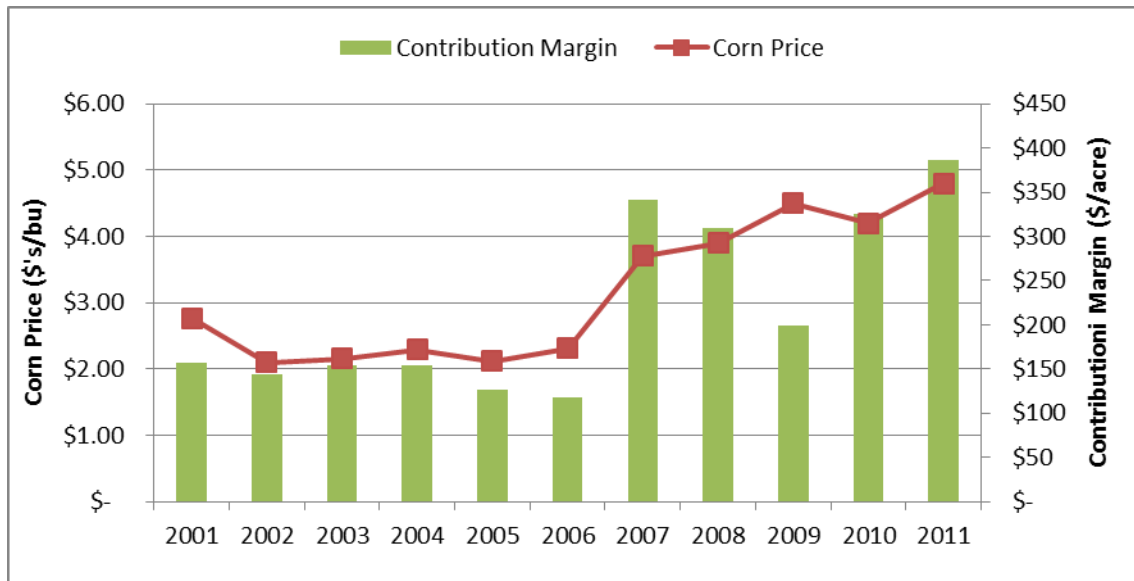


Figure 5. Budgeted Corn Price and Contribution Margin for Average Quality Indiana Farmland, 2001-2011.

Summary of the Factors Impacting Crop Returns

The stage is set for exports, biofuels policy, and U.S. monetary policy to provide important support to grain prices over the intermediate-term. The current level of stocks being held means that weather events will have important implications for price levels. Because of tight supplies, unfavorable weather anywhere in the world can result in strong upward movements in price. One needs to be careful to recognize that these events are often self-correcting and short-term in nature – the weather returns to normal and grain supplies increase. Additionally, one should note that increasing crop prices have historically been met with rising input costs.

Another point to observe is that these three factors are being driven largely by government policies not market forces. These policies are both those developed by foreign governments and the U.S. government. Government policies have been known to suddenly change, for example the shift in U.S. monetary policy from fighting inflation to fighting deflation. At the current time there are questions about the future structure of the U.S. biofuel program. Government policies can quickly shift.

⁷ Estimated contribution margin for rotation corn and corn prices were taken from *Purdue Crop Cost and Return Guide*, ID-166 for various years. The contribution margin represents gross income less variable production costs such as seed, chemicals, fertilizer, and other variable inputs. The cost of labor, machinery and equipment, and farmland ownership must be paid from the contribution margin to determine the net income from agricultural production.

Finally it is important to note what is missing from this discussion – farm policy. A few years ago this would have been an important determinant of any discussion of commodity prices and returns. Today farm policy is less important in the discussion. This is yet another reminder of how government policy can change the business environment.

The Income Capitalization Model of Farmland Values

Expected returns are a critical driver of farmland values. Farmland is a capital asset and people buy capital assets to obtain the rights to future earnings associated with their use. The idea is to obtain the asset for a price that is less than the real earnings (future earnings adjusted for inflation) that it will produce. The lower the price paid for an asset in relation to its future earnings, the better the rate of return earned on the investment.

Because investors have other options, the rate of return that can be earned on farmland must be compared to what could be obtained by investing in other alternatives. The most important of these alternative investments is the return on nearly risk-free investments in government bonds. The reason is simple; no investor would want to invest in a risky alternative for the same rate of return that could be earned by simply lending their money to the federal government. If interest rates on government bonds change, the prices of other assets must also change. This is necessary in order to maintain their returns relative to the risk-free alternative.

The relationship between current income, discount rates, and income growth can be operationalized in the capitalization model of farmland. This model of farmland values argues that increases in farmland values can come from increases in income, decreases in the discount rate, or increases in the growth rate of income produced by farmland. A simplified version of the income capitalization model expresses farmland value as a function of the income produced by the land divided by discount rate less the growth rate (1).

$$(1) \text{ Farmland Value} = \frac{\text{Income}}{\text{discount rate (\%)} - \text{growth rate (\%)}}$$

In this model the cash rental rate (\$'s per acre) is typically used as a proxy for income. The discount rate represents the opportunity cost of invested funds or the rate of return that an investor would require in order to own this asset. Normally, this rate is thought of as the rate of return on risk-free securities plus an adjustment for the risk associated with the farmland investment. The risk adjustment means that the discount rate will be larger than the interest rate on risk-free securities. The growth rate is the percentage rate at which the income associated with farmland is expected to grow. The difference between the discount rate and the growth rate is often referred to as the capitalization rate or “cap rate”.

Interest Rates

As noted earlier an important component of the discount rate is the rate of return on risk-free investments. The capitalization model illustrates the inverse relationship between the rate of return on risk-free investments and prices for assets such as farmland. As the rate of return earned by investing in risk-free assets increases, investors demand an even higher rate of return

on investments in risky assets such as farmland. This means that, other things equal, they must reduce the price that they can pay for farmland. This phenomenon also works in reverse. When the rates of return on government securities decline, as is our recent experience, investors will be willing to pay more for the earnings generated by riskier assets such as farmland.

