Abstract

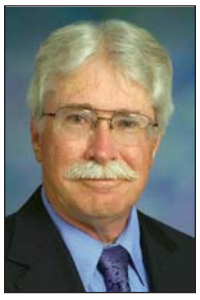
Farmland values have recently increased dramatically in the Midwest, attracting investors from outside of agriculture and causing many inside agriculture to question whether a speculative bubble has formed. This article addresses that question by presenting an economic assessment of the facts related to farmland values across regions of the United States to give a more complete outlook for Midwestern farmland prices. After presenting an analysis of farmland values, this article concludes with a discussion of some often-ignored factors that should be at the center of the current debate.

Rising Farmland Values: An Indicator of Regional Economic Performance or a Speculative Bubble?

By Steven C. Blank, Kenneth Erickson, and Charles Hallahan

Introduction

An article published in July 2011 by the Associated Press (Condon, 2011) implies that economic times are good on farms. The title states "Down on the Farm, Investors See Big Potential," and the article describes a remarkable increase in farmland values across the Midwest. It notes that investors from outside agriculture are being attracted to the production sector by the recent high prices for commodities, especially corn, and the resulting increase in the prices of land in the Midwest. The article illustrates the point by noting, "When 430 acres of Michigan cornfields was auctioned last summer, it was Janowski, a brash 33-year-old software executive, who made the winning bid. It was so high – $4 million, 25 percent above the next-highest – that some farmers stood, shook their heads and walked out. And Janowski figures he got the land cheap. 'Corn back then was around $4,' he says from his office in Tulsa, Oklahoma." Then the article notes, "Corn rose to almost $8 in June and trades now at about $7." Thus, for farmland investors the lure of high farming income expectations will push land values up in the future. "Buyers say soaring farm values simply reflect fundamentals. Crop prices have risen because demand for food is growing around the world while the supply of arable land is shrinking (Condon, 2011)."



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Traditional farmland valuation theory's presumption of a direct link between current and future production income and farmland values means that those values should serve as an indicator of economic performance for a geographic area. According to traditional theory, "In rural areas, agricultural land values are primarily determined by the income earning potential of the land, as measured by expected returns from crops and livestock (USDA, 2000, p. 30). This appears to justify the recent increase in farmland values. However, many economists are beginning to question whether the Midwestern income-land-price link has been stretched to the point of becoming a speculative bubble (Duffy). Condon notes, "The value of Iowa farmland has almost doubled in six years. In Nebraska and Kansas, it's up more than 50 percent." This raises the question, "Are recent increases in farmland values in the Midwest consistent with the region's economic performance or do they reflect a speculative bubble?"

This article addresses that question by presenting an economic assessment of the facts related to farmland values across regions of the United States to give a more complete outlook for Midwestern farmland prices. After empirically analyzing farmland values, this article presents a discussion of some often-ignored factors that should be at the center of the current debate. Finally, a definition of "speculative bubble" is derived to help answer the title question.

Background

The fact that average farmland values across the United States have risen for more than two decades masks the fact that long-run performance of farmland values has been unique for each location. Also, recent changes in the markets for farm real estate and the implications of those changes appear to be often overlooked by many buyers when assessing local agricultural land values. Therefore, to provide a long-run perspective illustrating the need for a modified view of farmland valuation, the next sections present farmland value data for the past three decades and a summary of the economic literature's explanation for the recent increases. Then, a simple analysis shows what types of new factors need to be added to valuation theory to make farmland values a better indicator of farm sector economic performance. From that list come implications regarding the question of a speculative bubble in current farmland values.

The Data, Nominal and Real

To begin, Table 1 presents farm real estate average values per acre in nominal and real dollars for the period of 1980 to 2010, as reported by the USDA. Data are presented for the entire United States, plus separate values for the three states with the highest levels of agricultural sales revenue: California, Texas, and Iowa. The farmland nominal value levels in the four columns on the left are quite different due to differences in the income potential of the crops produced in each state, but in each case the effects of the "farm crisis" of the 1980s is apparent. In each column values peak in some year during the early/mid-1980s, fall for a few years and then begin a recovery. Farm real estate values had increased rapidly in the decade prior to the "farm crisis," but the changes in lending practices that followed the crisis were supposed to have reestablished the fundamental link between land values and local commodity market performance across the United States. Variation between the aggregate national values and the values in each of the states calls for a closer look.

