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1998 Farmland Sales Don't Support "Crisis" Talk—Yet!

Steven J. Taff

Despite dramatic drops in livestock and crop prices, average Minnesota farmland prices continued to move upward in 1998. This apparent contradiction should surprise no one, once it's thought through.

Economists commonly look to sales prices to help understand land markets. In our language, we use observations of what land sold for in the past (prices) to form expectations about what it will sell for in the future (values).

In addition, we claim that prices for capital assets like land reflect, in part, the long-run earning potential of that asset. If buyers and sellers—"the market"—thought that the spike in land prices of a few years ago was an anomaly rather than the "rightful" price level, then land prices shouldn't have dropped much since then. Indeed, our studies show little response to that dizzying episode. There was no spike in land prices in 1996 or 1997, even though crop prices rose—and then fell—precipitously.

If buyers and sellers don't expect the current (late 1998) commodity price doldrums to persist for more than a year or two, then their expectations about more "normal" future earnings from land should keep current sales prices fairly stable. And indeed, that's what we've seen in Minnesota as we move into 1999.

If there is to be any near-term downturn in land prices, I would expect it in areas of the state where farm problems are more of the structural than of the cash flow variety. Landowners in deep financial straits—brought about by year after year of yield or price difficulties—might be willing to sell land for far less than it might fetch in "normal" circumstances. These sales would perhaps be

of sufficient magnitude to move the average sales prices downward in those areas.

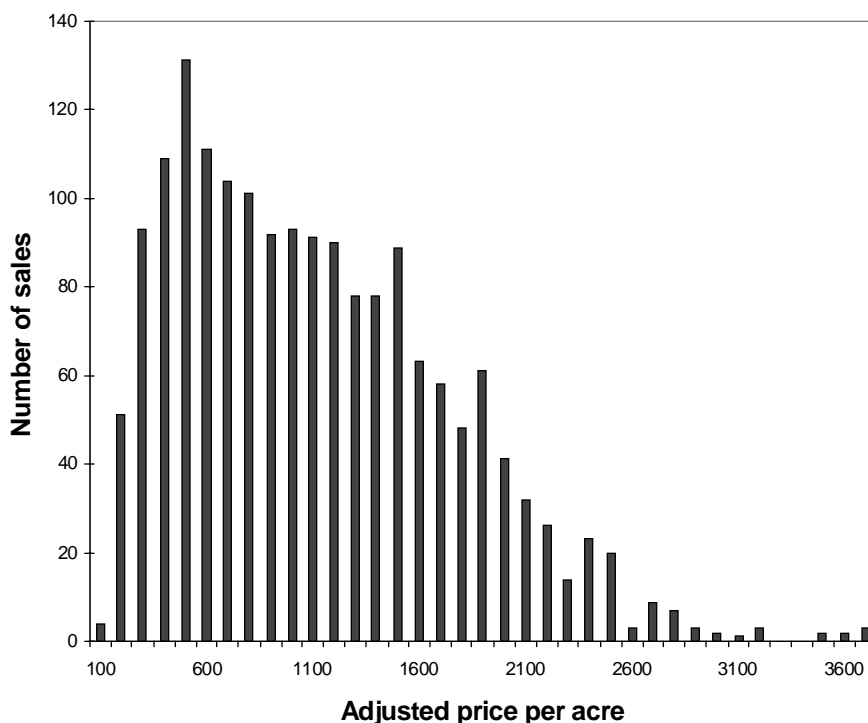
It would be nice if we could also read something into the *number* of sales that are reported each year. If the number of sales goes up considerably compared to the year before, it could be because many farmers are going broke and were forced to sell their land.

But what if the number of reported sales is down substantially? One could

make a financial distress story out of this evidence too. There might be a large number of distressed farmers, but the price they felt they could get for their land might be so low that they decided not to sell at all.

So we're left with prices of reported farmland sales. Do they support talk of a farm crisis? To find out, we need to do the numbers.