Figure 6 shows the average interest rate paid on 10-year Treasury bonds issued by the U.S. government over the period of 1970 to 2010.⁸ Rates have fluctuated widely over this period. Starting at roughly 8 percent in 1970 rates started to climb, reaching a peak of 15 percent in the early 1980's. Then they declined dramatically, falling to slightly less than 3 percent today. While the exact impact of interest rates on farmland prices is difficult to measure, the large increases of the early 1980s should have had a negative impact on farmland prices, and the large declines since the 1980's should have helped to support farmland prices.



Figure 6. Interest Rate on 10 Year Treasury Bonds, 1970 to 2010.

⁸ The interest rate on 10-year Treasury bond is often used to represent the risk free interest rate on long term investments.

Summary of the Income Capitalization Model

The capitalization model is one way of integrating several important drivers of farmland value. The model posits a positive relationship between the net income expected from owning this asset and the expected growth rate in farmland net income. The model also suggests that there is a negative relationship between risk free interest rates, risk premiums, and farmland values. Other things being the same, increases in interest rates and risk premiums will reduce farmland values. In the following sections, this capitalization model will be used to investigate historical farmland values and these factors.

Before undertaking this investigation it is important to realize that there are several assumptions that underlie the income capitalization model. When evaluating any change in an important driver of farmland values, a change in net income levels, interest rates, or income growth rates, the model is built on the notion that the change will last forever. For instance, in the case of a change in net return, the impact is based on having the higher or lower net return forever from this point forward. Second, the model is often used by making only one change at a time (other things equal). This is not the way the business environment functions. In most cases, several factors change at the same time. While the model clearly has its limitations, it also helps us to simplify and understand how different factors would impact farmland returns.

A Historical Perspective on Farmland Values

Expectations of future earnings and interest rates are always at work in determining the value of farmland. History provides several periods when the earnings potential of farmland ownership underwent substantial changes. The most obvious of these was the period leading up to the early 1980s. Here, agricultural profits were quite high by historical standards. Net farm income in the U.S. agricultural sector jumped from \$12.8 billion in 1965 to \$25.5 billion in 1975. Deflation of the U.S. dollar made U.S. exports extremely competitive and new agricultural markets opened. Investors in U.S. farmland quickly began bidding these earnings increases into the value of farmland. Farmland prices rose from less than \$1,000 per acre in 1975 to over \$2,000 per acre by 1981 (Figure 7). Lenders also participated by funding much of the investment in farmland, taking as collateral the paper equity that instantly showed up on farmer's market value balance sheets. This pushed land values even higher. All this was in spite of interest rates starting their sharp move upward.

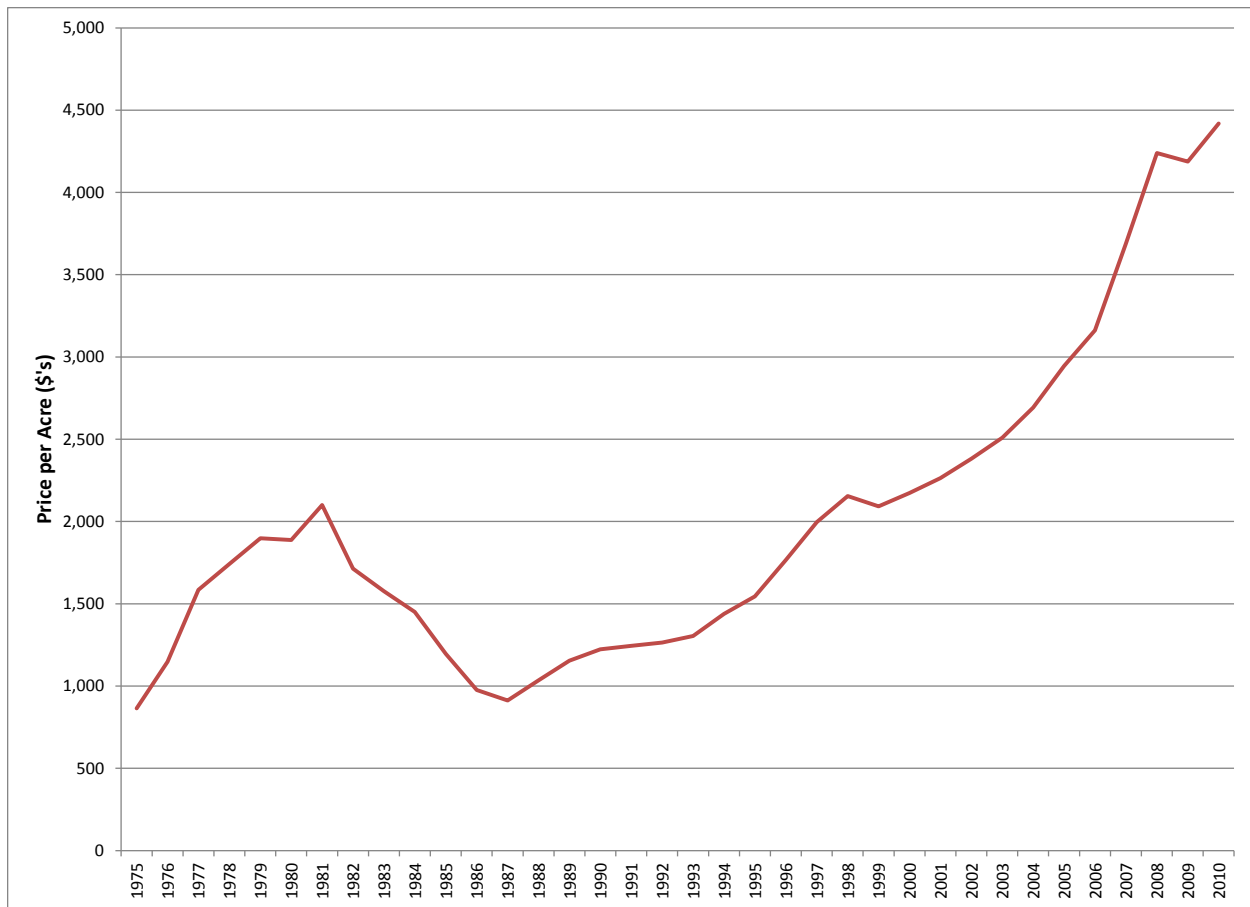


Figure 7. Price per Acre for Average Quality Indiana Farmland, 1975-2010.