For the continental United States, the first nominal price peak of $823 per acre occurred in 1982, the bottom was in 1987, and the recovery was completed in 1995 when values rose above the level of the earlier peak. However, the market's fall was deeper and the recovery was even slower if real values are considered instead of nominal values. Using the Consumer Price Index to convert the average farmland values into *real* terms (in 2010 dollars) gives an early peak of $1,746 per acre in 1981 and a low of $1,032 in 1987. Thus, the real data show that the decline was steeper than indicated by the nominal data. There was a 41 percent drop in real values compared to a 27 percent drop in nominal values. Also, the U.S. farmland market, on average, did not completely recover until 2005 when real values passed the early peak of $1,746. And, finally, the nominal and real data both show that average U.S. farmland values hit their recent peak in 2008 from which they had not fully recovered through 2010.

For the three leading agricultural states, very different pictures emerge from the data in Table 1. Through 2010 Midwestern agriculture (as represented by Iowa's farmland values) had not completely recovered from the farm crisis of the 1980s, unlike California and Texas. In nominal dollars, California farm real estate peaked later and recovered sooner (in 1984 and 1991, respectively) than did the national average values. Texas farm real estate values peaked at $694 in 1985 and after their 1992 bottom finally rebounded by 2001. In Iowa, nominal farm real estate values peaked at $1,999 in 1981, hit bottom in 1987, and appeared to recover by 2003. However, these values do not reflect the effects of inflation. The real performance of farm real estate in the three states was worse, and it shows the differences in economic performance of the agricultural sector in the three different regions. California's average values recovered to its "pre-crisis" level by 2001,

and in 2010 *real* values were about 75 percent above their earlier peak (reached in 1982). Texas farm real estate did not recover to its 1985 peak until 2006, but in 2010 it was about 30 percent above the previous high. In contrast, Iowa still had not recovered in real terms through 2010. Its average value peaked again in 2008 before falling the next two years to a 2010 value that was only 91 percent of the real 1980 value. Clearly, the economic performance of the three state agricultural industries has varied over the last three decades, with Iowa and the Midwest being the weakest, not even performing as well as the national average.

The Economic Literature

The data discussed above show what the patterns in farmland values have been, but what has been driving those values? Economists have developed many explanations, the simplest being the traditional income capitalization model. As presented by Gloy et al. (2011), this model "... expresses current farmland values as a function of current income produced by farmland, the opportunity cost of capital or discount rate, and the constant rate at which income is expected to grow in the future," as expressed in equation 1:

(1)Farmland Value=Income/(Discount rate – Income growth rate).

Clearly, income that can be generated on a parcel of farmland is expected to be the main driver of that farmland's value, but the discount rate is an often-overlooked factor of great importance. Gloy et al. note that "the discount rate represents the opportunity cost of invested funds or ... the rate of return on risk-free securities plus an upward adjustment for the risk associated with the farmland investment." Finally, the third component – the income growth rate – "is the rate at which the returns to farmland are expected to grow" which is assumed to be "constant into perpetuity" (Gloy et al.). In summary, this simple model shows that current and future farm income and interest rates are each expected to influence farmland values.

Economic research has shown that another factor has become significant in valuing farmland: urban influence. Kuethe et al. reviewed the growing literature on this topic and found that "farmland values are higher near urban areas." Much of the early research was conducted by the U.S. Department of Agriculture. What the USDA called "urban influence" affects only about 17 percent of U.S. farm acreage. The USDA classifies only 515 counties in the U.S. as being both completely rural (contains no part of a city with at least 2,500 residents) and not adjacent to a metro area. In all remaining counties, the USDA says there is some degree of urban influence on land values. The USDA estimated that during 1994 through 1996 the average value of farmland which was not urban-influenced was $640 per acre, compared to $1,880 for urban-influenced farmland. Thus, they concluded that 66 percent of urban-influenced farmland market value was due to nonagricultural factors. "The market value for undeveloped farmland in these areas often begins to rise above its value based on agricultural returns alone, reflecting anticipation of eventual nonagricultural uses (USDA 2000, p. 30)." That explains why the urban states in the Northeast have had the nation's highest average farm real estate values for decades. In densely populated areas along the East and West Coasts, the amount of urban influence on farmland values can be significant.

