1996 Farm Real Estate Sales Prices Up Sharply Across Minnesota

Steven J. Taff

To probably no one’s real surprise, our newest farm real estate price study shows the state’s farmland selling at a higher level in 1996 than it did in 1995. The high prices earlier in the year are largely responsible for this bump—and these didn’t last long.

Economists teach that land prices reflect people’s future income expectations—how much profit they think a piece of land will return year after year after year. Higher crop prices (all else equal) lead to higher farm profits, which lead to higher annual rents, which lead to higher land prices.

The speed at which the crop price/rent/land price connection operates can be called the velocity of price transmission. This year that velocity seemed pretty quick, even though the monthly land prices didn’t track crop prices all that closely (Figure 3). Of course, we know now that the crop price boom was a spike, not a new plateau. December crop prices are actually below the level of a year ago. But because our land sales records stop at September 30, 1996, we’ll have to wait until next year’s study to find out if price transmission works as fast going down as it did going up.

In this article, I examine our common assumption that such annual movements in the average price of observed sales is an accurate reflection of movement in the values of all Minnesota farmlands. Just what do observed prices tell us?

The more I examine the data, the less confident I am that the ways in which it is commonly reported and used are fully justified. My concern is based on both the sparseness of the sales (less than 1% of the state’s land is sold each year) and on the representativeness of the properties that were sold.

My conclusion is that our study, however sparse the data might be, does accurately reflect a broader reality. Much agricultural land in the state did increase in value last year. Land sales studies such as this are still the best analytical tool we have for assessing overall land values—if they are reported honestly and applied cautiously.

Who Cares?

Why do we care about the price of farmland? I can think of three reasons.

First, we’re a scorekeeping society. We want to know “how we’re doing,” and we’ve decided to accept the average price of farmland as one indicator of the general level of prosperity in rural America. If the price of land goes up, then people in the country must be doing better. It’s the bucolic counterpart of our infatuation with the Dow Jones Index—the Dow goes up and we all celebrate, because “the economy” is better. Both notions are largely unsupported by either economic science or common sense, but both are deeply embedded in the public psyche.

A second reason for tracking land price averages is to decide if Land is a

Using Surveys and Farm Records to Track Farmland Rental Rates

Bill Lazarus and Jim Molenaar

Record crop prices and government program changes made rental rates a hot topic in late 1996. But how do we know what those rates really are? For years, we got farmland rent information from a University of Minnesota survey of township boards. The most recent survey was conducted in late 1994. Since then, we haven’t had the resources to conduct a statewide effort. But there are two other sources of rent information that might fill the void.

(See Prices page 2)

(See Rental Rates page 7)
Calculating The Price of Land

What we actually observe on the land market is a completed transaction. We know the buyer and seller, the total amount paid, the terms of the sale, its location, the size of the parcel, and (sometimes) the productivity of the soil. Importantly, we don’t know anything about all those other land parcels in the state that happened not to sell that year. Yet it is the hidden values of those lands that we frequently want to know about.

The sales we report here are those that remain after we filter the set of all “agricultural sales” (those for which the buyer indicates no intention of changing use) reported to the Minnesota Department of Revenue over the October 1, 1995-September 30, 1996 “record year.” For present purposes, we analyze only sales of 40 acres or more at least half of which are tillable. We include only those sold via either a warranty deed or a contract for deed. We are left with 1,584 “farmland” sales covering 188,000 acres.

From the basic sales information, we calculate a per-acre price by dividing the total parcel price (unadjusted for terms and time including buildings and improvements) by the number of deeded acres in the parcel. Although no single calculation serves all purposes, this particular price is comparable with others used in series such as the USDA survey (shown in Figure 4) and Professor Philip Raup’s long running Minnesota land studies which this report succeeds.

Figure 1 shows the distribution of per-acre prices for 1996 Minnesota farm real estate sales. The figure casts doubt on the usefulness of using a single number to capture all the information contained in the entire distribution of prices. Nevertheless, a single number is what we generally ask for, and its movement from year to year is what we commonly use to indicate “changes in land prices.”

Figure 2 provides three prices, none of which alone adequately describes the set of prices pictured in Figure 1: the transaction mean, the area mean, and the median. The first is simply the average of all the individual sales’ per-acre prices. The second is an average of sales prices weighted by the size of the parcel. The median is the middle price: half the sales were at a higher price, and half were lower.