Then things changed. The Federal Reserve began an aggressive policy of fighting inflation, increasing interest rates dramatically. Exports became less competitive and agricultural product prices fell considerably. Net farm income in the U.S. fell dramatically, and investors realized that the earnings potential of farmland had been overestimated. Farmland values began a drastic descent and by 1987 had nearly fallen back to the levels of 1975.

Since this period, farm income in the U.S. has generally marched slowly but surely upward. After bottoming at \$14 billion in 1983, U.S. net farm income stabilized and increased. The average for the decade of the 1990's was \$48 billion. So far, the decade of the 2000's has been even better, with the U.S. net farm income averaging \$65 billion from 2000 to 2008. These increases in income have been quite favorable to land values. Likewise, the substantial declines in interest rates since the 1980's have also worked in favor of higher farmland prices. Together, these impacts have resulted in farmland values increasing from the 1987 lows of \$913 per acre to their current level of \$4,188 per acre, an increase of 358% or an average compound growth rate of nearly 7 percent.

The Relationship between Farmland Value and Earnings

While investors have developed a number of different ways to assess the relationship between earnings and prices, the value to rental multiple or price to earnings (P/E) ratio is one of the most commonly employed. The P/E ratio describes how much an investor is willing to pay for each dollar of earnings. The earnings (E) component of the ratio reflects the earnings potential of the asset. As a matter of convenience, this number is usually presented as either the most recent level of earnings, or the earnings forecast for the upcoming year. Rather than calculating the net income from owning farmland as a measure of earnings, current cash rent is often used as a proxy for earnings.

The income capitalization model is directly related to the price to earnings ratio or cash rent multiple for farmland. The price to earnings ratio can be found by manipulating equation 1 so that the price (farmland value) divided by income (or cash rent) is equal to $1/(\text{discount rate} - \text{growth rate})$. Thus, the multiple attached to the cash rental rate is the inverse of the capitalization rate.

For instance, if the discount rate is 8% and the expected growth rate is 3%, the capitalization rate is 5%, and the cash rent multiple is 20 (Table 1). The cash rent multiple tells us how much an investor will pay for each dollar of current rent. In this example, an investor would pay \$20 for the right to receive the one dollar per acre of current and future cash rents associated with the farmland. In other words, if the current income were \$150 per acre, the resulting land price would be \$3,000 per acre. It is important to realize that the lower the capitalization rate, the higher the multiple and the more that an investor pays for each dollar of earnings.

Table 1. Cash Rent Multiples for Different Discount and Growth Rates.

Discount Rate (%)	-----Growth Rate (%) -----					
	0%	1%	2%	3%	4%	5%
12%	8	9	10	11	13	14
11%	9	10	11	13	14	17
10%	10	11	13	14	17	20
9%	11	13	14	17	20	25
8%	13	14	17	20	25	33
7%	14	17	20	25	33	50
6%	17	20	25	33	50	100
5%	20	25	33	50	100	
4%	25	33	50	100		
3%	33	50	100			
2%	50	100				
1%	100					

While easily calculated, it is important to interpret the value to rent ratio carefully. This is especially true when comparing them over time. If earnings for the current or upcoming year are abnormally high or low, the P/E ratio will be abnormally low or high. Additionally, in periods of

high volatility, the actual returns associated with farmland ownership can vary significantly from rental earnings as we will discuss in more detail later.

The challenge of making interpretations about the reasonableness of farmland prices from the value to rent ratio can be seen by examining the cash rent multiples for Indiana farmland. Figure 8 shows value to cash rent multiples for average quality Indiana farmland from 1975 to 2009. The rent multiple rose to slightly over 20 in 1979, and then fell to about 12.4 in 1986. Since that period it has risen steadily and now stands at approximately 26.5.

When examining this chart it is tempting to argue that at present this multiple is abnormally high. However, one must be cautious about such conclusions based on this graph alone. The same argument could have been made in 1997. Why would an investor have paid \$18.20 for each dollar of earnings in 1997 and only 12.4 in 1986? Part of the answer is that investors likely had a more favorable future outlook in 1997 than in 1986. Whether those expectations materialize is another story.