Two other factors – policy effects and amenity values – may contribute to farmland values, according to a growing new academic literature.[1] There is now little debate remaining about whether agricultural policies influence farmland values, even the government acknowledges that there is an influence (e.g., USDA 2001). However, lots of questions remain about the nature, extent, and direction of the influence. It is easy to see that government policies aimed at increasing returns from farming activities would affect farmland values, yet other policies, such as land use restrictions, are less obvious in their effects. The effects of amenities on land values are parcel-specific and can be measured only with individual sales data, thus much less empirical research was done on this subject by academics until recently. As sales data began to become available, studies like that by Torell et al. began to show that "lifestyle amenities" (such as a desirable location and recreational opportunities) explained much more of rural land value than did the productivity of the land in many areas. The range of amenities and the scale of their effects on prices are often surprising.

Thus, the story will differ by location, but the message is the same: an increasing number of factors have been shown to influence farmland values, thus adding to the list of necessary "adjustments" to the traditional model. Agricultural productivity is the basis of the traditional theory of valuation (Flanders et al.), but a study by Huang et al. illustrates how involved price analysis has become. They estimated a model of Illinois farmland values using county-level cross-section, time-series data. Explanatory variables included land productivity, parcel size, improvements, distances to Chicago and other large cities, an urban-rural index, livestock production (using

swine operation scale and farm density measures), population density, income, and inflation. They concluded that farmland values per acre decline with parcel size, "ruralness," distance to Chicago and large cities, and swine farm density, and increase with soil productivity, population density, and personal income. Clearly, valuation models are changing!

The Relative Importance of Pricing Factors

With so many factors to be considered in modeling farmland values, a natural question arises: which one(s) is (are) the most important in today's market? To answer that question, a simple regression analysis was conducted. Farm-level survey data (USDA/ERS) collected annually by the USDA's National Agricultural Statistics Service and Economic Research Service from across the continental United States were used to estimate simple equations for farmland values over the 1996-2010 period. We had a total of 95,517 observations drawn from both a list of farmers producing selected commodities and a random sample of farmers based on area (USDA/ERS). The data include farms of different economic sizes across each region of the United States.

To begin, a single equation for the average farmland value was estimated for each of the ten geographic regions of the country defined by the ERS. The explanatory variables included were proxies for the factors identified here as influences on farmland values. Productivity of the land was proxied by two variables: revenue per acre and a productivity index. The cost of capital was used to represent the discount rate in equation 1. Urban influence was proxied by a county population density measure using data from the Bureau of the Census. Policy effects were proxied by the amount of government payments received per acre. Amenity effects are specific to individual parcels, thus they cannot be estimated using aggregated data and were, therefore, excluded from this analysis. Finally, a "year" variable was included to account for any temporal trends in the data. The "fixed effects" dummy variables for region and for year are meant to account for characteristics of the region omitted from the model, such as amenity effects.

Since stratified sampling is used to generate these complex-survey data, inferences regarding the means of variables for states and regions are drawn using weighted observations. We apply the USDA's in-house "jackknifing" procedure to estimate sample variances. That procedure involves linking fifteen annual farm-level ARMS surveys to form a pooled time-series cross-section, assuming that the survey design for each year is comparable. Hence, we are able to use the annual ARMS survey data to examine the key drivers of farmland values across space and time.

The empirical results of the analysis for each of the ten regions are presented in Table 2. The key result is that the proxy variable for the urban influence on farmland values – county population density by year – was significant in seven of the ten regions. This supports the growing realization that non-farm demand for farmland is increasingly influencing farmland values, even in areas such as the Corn Belt whose state economies were dominated by production agriculture in the last century. This result is consistent with the USDA's results which showed a dramatic increase in farmland value when a parcel was in an "urban influenced" area. Thus, the proximity of a farmland parcel relative to non-agricultural development is a key factor in pricing. This implies that no commodity can generate enough revenue to adequately compete with expanding urban development. As a result, some states use land-use ordinances (or other incentives such as separable development rights or conservation easements) to help preserve farmland in urbanizing areas.

The results show surprisingly little effect of farm income on farmland values; the revenue variable was significant in only two of the ten regions. The 1996-2010 period was, on average, one of very low farm income across most of the country. Therefore it is not surprising that this variable was not a strong driver of farmland values, contrary to traditional theory.[2] The Corn Belt was not one of the two regions with a significant effect from farm income. The only significant variables in the Corn Belt model were population density and the trend variable "year." Given the relatively low population of the Midwest, it is understandable that farmland values would recover slowly if only urban influence is driving those values.

The second component of the traditional valuation model in equation 1, the cost of capital, had better empirical results than did farm income. The cost of capital variable was significant in four of the ten regions and had a negative sign in each of those regions, as expected by the theory. Given that interest rates were falling during most of the data period, this variable helped increase average farmland prices.