Following our own convention of past years, as well as those of other land market studies, we report here mostly the area mean, which can be thought of as the sales price of a typical acre. That’s the type of average used in all the ensuing figures—except Figure 5. There I try to capture more of the information embedded in the distribution of observed sales prices by slicing the distribution of each year’s sales at the median, the middle price. By slicing each half once again, I find the prices below which 25% and 75% of the sales lie. A similar slicing gives us the 5% and the 95% prices. So, for example, 5% of the 1996 sales were lower than $300, the bottom mark, and 25% were higher than $1,350, the next-to-top mark.

This portrayal helps us ignore the extremely high or low prices and focus on the price distribution, not just the single average price. It’s apparent that a long run increase in average prices has been due more to movements of higher-priced properties. The 25% line has hovered around $400-500 since 1989, while the 75% line has risen from around $1,000 to nearly $1,400 per acre—up $200 since last year alone. There is, however, a noticeable increase across all price levels this past year.

Excluding Buildings

Because most of the series reported here include the value of buildings, it’s better to say we’re tracking the prices of farm real estate, not of farmland itself. That is customary in the land price literature.
Could the jump in farm real estate prices be caused, not by increases in the land itself, but by increases in the sales price of buildings or a disproportionate number of sales with buildings? Figure 6 shows my attempt to answer the question. (The short answer is No.)

The dashed line is the same average farmland price reported in Figure 2. What I call “bare land” is the average of sales prices of just those parcels with no buildings—1,047 sales out of 1,584. The “tillable land” price series results from the more elaborate procedures we use in preparation of the annual Minnesota Agricultural Land Valuation Schedule, which county assessors use for their estimates of future land prices. Essentially, our procedure subtracts out the estimated value of any buildings and non-farmland values for each parcel and then calculates the remaining value on only the tillable portion of the parcel.

It’s clear that the “purer” land price series has moved in lockstep with the total. Our observed run-up in average farm real estate prices is attributable to the land itself, not just to the buildings.

Parcel Size

Figure 7 shows the relationship of parcel size and the price paid on a per-acre basis. (As before, this is total unadjusted price divided by deeded acres.) The forty-acre multiples common in Midwest land transactions are evident. Note the massing of sales at 40, 80, 120, and 160 acres especially.

One might be tempted to exclude some of the over-$3,000 sales as “non-agricultural”—despite their buyers’ claims to the contrary. For this study, however, I have chosen to leave them in. I have little evidence that they were not agricultural. Most of these sales were on the periphery of the Twin Cities metropolitan area, in Dakota, Rice, Washington, Anoka, Sherburne, and Wright Counties—all increasingly subject to development pressures.

People have to pay high land prices in these areas, even to stay in farming.

Regional Movements

Figure 9 and Figure 10 give a region-by-region summary of sales information. (Figure 8 shows the boundaries traditionally used in reporting distinct Minnesota land sales studies.) The table is a modified version of the approach used in Figure 5. I report the 5%, 25%, etc. sales points for each region. In the graph, I show the movement of the average sales price (the area mean) for each region. (Keep in mind that the area mean is considered the best single number to capture the entire set of observed prices, but the “quantiles” in the table better portray the distribution of those prices.)

A final take on the regional data is provided by Figure 11, which shows the relative movements of prices. For each reporting district for each year, I divide the average price by the 1989 price. That “normalizes” all prices to an index value of 1.0 for 1989. The steeper the ascent in this price line, the faster prices in that region have risen. I’ve selected three major crop regions for comparison to the state as a whole.
Composition

These sales numbers are for a completely new set of lands each year, which leads to what I call the Problem of Composition. Briefly, if we have proportionately more sales of lower-priced land this year compared to last, then averages (however defined) of this year’s sales might be lower than last year. This is not because all parcels in the state (which we don’t observe) went down in value, but because the preponderance of lower-priced sales pulled down the calculated average.

This has always been an especially vexing reporting problem in the Red River Valley (the Northwest region in Figure 8). There are two distinct land markets there, with dramatically different average prices, largely linked to land productivity. Figure 12 tracks these two markets. In 1994 and 1995, the ratio of lower-priced non-valley sales to higher-priced valley sales went from 6:5 to nearly 3:1. It was about 2:1 this year. While this partly explains the drop in average region prices after 1993, the figure shows that even prices within the valley dropped. (Of course, these are averages, similarly subject to the Problem of Composition. There is no escaping it.)