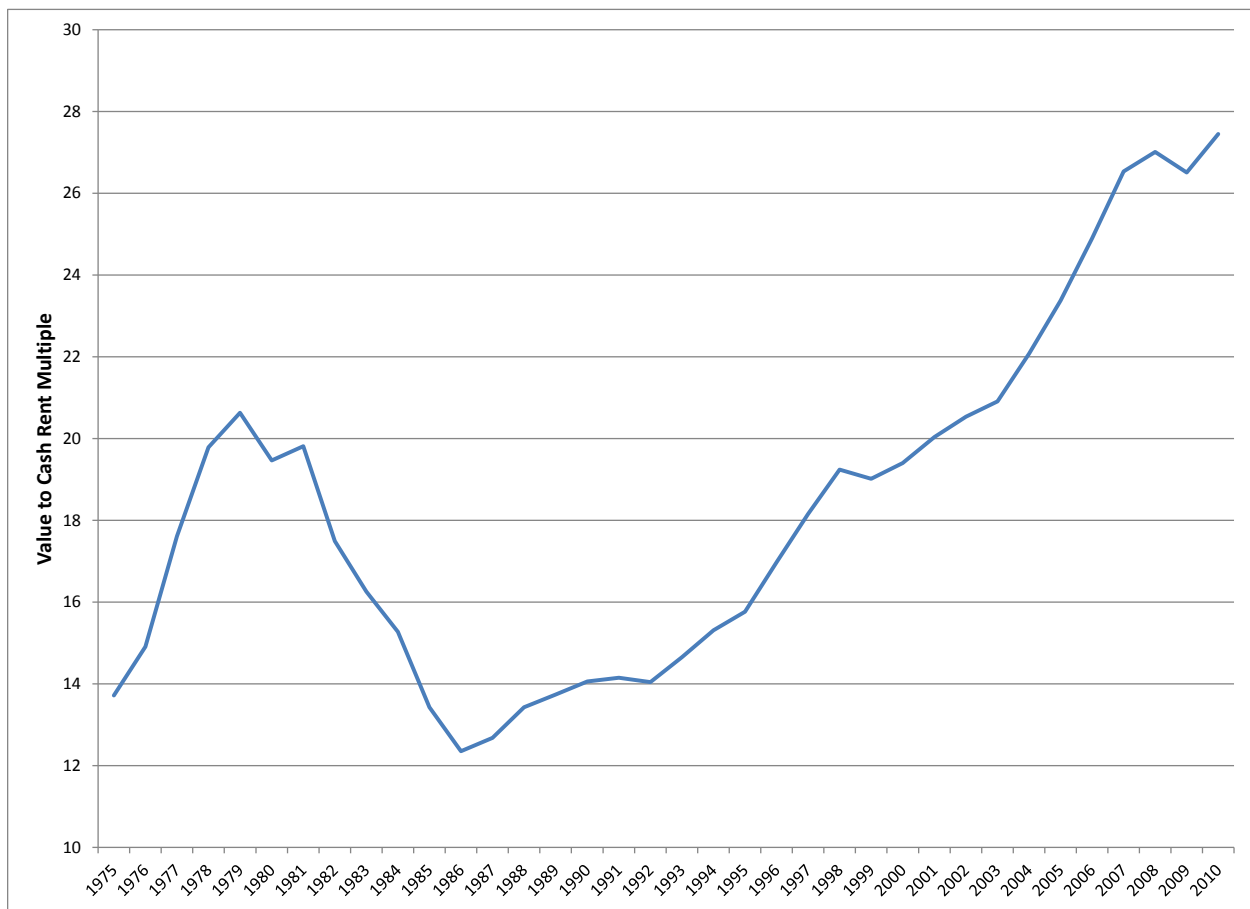


Figure 8. Value-to-Rent Multiple for Average Quality Indiana Farmland, 1975-2010

Clearly, from looking at history, we can see that the cash rent multiple is not a particularly good indicator of the actual returns realized by purchasing farmland. Investors purchasing land with a 19.2 cash rent multiple in 1998 would have done quite well over the last 10 years, earning an

average rental yield of 5.7% and seeing the value of farmland increase by 97%. On the other hand an investor buying land at a 20 value to rent multiple in 1979 would have earned an average rental return of 4.7%, and seen the value of their investment decline by 39% over the following ten years. In short, there is much more to the farmland valuation story than can be told from simply looking at ratios of current prices to current rental rates.

The Outlook for Income

According to the 2010 Indiana land value survey, average quality Indiana farmland generated a cash rent of \$161 and sells for \$4,419. This would put that cash rent multiple slightly above 27. In other words, investors are paying \$27 for each dollar of current income. As noted earlier the current level of income reflects the relatively strong earnings associated with row crop production in Indiana.

There are several important points to make about the level of current income and how it impacts the returns to farmland ownership. Current average cash rental rates may understate the actual returns associated with farmland ownership. Cash rent is only a proxy for the actual returns that are generated by farmland ownership. In fact, cash rents exhibit much lower risk and variability than the residual returns to land earned by an owner-operator of farmland. Owner-operators may be able to generate higher earnings than those who cash rent farmland through improved efficiency and cost reductions resulting from an expanded farming business. So the average reported cash rental rate may not accurately reflect the full returns that could be generated by ownership.

Average cash rental rates may also adjust slowly to changes in farmland income. In periods of rapid increases in crop prices such as experienced recently, newly negotiated cash rents may be substantially higher than the average reported in survey data. This is because many rental agreements are not updated annually to reflect changes in the profitability of farm operation. As a result, the average may be slow to adjust as leases are modified.

On the other hand, using the current cash rental rate can also overstate the return to farmland ownership. This is because farmland owners must also pay for any maintenance associated with the property and also have to pay property taxes. These factors would tend to reduce the current level of income associated with farmland ownership.

These caveats aside, assume that the cash rental rate of \$161 is a reasonable approximation of the current income associated with farmland. When this return is put in the context of the capitalization model of farmland, one can see that in order to arrive at the cash rent multiple of 27, the implied capitalization rate is 3.6% (Table 2). In other words, the difference between the discount rate and the income growth expectations must be 3.6%.

Table 2 shows the implied capitalization rate for various levels of cash rental income assuming that the current price of average quality Indiana cropland is \$4,419 per acre. If one believes that the survey overstates cash rents by 10%, this would increase the multiple to 30 and reduce the implied capitalization rate to 3.3%. A 20 percent increase in the current rental rate would reduce the multiple to 23 and increase the capitalization rate to 4.4%.

This table shows that the capitalization rate being applied to farmland is quite low. Even if we assume that rents understate the actual income associated with farmland by 20%, the multiples are high by historical standards. Since 1975 the cash rent multiple has been below 20 nearly 70% of the time. If one believes that the current cash rents reflect current income, the cash rent multiple is at an all-time high, and if it overstates current income it is very high.

Table 2. Implied Capitalization Rate Assuming Different Levels of Rental Income for Average Quality Indiana Farmland with a Price of \$4,419 per Acre.

Percent of Reported Cash Rent	80%	85%	90%	100%	110%	120%
Cash Rent Multiple ^a	129	137	145	161	177	193
Implied Capitalization Rate ^b	2.9%	3.1%	3.3%	3.6%	4.0%	4.4%

^a Multiple calculated by dividing base price \$4,419 by cash rental rate

^b Implied capitalization rate = (1/multiple)

The Capitalization Rate

The analysis of the income multiple points to a clear need to understand the capitalization rate being applied to current farmland income. As noted earlier, the capitalization rate is determined by the discount rate or opportunity cost of capital, and the potential growth rate associated with farmland income.

The Discount Rate

A few principles should be kept in mind when determining the appropriate discount rate to apply to future earnings. At its most fundamental level, the discount rate reflects the opportunity cost of investment. Lower discount rates indicate a lower opportunity cost and will increase the price that can be paid for an asset. Individuals with higher return alternatives will have a higher opportunity cost and will be willing to pay less for capital investments.

Second, there is an important relationship between the risk-free return and the discount rate. The discount rate should always be higher than the risk-free return. The risk-free return is usually viewed as the return on government securities. Because farmland returns are risky, one should demand a higher return on it than on government securities. Consequently, changes in the risk-free return tend to cause individuals to re-evaluate their opportunity cost and adjust their discount rate. Third, for firms with debt, the discount rate should be higher than the firm's cost of debt. These firms could earn their cost of debt in a risk free manner by simply paying down debt.