The mixed results for farm income and cost of capital, the two components of traditional farmland valuation theory, do not seem to be consistent with the current wave of increases in farmland values

across the Midwest. Neither variable was significant in the analysis of the 1996-2010 data for the Corn Belt, so what has been driving investors to push up farmland values recently?

Overlooked Factors and Future Risks

There have been at least two factors overlooked by farmland investors as they assess the economics of the Midwestern agricultural sector. First, income levels in Midwestern agriculture are dependent on government policies. Second, those government policies may change soon.

Everyone agrees that Midwestern farmland prices have undergone a significant increase the last couple years (Gloy et al., Condon). After peaking in 2008, prices in Iowa fell the next year before beginning the current climb (Table 1). The rate of increase is expected to accelerate, with Iowa State University predicting a 33 percent increase in farmland values from November 2010 to November 2011 (Duffy). Everyone also seems to agree on the major factors behind the farmland price rise, the three components of the valuation equation, farm income, its expected growth rate, and interest rates. What no one seems to be paying attention to is the policy base for those factors.

Two major policy drivers have been pushing farmland values up in recent years: interest rates and the ethanol program. The Federal Reserve intentionally pushed interest rates down to stimulate the national economy over the past decade and they have kept their base rate at *zero* percent since the Great Recession began in 2008. What is generically called "the ethanol program" began with the Energy Policy Act of 2005 and was strengthened by the Energy Independence and Security Act of 2007 which mandated that 13.2 billion gallons of ethanol be produced annually in the United States by 2012 (Carter et al.). Ethanol is produced using corn in the United States (compared to sugar-based ethanol produced in Brazil), so the program caused a huge increase in corn demand, which led to huge increases in corn acreage. More than 30 percent of the U.S. corn supply was diverted into ethanol production during the 2008 crop year. Carter et al. note that the diversion had "...a significant impact on world corn prices because the United States typically produces about 40 percent of the world's corn and accounts for 60 percent or more of total exports. According to the FAO, the increase in global corn demand in 2007 was about 40 million metric tons, and 75 percent of that growth was attributable to ethanol production." The ethanol program may have originally been aimed at reducing our dependence on foreign oil, but it definitely raised corn prices which, in turn, sharply raised the incomes of farmers in the Corn Belt. In summary, both interest rate and ethanol policies have what Blank and Ayer called "policy cross-effects." Their effects are influencing markets not mentioned in the policy itself. Both policies have had favorable effects on farmland values, even if that was not their intended goal. In the case of the ethanol program, some media commentators have questioned whether the program may have been a deliberate attempt to boost the economy in a region that had not recovered from the farm financial crisis of a generation earlier.

Farmland prices have increased so fast lately that regulators and farmers are beginning to voice concerns. Condon quotes a farmer, "'I never thought prices would get this high,' says Robert Huber, 73, who just sold his 500-acre corn and soybean farm in Carmel, Indiana, for $3.8 million, or $7,600 an acre, triple what he paid for it a decade ago. 'At the price we got, it's going to take a long time for him to pay it off – and that's if crop prices stay high.'" What the farmer is alluding to is the value-to-cash rent ratio (analogous to the price-to-earnings ratio commonly used in stock markets), which describes the relationship between land prices and income. Currently, that ratio is at its highest point in modern times (Gloy et al.). Clearly, some Midwestern farmland markets may be experiencing a speculative bubble.

In the near future there are at least two sources of risk that could cause the bubble to burst. The first is the fact that interest rates cannot get any lower, so they will eventually rise as the economy improves or as the debt ceiling/default debate worsens. No matter what causes interest rates to rise, higher rates mean lower farmland prices. The second source of risk to the current wave of increases in farmland prices is the likelihood that the ethanol program will be dropped completely.[3] This could happen in the short-run as part of Congress' deficit reduction efforts. Many people outside the Corn Belt do not like the fact that corn farmers and ethanol producers are heavily subsidized by the government, especially when corn farm incomes and farmland values are so high (Stillwell). In the long-run, the ethanol program may succumb to the global pressure on the U.S. to reduce food prices by seeking other liquid fuel alternatives that have a lower impact on cropland use. Many countries, especially those poor countries that have to import food, have been urging us to use corn for food, not fuel (Sexton et al.). When this happens, the policy-driven demand for ethanol will collapse, thus eliminating much of the diversion of corn into that market and, ultimately, the resulting lower incomes for corn farmers will deflate farmland prices.