What Are We Really Seeing?

Remember that each year all we see are prices from properties that happened to sell. We rarely see the same property sell more than once over a period of several years, so each year’s sales set is made up of different properties. It is premature to say, therefore, that our sales data tell us all land values are increasing or decreasing. Readers may choose to make that inference, but must be cautious in making this leap from the yearly “sampling” of the total population.

All these numbers really tell us is that the average (or 25% level, or whatever) of those properties that happened to sell this year is higher than the average (or 25% level) of those properties that happened to sell last year. Only if we assume that each year’s sales set sufficiently represents all land (sold and unsold) can we use the average prices of the sales set to estimate the average values of all farmlands in the state. (This assumption, usually unstated, underlies all surveys and sales reports that attempt to estimate expected land prices.)
Is this a good assumption? Does the set of sales reported here “adequately” represent all farm real estate in Minnesota? There are really two potential problems: not very many sales and not very representative sales.

Are There Enough Sales?
The state has roughly twenty million acres of farmland, according to the Census of Agriculture. Each year, somewhere around 200,000 of those acres are sold. So we have a turnover rate of around 1% overall—a little higher in some areas, a little lower in others.

That’s not a very high percentage on which to base inferences about land prices. But it’s all we’ve got, and Figure 4 suggests that our observed sales averages move roughly in step with two other land price series: the USDA’s annual survey of landowner opinions and the county property tax assessors’ aggregate estimates of market value within their respective jurisdictions. (Neither of these series, however, suggested the downturn in prices that our UM study showed in 1994 and 1995.)

One way to deal with the sparseness of sales data is to combine sales from over several years. Figure 13 shows average county prices since 1989, adjusted for inflation. The implicit assumption here is that any year-to-year price differences (after inflation adjustments) are due to the vagaries of annual sampling. This permits us to average prices across over 12,500 property sales and to examine price differences among jurisdictions.

Are the Sales Representative?
How good is the assumption that each year’s set of sales is “representative” of the underlying universe of values for all properties? We need some way to characterize each year’s sales and to assess the invariance of those characteristics over time. Figure 14 shows that the relative proportions of deed types have changed since 1989: contracts for deed have fallen from 50% to now below 30% of the total. This may reflect an increasing liquidity on the part of buyers or an increasing reluctance by sellers to be locked into long-term arrangements. But Figure 15 shows that the average size of parcels sold and the average productivity of those parcels (as measured by the CER, the Crop Equivalent Rating) have remained unchanged.

In all, I judge that the set of sales observed in 1996 is similar enough to those observed in 1993 or in 1989. Because each year’s “sample” is consistent, I have some confidence that the observed changes in average prices from year to year do indeed reflect changes in the prices of all farmland in the state.

My Opinion, for What It’s Worth....
Observed farm real estate sales prices jumped considerably in 1996. This increase held across most geographic areas and for both bare land and total real estate. It was most pronounced for mid-level to higher-priced properties. It would seem that the high crop prices of
early 1996 were quickly transmitted into higher land sales prices.

Readers may recall that my conclusion last year was that the prices being paid then clearly exceed the capacity of those parcels, on a per-acre basis, to return enough income to justify the buyer’s investment. This year’s results, a dramatic upturn in average prices unsupported by long-run higher crop prices, give me an even queasier feeling.

I worry that the current farmland market in Minnesota is overheated. Crop income alone cannot justify the prices we’re seeing. One can only hope that buyers have other reasons that will prove to be financially prudent.

I worry that a collective amnesia besets us. We’ve conveniently forgotten that the land price boom of the 1970s was quickly followed by a bust in the early 1980s. Will that cycle repeat itself? I don’t know. But I do think that potential buyers should think twice, then think again, before rushing into a purchase. There are many good reasons to buy farmland, but there is no good reason to pay too much.

The basic sales data used in this report is available for readers’ own analyses at http://apecon.agri.umn.edu/ or contact the managing editor at the address listed on the back page of this report.
in at least some parts of the state. Surveys by county extension offices and farm business record summaries. In this article, we examine each data source and compare their findings.