From this perspective, the discount rate is an opportunity cost that contains a risk-free component and a risk premium associated with the investment in farmland. The closer the discount rate is to the risk-free rate, the lower the risk premium that the investor is demanding from their investment in farmland.

As shown in Figure 6 the average rate of interest on 10-year U.S. Treasury bonds has varied widely since 1970. Table 3 shows the average annual rate of interest on 10-year Treasury Bonds for each decade since 1970. While these are arbitrarily selected time periods, one can observe the higher interest rate environment of the 1980s and the lower rate period in the 2000's.

Table 3. Average Rate on 10-Year U.S. Treasury Bonds, 1970-2009.^a

Period	Average Interest Rate (%)
1970 to 1979	7.5
1980 to 1989	10.6
1990 to 1999	6.7
2000 to 2009	4.5
Entire period 1970 to 2009	7.3

^a Calculated as the average of the annual average rate on 10-Year Constant Maturity U.S. Treasury Bonds, reported by the Board of Governors of the U.S. Federal Reserve System.

Assuming that the risk premium and income growth rate remain constant, a decline in the risk-free component of the discount rate decreases the capitalization rate and increases the associated earnings multiple. At low capitalization rates, this impact can be dramatic. For instance, a capitalization rate of 4% would produce a multiple of 25, while a capitalization rate of 10% would produce a multiple of 10. When put into the context of actual land values, these changes are striking. Using the simple capitalization model, land that produces cash rent of \$160 per acre would be valued at \$1,600 under a multiple of 10 and \$4,000 under a multiple of 25.

Growth Rates and Risk Premiums

One can see the important impact that the level of the risk-free return can have in the previous simple example. As described before, the cash rent multiple on Indiana farmland has increased steadily since the late 1980's. The declining interest rates in Table 3 may explain some of this increase. At present, the average rate on 10-year U.S. Treasury bonds is approximately 2.5% which is low by historical standards. These low risk-free rates put upward pressure on the multiple. Of course, one must also consider how the risk premium that investors associate with the land has changed as well. Lower capitalization rates, and higher multiples, could also be achieved by investors requiring a smaller risk premium, or by expecting a higher rate of growth in farm income.

The relationship between the risk-free return, the growth rate, and the implied risk premium is illustrated in Table 4. The cash rent multiple for average quality Indiana farmland is shown for each year since 1975. The average annual interest rate on the 10-year U.S. Treasury is used as a proxy for the risk-free return and is shown in the next column. The subsequent columns show the implied risk premium that would be necessary to generate the multiple under alternative assumptions about the rate of income growth.

For example, in 2000 the cash rent multiple was 19.4. Given the 10 year Treasury rate of 6.03%, if investors assumed future income growth of 1%, the implied risk premium was negative 1%. A number of factors could explain the negative risk premium. First, investors could expect income growth well beyond 1% per year. If their expectations were 3% annual growth then the risk premium would be 2%. Second, the 10 year treasury rate may not be a valid proxy for the risk-free return, or investors could be betting on a decline in interest rates. Third, the simplified income capitalization model may not adequately explain behavior. Recall, the previous caveats about whether cash rents accurately reflect the income generation of the farmland.

Table 4. Implied Risk Premium (%) Necessary to Generate Cash Rent Multiple Under Alternative Income Growth Rates, 1975-2010.^a

Year	Cash Rent Multiple	10 Year Treasury Rate (%) ^b	-----Growth Rate (%) -----					
			0	1	2	3	4	5
1975	13.7	7.99	-1%	0%	1%	2%	3%	4%
1976	14.9	7.61	-1%	0%	1%	2%	3%	4%
1977	17.6	7.42	-2%	-1%	0%	1%	2%	3%
1978	19.8	8.41	-3%	-2%	-1%	0%	1%	2%
1979	20.6	9.43	-5%	-4%	-3%	-2%	-1%	0%
1980	19.5	11.43	-6%	-5%	-4%	-3%	-2%	-1%
1981	19.8	13.92	-9%	-8%	-7%	-6%	-5%	-4%
1982	17.5	13.01	-7%	-6%	-5%	-4%	-3%	-2%
1983	16.3	11.1	-5%	-4%	-3%	-2%	-1%	0%
1984	15.3	12.46	-6%	-5%	-4%	-3%	-2%	-1%
1985	13.4	10.62	-3%	-2%	-1%	0%	1%	2%
1986	12.4	7.67	0%	1%	2%	3%	4%	5%
1987	12.7	8.39	-1%	0%	1%	2%	3%	4%
1988	13.4	8.85	-1%	0%	1%	2%	3%	4%
1989	13.7	8.49	-1%	0%	1%	2%	3%	4%
1990	14.1	8.55	-1%	0%	1%	2%	3%	4%
1991	14.1	7.86	-1%	0%	1%	2%	3%	4%
1992	14.0	7.01	0%	1%	2%	3%	4%	5%
1993	14.7	5.87	1%	2%	3%	4%	5%	6%
1994	15.3	7.09	-1%	0%	1%	2%	3%	4%
1995	15.8	6.57	0%	1%	2%	3%	4%	5%
1996	17.0	6.44	-1%	0%	1%	2%	3%	4%
1997	18.2	6.35	-1%	0%	1%	2%	3%	4%
1998	19.2	5.26	0%	1%	2%	3%	4%	5%
1999	19.0	5.65	0%	1%	2%	3%	4%	5%
2000	19.4	6.03	-1%	0%	1%	2%	3%	4%
2001	20.0	5.02	0%	1%	2%	3%	4%	5%
2002	20.5	4.61	0%	1%	2%	3%	4%	5%
2003	20.9	4.01	1%	2%	3%	4%	5%	6%
2004	22.1	4.27	0%	1%	2%	3%	4%	5%
2005	23.4	4.29	0%	1%	2%	3%	4%	5%
2006	24.9	4.8	-1%	0%	1%	2%	3%	4%
2007	26.5	4.63	-1%	0%	1%	2%	3%	4%
2008	27.0	3.66	0%	1%	2%	3%	4%	5%
2009	26.5	3.26	1%	2%	3%	4%	5%	6%
2010	27.4	3.25	0%	1%	2%	3%	4%	5%

^a Implied risk Premium is calculated using the simplified income capitalization model. Calculation assumes that the 10-year Treasury Bond interest rate is equal to the risk free rate.