Figure 1. Distribution of 1998 Minnesota Farmland Sales Prices



UNIVERSITY OF MINNESOTA

Extension

S E R V I C E

The University of Minnesota Farmland Price Study

Because land prices in Minnesota vary widely across regions, counties, and townships, attempts to lump them into single numbers such as an average price can lead to serious errors of interpretation. Having offered that caution, I'll now provide average land prices within and across the state.

This report analyzes actual farmland sales prices, not survey estimates of farmland values. As far as I know, Minnesota is the only state that does this consistently. The 1998 averages I report are for transactions during the "record year" of October 1–September 30. Land values reported in other studies (for example, those tracked in figure 3) are averages of estimates made in 1997 for land that might sell during 1998.

Sales prices reported here have been adjusted for terms and time and combined into reporting districts (see map on page 4), which are coterminous with those used by the Department of Agriculture's National Agricultural Statistics Service (NASS).

I use several different descriptive statistics to examine the data. Means, or averages, are weighted by the size of the parcel (so one can speak of a "typical" farmland acre). Medians are the halfway point on price rankings such as the histogram shown in figure 1.

Let me restate my annual caveat. These are average land prices, not average land values. I can tell you with great confidence what happened in the state's many land markets last year, but it's up to you to try to figure out what might happen next year.

Where Do the Data Come From?

Each November, Minnesota counties are required to report all land sales to the Department of Revenue. These reports form the basis of the present study. The data set includes all sales that the assessor deems "arms-length" (independent) and for agricultural land uses, both previous and subsequent to the sale.

Because some sales are not actually reported to the state for several months after the reporting deadline—and there are some, if not many—I continue to urge caution in using my data (available

on the Web through my home page, at the address below) at lower than a multi-county level. All the sales in the data set are valid but not all valid sales are included.

I am in the process of recovering missing data from previous years but this won't be available on my Web site until spring. However, conversations with state and local officials convince me that we can call this data set "all Minnesota farmland sales between October 1 of the previous year and September 30 of the present year," and not be too far off the mark.

I further screen the reported sales to exclude sales less than forty acres (on the grounds that these probably aren't really "agricultural") and those in the seven-county metropolitan area (on the grounds that development potential on these parcels probably swamps agricultural potential). For each sale that remains, I know the sale price, sale date, parcel size, terms of sale, and other pertinent characteristics. From these I adjust the price to reflect a common full price at a hypothetical January 1 sale date.

For more detail on my procedures, check out the previous years' reports at <http://www.extension.umn.edu/Documents/F/L/ag237.html>.

The Sales at a Glance

I'll generally let the accompanying tables and graphs speak for themselves, so you're spared a repetition of what is apparent by inspection. I'd rather spend my text on analyses of where the data came from and how we use and abuse them. All the data for this year's and several previous years' reports are available from my Web site, <http://apecon.agri.umn.edu/faculty/sjtaff>.

Figure 1 is a histogram of sales prices. It shows the number of transactions in each price range. The higher the bar, the more sales were observed in that range. Summary statistics are shown in table 1 for the entire state and in table 2 for each district.

Most transactions were for 160 acres or fewer, and the bulk was at forty-acre intervals of 40, 80, 120, and 160 acres (figure 2). This pattern reflects both the land survey origins of midwestern farmland boundaries and the fact that practically nobody buys whole farms anymore. Most purchases (and for this I have only anecdotal evidence based on discussions with local lenders and real estate professionals) are justified under the argument that additional land permits the buyer to more efficiently use existing equipment.

Table 1. Minnesota Farmland Sales: 1998

	Number of sales	Acres sold	Average price (dollars/acre)	
			Mean (acreage weighted)	Median
1995	1,435	181,620	774	759
1996	1,579	187,276	912	901
1997	1,634	205,886	939	916
1998	1,746	221,127	1,011	995

Table 2. Minnesota Farmland Sales by District: 1998

Reporting district	Number of sales	Acres sold	Average price (dollars/acre)	
			Mean (acreage weighted)	Median
North West	216	35,267	471	385
West Central	345	46,404	859	800
Central	365	42,587	1,029	991
East Central	140	13,071	750	593
South West	237	32,740	1,216	1,305
South Central	200	20,881	1,839	1,843
South East	185	23,068	1,367	1,304
State	1,746	221,127	1,011	995

Figure 3 arrays three different and reasonably consistent series to see how my sales price averages compare to land value estimates generated by two other methods. It's instructive to examine each in some detail.