**Extension Office Studies**

In many counties where interest in farmland rental rates is high, county extension offices insert questionnaires into extension or USDA Farm Service Agency newsletters that are mailed to farmers. Thus, the population surveyed (farmers) is different and larger than that in the University’s state-level survey which questioned only one board member in each township. Farmers presumably report rents that they themselves have paid, whereas township board respondents were asked their estimate of the “going rates” in their area.

The extension questionnaires usually ask for details that were not on the state survey, such as crop base and tile drainage. If enough farmers respond, these surveys can provide a representative and descriptive view of the farmland rental situation in those counties.

The counties that conducted local rent surveys in 1995 and/or 1996 are shown in Figure 1. The available surveys cover counties in the south central, southwestern, and west central parts of the state, as well as the southern and eastern parts of the metro area. We have no record of any surveys from the northern half or the southeastern corner of the state. (Figure 4 shows the rental rate region boundaries used in this report.)

Figure 1 summarizes the rental rates reported for the surveyed counties for 1995 and 1996, along with projected rates for 1997. In all, 1995 data are available for 24 counties. Data are available for 19 counties for 1996, including two that were not surveyed in 1995. In eight counties, the 1996 survey asked about projected 1997 rental rates.

For the 17 counties with both 1995 and 1996 data, most showed slight
increases of between one and five percent (Figure 2). Three showed declines, two were unchanged, and three showed increases of over five percent.

Because the 1995 and 1996 data are from two different sets of surveys with different samples of farms responding, caution must be used when comparing the two sets of data. The 1997 projections are from the same respondents as the 1996 data. For the eight counties with 1997 projections, increases of three to six percent were expected.

Farm Records Data

How accurately do these surveys reflect what farmers actually paid? A second source of rental rate information are farm business records from the Farm Management Programs of the Minnesota State College University (MnSCU) system and the Minnesota Farm Business Management Associations (FBMA) coordinated by the University. The records are summarized annually by the University using FINPACK Version 8.0’s FINAN module.

The record summaries are published in six regional MnSCU publications and two regional FBMA publications. The FINAN crop enterprise section includes data for each crop grown, including tenure type (owned, cash rented, or share rented), acreage for each tenure type, and dollars of rental expenses paid, along with other direct crop expenses. The summary publications include per acre crop enterprise analyses split out by land tenure (owned land, cash rented land, and share rented land) for the major crops. Average rent paid per acre is available by farm record region and by crop.

A disadvantage of the farm record databases as a source of information for upcoming land rental negotiations is the two-year time lag from negotiation to reporting. For example, this article summarizes rates paid in 1995, which would have been negotiated in late 1994. The records were summarized by MnSCU and FBMA in early 1996. So the first time the 1995 information could be used was this summer and fall for the 1997 crop year.

More timely surveys will continue to be needed to assess the current state of the land market, but the farm records do give us a retrospective “reality check” on the accuracy of the survey information.

This report summarizes the rental expenses paid by the MnSCU and FBMA farmers, reported differently from the way the data appear in the
published regional summaries. The procedure used to extract the information summarized in this report was to sum, for each farm, the rental expense paid on all crop enterprises on cash rented land and acres of those cash rented crops. Both cropped and setaside acres were included. Then total rental expense paid was divided by the total rented acres to arrive at a rental rate per acre for the farm. We excluded from these any pasture, CRP land, or miscellaneous crops such as cranberries, apples, and cordwood.

The database included 1,451 farms with cash rented cropland. Of these, 1,235 were participants in the MnSCU program, and 216 were FBMA farms. There were 104 farms with cash rented pasture land, 85 from MnSCU and 19 from FBMA.

The rental rates were then aggregated by county, region, and the state overall. County level data are listed here only for counties with at least twenty reporting farms.

**Observed Rental Payments**

There is no single “going rate” for any county. Rather, there is a distribution of rates from low to high. So, how do we best describe the distributions? The measures we use here are:

- **median (50th percentile)** - the rent where there are an equal number of farms with higher and lower rates.
- **20th percentile** - twenty percent of the farms paid this amount or less.
- **80th percentile** - twenty percent of the farms paid more than this amount.
- **farm mean** - a simple arithmetic average of all farms’ rent per acre. Each farm counts equally, regardless of acreage.
- **area mean** - total rent paid by all farms divided by total acres. Large farms count more than small farms in this measure.