Implied Risk Premium (%) =

$$1/(\text{Rent to Value Multiple}) - 10 \text{ Year Treasury Interest Rate } (\%) + \text{Growth Rate } (\%)$$

^b Interest rate on the 2010 10-year Treasury bond set to the monthly average though October.

Given alternative risk premiums, the same approach that was used to construct Table 4 can be used to calculate the implied income growth rate. The results of this calculation are displayed graphically in Figure 9 which shows the implied income growth rates under no risk premium, 2% risk premium, and 4% risk premium scenarios from 1975-2010. Here, one can clearly see the very large implied income growth rates of the late 1970's and early 1980's. Valuing farmland using the income capitalization model would suggest that investor expectations for future income growth were wildly optimistic at that time. For instance, even under a 0% risk premium, in 1981 the implied annual income growth was nearly 9% per year.

To provide a perspective on the annual income growth rate for farmland, the change in cash rent for average quality Indiana farmland was calculated. Although the growth rate in cash rents could be calculated for a large number of alternative periods, only four of those periods are shown in Table 5.⁹

Table 5. Average Annual Growth Rate for Cash Rents on Average Quality Indiana Farmland, Various Periods Ending in 2010.

Period	Annual Growth Rate (%)
1975-2010	2.72
1987-2010	3.56
1990-2010	3.13
2000-2010	3.70

For the period of 1975 to 2010, cash rent increased from \$63 per acre to \$161 per acre for an annual growth rate of 2.72%. If one selects the 1987 cash rent low that occurred after the farm crisis of the 1980's as the starting point and 2010 as the ending point, the average growth rate increases to 3.56%. The most recent 20 years have seen rents grow at slightly over 3% and they have grown at nearly 4% over the last 10 years.

⁹ Data was obtained from the annual Purdue Land Value Survey. The period from 1975 to 2010 represents the entire period of this survey. The 1987 was the low in cash rent after the sharp downward correction in the 1980s.

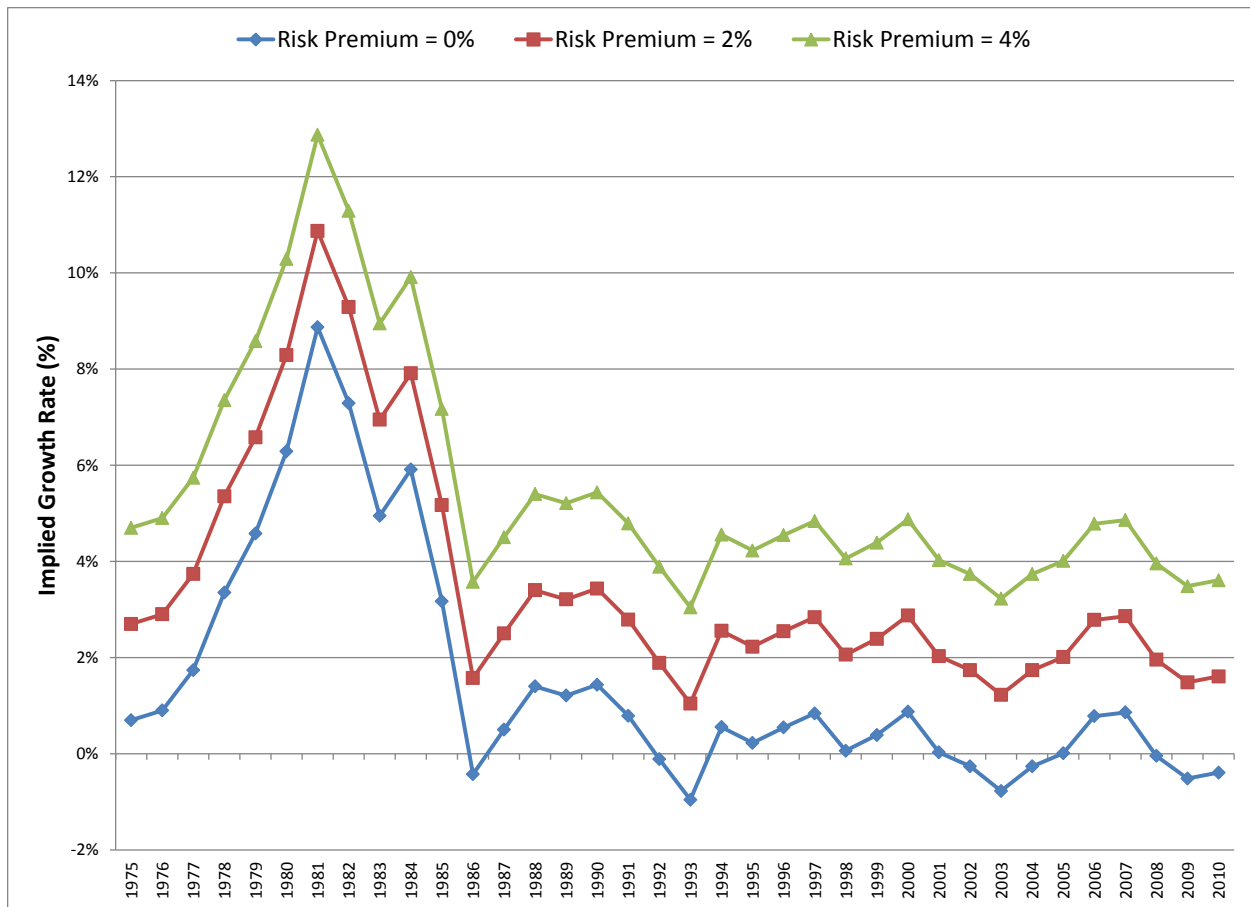


Figure 9. Implied Income Growth Rate Under Various Risk Premium Assumptions for Average Quality Indiana Farmland, 1975-2010.^{a,b}

^aImplied income growth rate is calculated using the simplified income capitalization model. Calculation assumes that the 10 year Treasury Interest rate is equal to the risk free rate.

$$\text{Implied Income Growth (\%)} = -1/(\text{Rent to Value Multiple}) + 10 \text{ Year Treasury Interest Rate (\%)} + \text{Risk Premium (\%)}$$

^b Interest rate on the 2010 10-year Treasury bond set to the monthly average through October.