Price Bubbles

Price bubbles are inflated by expectations. This can easily be seen in equation 1 when considering the impact of the third (and often neglected) factor: income growth rate. Whereas the income and discount rate factors can be observed in the current period, the income growth rate factor must be estimated based on expectations of future income. Therefore, farmland price bubbles can form based on mistaken estimates of farm income performance. Unfortunately, there is another source of price bubbles.

Price bubbles can form based on mistaken estimates of the farmland market's performance itself. In other words, estimates of farmland value can be direct forecasts made by looking at farmland price data instead of being derived indirectly by using equation 1. Clark, Fulton, and Scott (1993, p. 151) note that "... if people expect land prices to rise, then it will be rational for people to pay a price that reflects this increase. A self-fulfilling expectation of this type is known as a rational bubble."

In summary, the academic literature has identified two types of price bubbles: rational bubbles, as described by Clark, Fulton, and Scott, and speculative bubbles. That literature also provides some empirical evidence on bubbles. For example, Clark, Fulton and Scott conclude that farmland values in the short run exhibit bubbles. However, missing from that literature are guidelines for differentiating between "rational" and "speculative" bubbles. Therefore, we offer some basic guidelines here.

Simply stated, the most important factor distinguishing between rational and speculative farmland price bubbles is whether or not the buyers are basing their expectations on the numerator in equation 1: income generated on the land. Rational bubbles are caused by short term, self-fulfilling price expectations which are based on expected production income. Speculative bubbles are caused by speculative buying which focuses on some "technical" aspect of land markets, not on the economic "fundamentals" of the underlying commodity market. This means that a speculative bubble has formed when farmland prices are too high relative to the agricultural production earnings generated from the use of that land (reflected in the value-to-cash rent ratio). Two guidelines are offered here to help identify a speculative bubble. First, a speculative bubble is indicated when the mortgage cannot be paid entirely with the land's earnings. The second indicator is when, in the case of a cash purchase (where there is no mortgage), the return on assets (ROA) calculated as the production income divided by the land's purchase price is lower than the ROA available from alternative investments. Neither of these guidelines will be met in a rational bubble.

Concluding Comments

In summary, the traditional theory that farmland values are influenced primarily by the land's ability to generate profits from agricultural production may still be true for some farms in some locations, but for most regions urban influence was the dominant factor in the valuation process, according to the macro-scale analysis done here. This means the income capitalization model needs to be augmented with a measure of urban influence. It is also argued here that policy cross-effects need to be considered in the farmland valuation process. Nevertheless, the results of the analysis in this study appear to support the idea that a speculative bubble has developed in Midwestern farmland values. Bubbles in asset prices are usually described as conditions in which a significant price decrease over a relatively short time period is possible.

There is an old saying in commodity futures markets, "What goes up comes down faster." Using equation 1 it can be shown how a big percentage drop in farmland values is likely, bursting the current speculative bubble.

Using a Midwestern corn farm as an example, the numbers currently in both the numerator and denominator of equation 1 create a frightening scenario for a faint-hearted investor. For the numerator we use gross revenue, ignoring the farmer's production costs so as to overstate income. As reported by Condon, corn prices are about $7-8 per bushel now, but have been $4 within the past year. That means the current farmland value based on $8 corn could fall by at least 50 percent if corn price returns to $4. Then, in the denominator, we have current interest rates at historic lows. These credit market conditions create a nightmare of small numbers: when rates are four percent, a one percentage point increase in credit costs represents a 25 percent increase in the denominator that will give a 20 percent lower farmland value. Finally, if farm income falls at the same time that credit costs increase, which is the most likely case in the next few years, equation 1 will yield a huge percentage decrease in farmland values (at least a 60 percent decrease using the numbers in this example and ignoring the decline in income growth rate: $8/4% = $200 vs. $4/5% = $80).

When it comes to evaluating the current market for Midwestern farmland, we may not have 20/20 vision until 2020. If a speculative

bubble does exist now, it will have burst by the end of this decade, given the historic market conditions at present and the likely shift in the policy environment surrounding agriculture. Farmland investors should recognize their risk exposure and manage it. For some, this may involve buying land close enough to an urban area that its price will be influenced by non-agricultural market conditions.

Endnotes

1 The appraisal industry has always considered these factors while the academic literature has only attempted to incorporate them into empirical estimates of farmland values over the past decade.

2 For most regions, farm incomes declined during the first half of this period (1996-2002) before rebounding. In the Corn Belt that rebound was very strong. For example, in Iowa net farm income was $2.1 billion in 2003, $5.7 billion in 2004, and $6.7 billion in 2008.