Each spring the USDA reports an estimated average price of farmland plus buildings for each state, as of January 1 of that year. The data come from a sample of land parcels throughout the country (some 7,000 in all), conducted the previous fall.

Owners of land within each sampled parcel are asked what they think their land is worth (its expected sales price, or value, in our terms). Their responses are aggregated to give a statistically valid average for the entire state.

The USDA approach can ensure that the state average is a valid summary of the individual owners' valuations, but it cannot, of course, ensure that individual owners know what their farmland is worth in the first place.

The second series in figure 3 is based on annual reports filed by county assessors that aggregate all farmland value estimates and all farmland acres for each township, as of January 2 that year. The underlying parcel-level value estimates are calculated by the assessors the previous fall.

From these county reports, I compiled total agricultural values and total deeded acres for each township for which I have data for the entire ten-year reporting period. These 1,838 township per-acre averages (agricultural value divided by deeded acres) are then averaged (weighted by total township agricultural land extent) for each year and reported here as a single statewide estimated land value.

These two value series can be seen to converge in recent years because the assessors' collective estimate has risen more rapidly than the USDA's collective landowners' estimate. Our University of Minnesota study fairly consistently tracks the USDA numbers, but it tends to run approximately \$100 lower.

For the past ten years, at least, movement in the statewide average USDA estimate of value (done at the end of the previous year), is a reasonable predictor of movement in the statewide average of actual transactions (occurring over the course of the succeeding year).

Unfortunately, the value of knowing

Figure 2. Distribution of 1998 Parcel Sizes

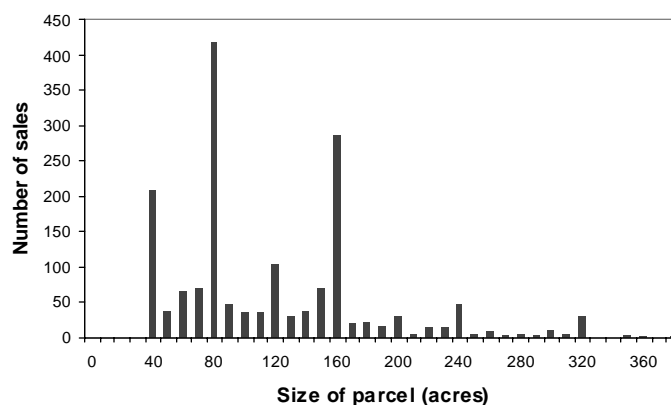
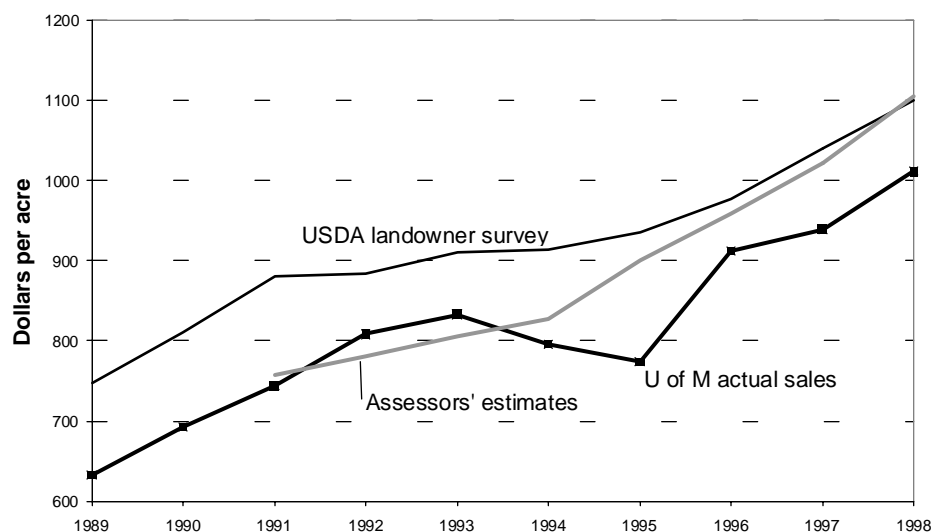