The Potential for Income Growth

The previous discussion illustrates the role that income growth expectations and interest rates play in determining the value of farmland. When farmland prices outpace reasonable growth expectations, it creates the potential for a substantial correction in farmland prices as was experienced in the 1980s. It is useful to consider what might drive future farmland income growth and what different growth expectations would imply for farmland incomes.

Increasing productivity is one key potential driver of farmland income growth. Over time, farmers have been able to produce more output from the same amount of farmland. According to corn yield data collected by the National Agricultural Statistics Service, national corn yields have grown from 72.4 bushels per acre to 154.3 bushels per acre from 1970 to 2010, for a compound annual growth rate of 1.9%. This means that farmland has generally become almost 2 percent more productive per year. It is unlikely that the land owner will capture all of the gains associated with this increased productivity – input suppliers are likely able to capture some

portion of this productivity gain. As a result, if we are to expect long term income growth of even 2 percent per year it will probably have to come from a source in addition to productivity gains.

There are other possible sources of income growth. First, the general trend of inflation should result in income growth as long as output prices increase at a rate at least as fast as input prices. Second, shifts in the demand for agricultural products would tend to increase the price of agricultural products and improve the profitability of agricultural production. This has occurred recently with the substantial demand shift associated with biofuel production. However, this demand shift is largely driven by government policy. While it is possible that government policy could further increase demand, it is also possible that policy could be altered and reduce demand.

Population growth and income growth in lower income countries is another possibility for increased demand and income growth in agriculture. In the past, the rate of agricultural productivity growth has generally outpaced the rate of population growth. As populations become wealthier, there is evidence that they generally increase food consumption and switch to foods that require more calories to produce such as animal proteins. These trends would be supportive to income growth rates.

Aside from income growth factors, as indicated earlier it is also possible that currently reported cash rental survey data understates earnings associated with farmland ownership. If the actual income produced by farmland is substantially greater than reported, it would help support higher farmland prices.

Based on the current cash rental survey as a proxy for income, current farmland prices imply that investors are willing to accept relatively small risk premiums for owning farmland, or that they expect substantial income growth from farmland. Were interest rates to increase, it would put substantial pressure on cash rent multiples, likely reducing farmland values. Holding other things equal, if rates would increase from 3.25% to 4.5%, the multiple would decrease from its current level of 27 to 20. In order to maintain land prices, current income would have to increase, expectations of future income would have to increase, and/or investors would have to accept a lower risk premium. To be specific, if the multiple decreased to 20, the cash rent on average quality Indiana farmland would have to rise from \$161 per acre to \$220 per acre. While there are many reasons to support the case for increased farmland income in the future, one must be very careful in assuming growth rates beyond the general rate of inflation and the rate of productivity growth in agriculture. Sustained growth beyond this level would require substantial demand growth that would manifest itself in continually higher agricultural product prices.

The impact of higher or lower income levels and capitalization rates can be seen in Figure 10. This figure illustrates the level of farmland prices that would be achieved with different capitalization rates and income levels. For instance, at a capitalization rate of 3 percent and a cash rental rate of \$120 per acre the farmland price would be \$4,000 per acre. Holding the capitalization rate constant, farmland prices would increase with income. At the same level of income increases in the capitalization rate would cause farmland prices to decline. The current situation with the average quality Indiana farmland is shown as a horizontal line at a level of

\$4,419. The current cash rental rate for this quality of farmland, \$161 per acre, is shown as a vertical line. These lines intersect slightly above a 4% capitalization rate, meaning that the capitalization rate is slightly less than 4%. One can see that if the capitalization rate were to increase, income would have to increase to hold farmland values constant. For example, at a capitalization rate of 5% income would have to rise to nearly \$220 per acre to keep land values constant.