3 Congress allowed the 45 cents per gallon subsidy to ethanol producers to expire in January 2012. The requirements to use ethanol as a fuel are the sole remaining aspects of the program's effects on demand for corn.

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Table 1. Farm real estate average values, 1980-2010 ($/ac)

Year	Nominal Value				Real Value (base = 2010)			
	United States	California	Texas	Iowa	United States	California	Texas	Iowa
1980	737	1,424	436	1,840	1,719	3,321	1,017	4,291
1981	819	1,732	468	1,999	1,746	3,693	998	4,262
1982	823	1,900	539	1,889	1,654	3,818	1,083	3,796
1983	788	1,918	544	1,684	1,524	3,708	1,052	3,256
1984	801	1,981	612	1,518	1,492	3,691	1,140	2,828
1985	713	1,841	694	1,091	1,289	3,329	1,255	1,973
1986	640	1,730	594	873	1,132	3,061	1,051	1,544
1987	599	1,554	546	786	1,032	2,676	940	1,354
1988	632	1,575	544	947	1,053	2,623	906	1,577
1989	668	1,742	521	1,095	1,072	2,795	836	1,757
1990	683	1,884	507	1,090	1,055	2,910	783	1,684
1991	703	2,077	498	1,139	1,049	3,100	743	1,700
1992	713	2,157	488	1,153	1,040	3,147	712	1,682
1993	736	2,213	499	1,212	1,050	3,156	712	1,729
1994	798	2,210	515	1,280	1,114	3,086	719	1,788
1995	844	2,220	525	1,350	1,155	3,038	718	1,847
1996	887	2,400	540	1,450	1,191	3,223	725	1,947
1997	926	2,500	554	1,600	1,223	3,303	732	2,114
1998	974	2,610	593	1,700	1,273	3,410	775	2,221
1999	1,030	2,800	640	1,760	1,327	3,606	824	2,267
2000	1,090	3,000	680	1,800	1,374	3,781	857	2,269
2001	1,150	3,200	730	1,850	1,416	3,940	899	2,278
2002	1,210	3,400	775	1,920	1,467	4,121	939	2,327
2003	1,270	3,600	810	2,010	1,505	4,266	960	2,382
2004	1,360	3,800	855	2,200	1,570	4,387	987	2,540
2005	1,650	5,090	1,030	2,650	1,842	5,683	1,150	2,959
2006	1,830	5,360	1,190	2,910	1,979	5,798	1,287	3,148
2007	2,010	5,960	1,380	3,370	2,114	6,268	1,451	3,544
2008	2,170	6,440	1,550	3,950	2,198	6,522	1,570	4,001
2009	2,110	6,600	1,550	3,850	2,145	6,708	1,575	3,913
2010	2,140	6,700	1,630	3,900	2,140	6,700	1,630	3,900

Source: "Land Values and Cash Rents, 2010 Summary" USDA NASS, ISSN: 1949-1867, August 2010. The real values are calculated using the CPI, adjusted to make 2010 the base year.

Table 2. Regression results for farmland value equations by region ($/acre), 1996-2010

Variable	Northeast	Lake States	Corn Belt	Appalachia	Southeast	Delta	Southern Plains	Northern Plains	Mountain	Pacific
Revenue Per Acre	-0.70	-1.47*	0.03	0.27*	0.27	0.22	-4.29	-0.19	49.20	-1.50
Govt Payments Per Acre	-10.80	1.30	-0.01	-7.22	3.37*	-4.85*	44.09	5.21*	0.50	-0.50
Cost of Capital	-114.10	14.07	21.69	22.29	-123.66*	-25.38*	-41.32*	-23.73*	-366.20	527.70
Productivity	878.30	1,633.5*	218.93	-12.78	70.43	61.84	4,457.24	390.30	-48,970.2	1,705.00
Pop Density	16.20	3.70*	9.47*	5.92*	17.58*	12.58*	2.01*	2.94	28.20	31.10*
Year	639.40	443.12*	287.27*	267.35*	494.89*	240.48*	111.61*	92.82*	631.40*	1,502.10*
R squared	0.08	0.19	0.22	0.27	0.07	0.28	0.05	0.10	0.06	0.07
observations	5,914	12,890	20,538	8,902	8,047	7,280	7,993	8,163	13,457	9,296

* Denotes statistical significance at the 90% confidence level (or higher)