Figure 3. Average Minnesota Land Values and Sales Prices



this statewide average is—to the analyst, to the property owner, or to the general public—relatively low. There is simply too much variation in land prices in Minnesota to make a single average useful for any but crude storytelling purposes. Later in this article I'll discuss construction of a new price index that promises to make single statewide numbers more meaningful.

Location Matters in Farmland, Too

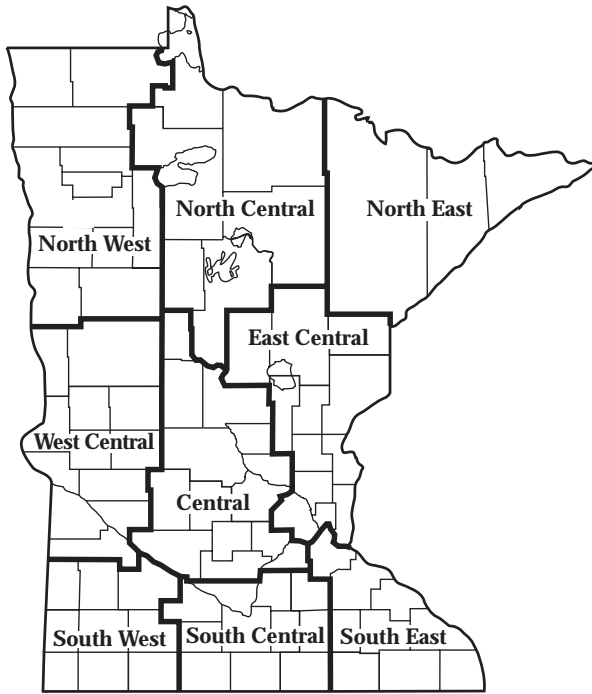
There are nine reporting districts in Minnesota (figure 4). As shown in figure 5 for three selected districts, price

movements differ dramatically across the state. Average price increases since 1989 vary from over 80 percent in the South Central district to practically zero in the North West district.

Underlying these average price movements is a change in the spread of prices over time (figure 6). For each district for each year, essentially the entire range of per-acre sales prices is shown by the span of the vertical lines. For example, 1998 sales in the South Central district ranged from about \$500 to nearly \$3,000 per acre.

The median price (the price at which half the sales were higher and half were

Figure 4. Farmland Sales Reporting Districts



lower) is indicated by the horizontal bar within each chart. The box on each year's range shows the boundaries for half of the sales, so 25 percent of the sales lie above the median but still within the box. This is called the interquartile range. So, for example, the 1998 median price for the South West district was about \$1,300 per acre and half the sales fell within the \$900–1,600 range.

The pattern of rising medians and broadening interquartile ranges for many of the districts suggests some of the statistical reasons for the observed increases in average prices. While many lower-price sales still occur, there has been a rise in the size of the higher-price sales and a general upward shifting of the mass of the price distribution.

The Valley—Always a Different Story

The Red River Valley consists of two separate land markets, defined essentially by soils: the Valley proper, on the lake bed of glacial Lake Agassiz, and the adjacent (slightly) rolling hills and lighter soils of the old lake's beach ridges.

To see the differences in these markets, I've sorted sales from the northwestern part of the state into two groups of townships according to my

own definition (largely based on soil type): those "Inside the Valley" and those "Outside the Valley." The results are shown in figure 7. (Please note that my divisions this year are somewhat different from those I've used in previous reports.)