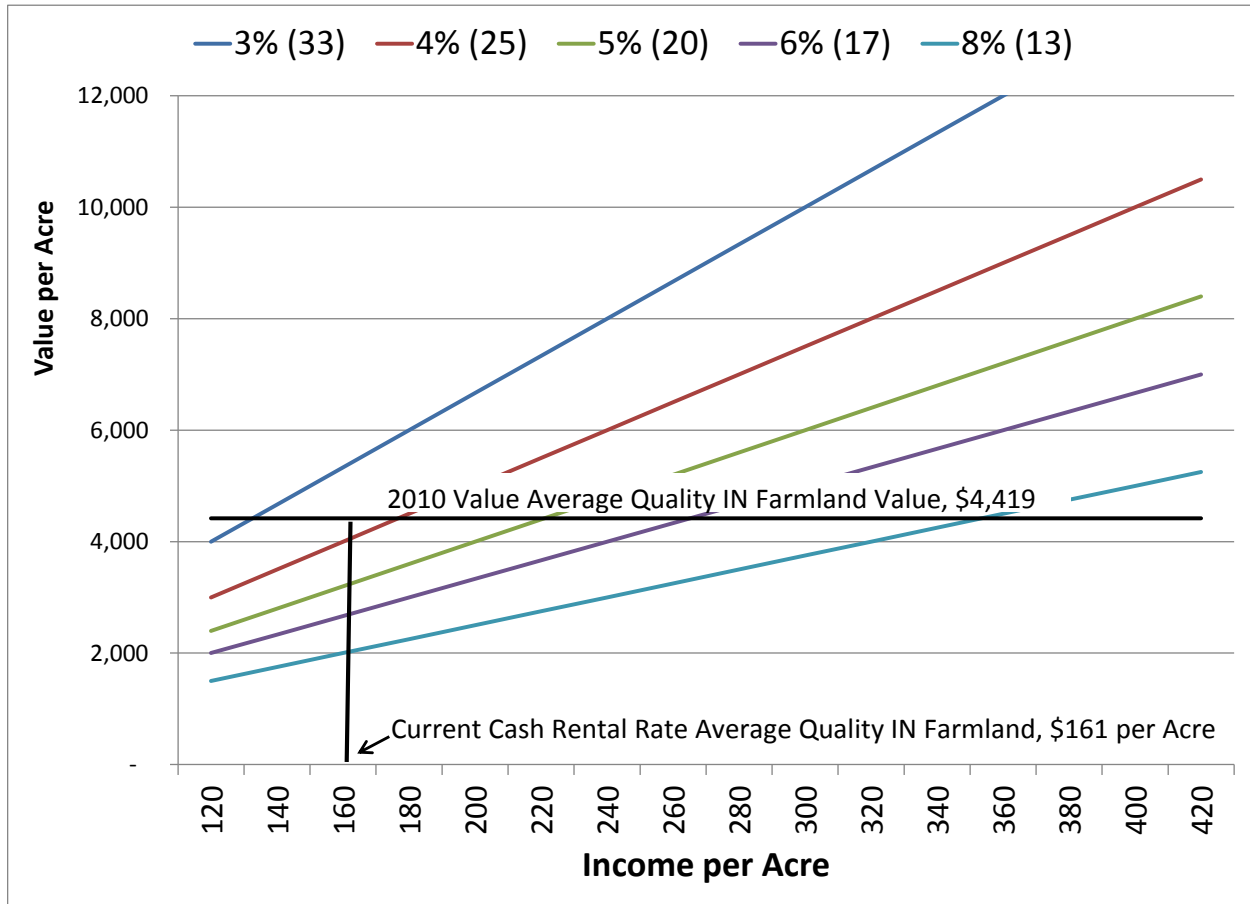


Figure 10. Average Quality Indiana Farmland Values Under Alternative Capitalization Rates and Income Levels.^a

^a Cash rent-to-value multiple shown in parentheses.

Summary

There are many factors that influence the price of farmland. Because farmland is a capital asset people purchase it to obtain the future earnings that it will produce. As a result, earnings and the opportunity cost of capital are among the most important factors influencing the price of farmland. These two factors are always at work in determining the value of farmland. The fact that both fluctuate over time also greatly complicates the analysis of farmland prices. Sometimes both are moving in the favor of farmland prices, sometimes in opposite directions, and sometimes both move against farmland prices. As earnings and expectations of earnings increase, farmland values increase. As the opportunity cost of capital declines, land values will rise. Presently both factors have moved in directions that support land values.

The analysis in this paper utilizes the income capitalization model of farmland values as an analytical framework with which to interpret farmland values. This model uses current cash rental rates for farmland, the discount rate or opportunity cost of capital, and expectations about the rate at which cash rent will grow to value farmland. The difference between the discount rate and the cash rental growth rate is often referred to as the capitalization rate. Its inverse is the often reported cash rent multiple which describes the number of times current cash rent must be multiplied to arrive at the current price of farmland.

The current cash rent multiple of 27 for average quality Indiana is at its highest point for the time period of 1975 to 2010. This multiple could arise from a number of factors including low opportunity costs approximated by interest rates on government securities, strong growth expectations for farmland income, and/or low risk premiums. In order to support increasing farmland values investors must believe in strong future earnings, growth rates, or continuing low interest rates.

All of these factors have been favorable in recent times. Row crop income has been growing due to increased demand for bio-fuels, demand growth from developing countries, and a weaker dollar. While it is difficult to forecast these variables in the future, it appears that at least in the area of biofuels, the massive demand expansion is likely to moderate in the future.

In addition to the fundamental factors associated with income and the opportunity cost of capital, there are a number of unique features of the land market that influence the prices currently being paid for farmland. Farmland markets are local markets that are influenced by local supply and demand which can sometimes be imbalanced. Recent data suggest that there are relatively few parcels of farmland being sold, creating a potentially thin market. Additionally, in the recent past there has been anecdotal evidence of considerable amounts of tax motivated buying and selling associated with section 1031 exchanges.

It is clear that expectations of the future earnings potential of farmland will play a significant role in determining the amount that one would be willing to pay for farmland. Because no one can perfectly forecast the future, two perfectly reasonable people can arrive at very different conclusions about the magnitude of future earnings that can be obtained from the purchase of farmland. The methods that individuals use to develop expectations about future earnings are a crucial, but poorly understood phenomenon.

At times the consensus expectations about future earnings can diverge from what is likely to occur. In some instances, investors view past returns as a strong predictor of the future. Often this can lead to very poor forecasts of future earnings, and as a result can lead to poor decisions about the value of assets such as farmland. In periods of rapid economic change investors can become overwhelmed with hype surrounding economic events, convincing themselves that things are only going to continue to improve or decline at an increasing pace. Again, these forecasts tend to lead to poor future earnings forecasts and poor investment decisions. This divergence of consensus or market expectations and what is reasonable or likely can last for substantial periods of time.

In summary, the current economic situation makes for a vibrant and fast-changing farmland market. While expectations about future earnings determine the current value of farmland, actual earnings will determine the performance of an investment in farmland. In other words, what an investor pays for farmland is determined by the consensus estimate of earnings potential, but the performance of that investment is determined by whether those returns actually materialize. Thus, it is important that investors think carefully about whether their projections of future earnings and economic conditions are realistic when purchasing assets such as farmland.

Based on current farmland values, it appears that investors believe that farm incomes will remain high and capitalization rates will remain low. Will these expectations materialize? In truth, it will be very difficult to determine whether these expectations are correct until hindsight provides the luxury of 20/20 vision. At this point, it appears that market fundamentals could justify prices. One situation to be concerned for is when investors must use arguments unrelated to market fundamentals to justify prices. Such factors typically involve debates over the magnitude of capital gains that landowners can expect, arguments that conservative collateral and lending standards need to be scrapped for higher loan-to-value ratio loans, development of new credit instruments with flexible repayment schemes or balloon payments to give more farmers a better “chance” to buy land, suggestions that if one doesn’t buy a farm today they’ll never be able to afford one, false hopes that farmland prices can’t go down because they aren’t making any more of it, or that inflation will always carry land values higher. If these discussions become common place, it is clearly time to assess whether the market has a sound view of realistic economic expectations. Let’s hope that time doesn’t come.