The median rates are shown on the map in Figure 2 for the 29 counties that have 20 or more farms covered in the records. (Figure 4 delineates the boundaries of the ten regions, plus the metro counties.)

Figure 5 shows all of the measures for these counties. It’s interesting to note the relationship between the county medians and the farm and area means in this table. The median is probably the best measure to use for rent summaries because it is affected less by extreme high or low values than are the farm...
and area means. The area mean is higher than the farm mean in most of the counties with sufficient farms to report (24 out of 29). Because large farms count more heavily in the area mean than in the farm mean, we can infer that rental rates are generally higher on large farms than on small ones.

The data do not tell us how many separate parcels are rented by each farm operation, so we cannot tell for sure what the relationship is between individual parcel size and rental rate.

Figure 6 shows the rental rate measures by rent-reporting region and for the state overall. The median rate for the state was $62 per acre, with 20% of the farms paying $30 or less and 20% paying $87 or more. For the regions, the medians and farm means are much closer than for the individual counties.

Twelve counties had a sufficient number of farms with farm records to permit a comparison with extension surveys from the same year (Figure 7). The survey and payment data seem fairly close overall. The county survey mean rents per acre were higher than the records median rates in five of the twelve counties, lower in five, and the same in two counties.

The county survey mean rents per acre were higher than the records mean in seven counties. The greatest discrepancy is in Watonwan County, where the survey mean of $98 per acre was $14 higher than the records mean, and $7 higher than the farm records median. Pipestone and Swift Counties also had fairly large differences between the survey mean and the records mean, although in Pipestone the records median was only $2 less than the survey mean.

Pasture Rental Rates

Pasture rental has not been given much attention in past surveys, but it is of interest to some producers. There were 104 farms in the MnSCU and FBMA databases that rented pasture land on a cash rental basis, with half of the farms located in two regions in the northeastern part of the state. A summary of pasture rental rates paid by two regions and for the state overall is shown in Figure 8. The median rate for the state is $6 per acre. The 20th percentile is zero, indicating that at least 20% of these farms paid no rent on the pasture land. The 80th percentile is $16 per acre.
Resources have not been available at the state level to conduct farmland rental surveys since 1994, but there are two other sources of rental information that can fill the void in at least some parts of the state: surveys by county extension offices and farm business record summaries. The county surveys cover the south central, southwestern, and west central parts of the state (with the exception of Brown County), and the southern and eastern parts of the metro area.

Data from 1995 farm business record summary databases are available for 29 counties, giving fairly good coverage of the state including a few counties in the northwest and southeast. In addition, the records provide a limited amount of information on pasture rental rates which have not been included in the county surveys. On the whole, the average rental rate reported in extension surveys is close to the actual rental payments reported in the farm business records.

For more rent survey information, contact your county extension office.

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**A New Price Index?**

Economists use indexes, like the widely reported Consumer Price Index, as a quick gauge of how much more an item costs today than it did last year—or in 1950. Trouble is, the CPI (and its counterparts) are usually reported in terms of some “base” year (1982-83 is what we presently use) that makes it hard to link to today’s prices.

In this chart we’ve converted the CPI so it more naturally shows what many people want to know: how much more does it cost to buy something today than it did in some previous year? To use the chart, simply find the “multiplier” on the vertical axis associated with the year you’re interested in. Multiply that number by the price of the item in that year to get what it would cost today. For example, a house that sold for $40,000 in 1973 would sell for about 3.5 x 40,000 = $140,000 today. The reverse works, also. A house selling for $140,000 today would have fetched $140,000/3.5 = $40,000 in 1973.

All this, of course, assumes that the prices of the item you’re interested in—houses, in our example—were subject to the same inflation as all consumer goods in aggregate, measured by the CPI. It also assumes that the goods haven’t changed over the years, that the house in 1945 is essentially the same today. This second assumption is more plausible for houses than it is for goods like computers. These concerns underly recent proposals to change the way the CPI is calculated. Small revisions can have dramatic effects on our calculations. For example, the alternative index shown in the figure results from whatever changes in CPI calculation that would result in a reduction of 1% in each year’s inflation rate. If the alternative index is “correct” that $140,000 house would have cost 140,000/2.9 = 48,300 in 1973.
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