Movements in an overall trend line would be strongly influenced by changes in the relative predominance of sales from one or other of these subar-

eas. (In previous years, I've called this the "Problem of Composition." See past issues for more detailed discussions.)

When there are relatively more sales reported from within the Valley, their higher individual prices pull the area average up. When there are relatively more sales reported from outside, their lower prices pull the average down. So what looks like an unstable local land market is really just an arithmetic artifact of where sales happen to have occurred each year.

Even in the "Outside the Valley" subarea, the part of Minnesota that might be expected to have some of the more severe financial problems, average sales prices have not declined in recent years. But they haven't increased, either, which could itself be an early indicator of financial stress, since practically all other regions of the state have consistently increased over the study period.

While it might be possible to find a part of this area that exhibits an actual decline in average prices—indeed, creative redrawing of boundaries can yield practically any conclusion—I'm reluctant to embark on such a crusade. The small number of farmland sales means that I'd be drawing conclusions from too small a set of observations.

Figure 5. Average Minnesota Farm Real Estate Prices

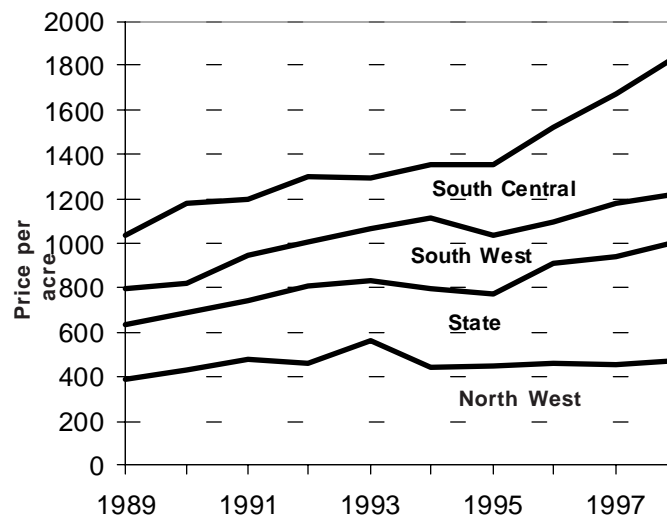


Figure 6. Minnesota Farmland Price Distributions by Reporting District

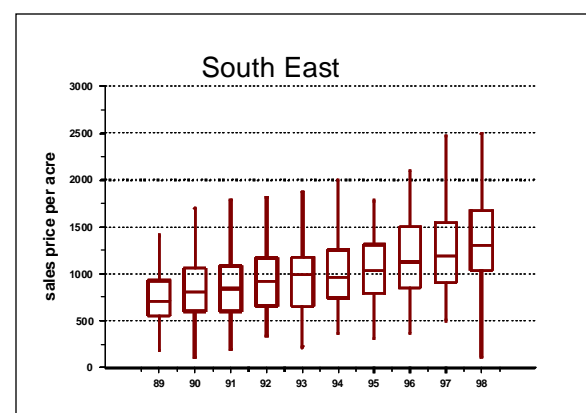
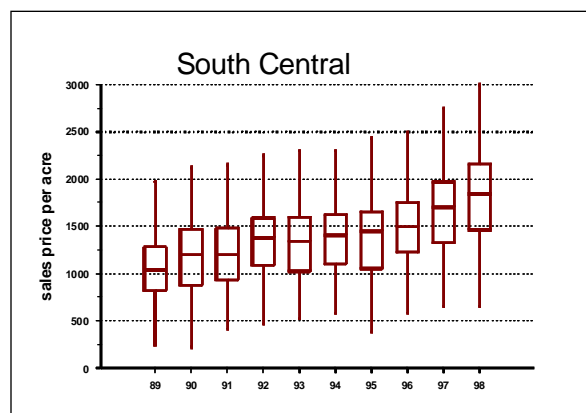
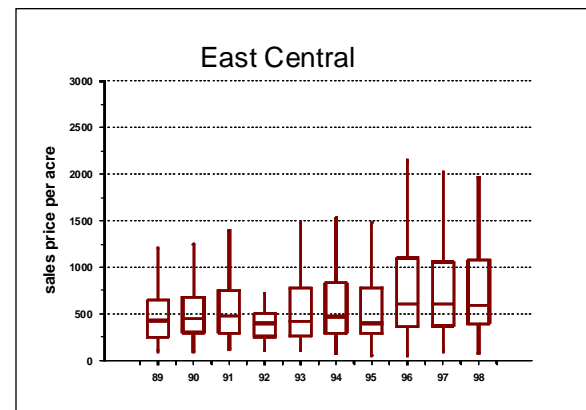
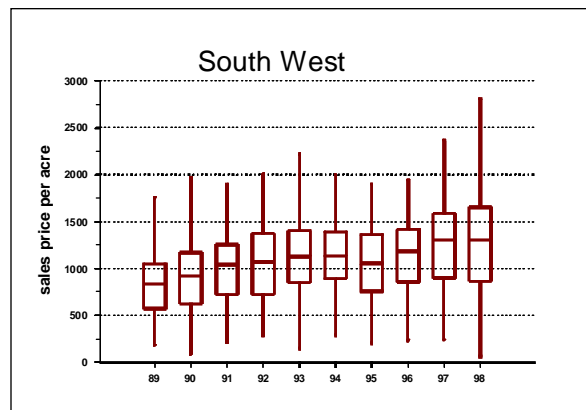
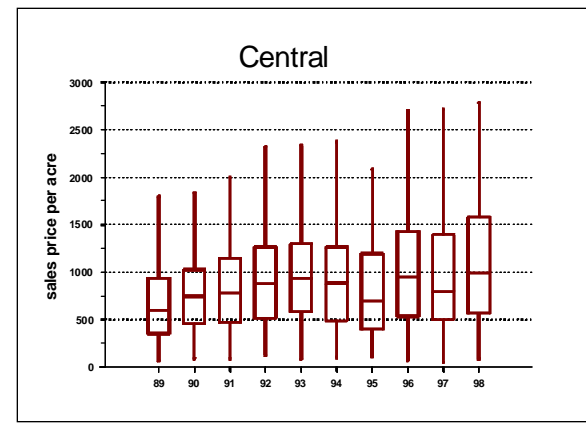
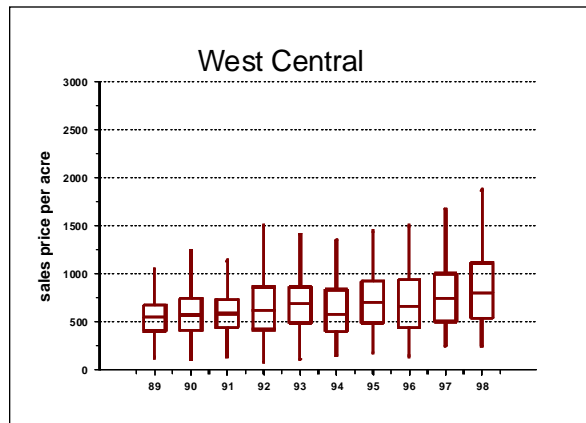
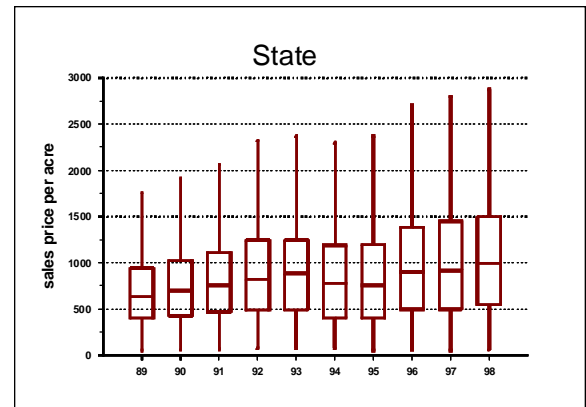
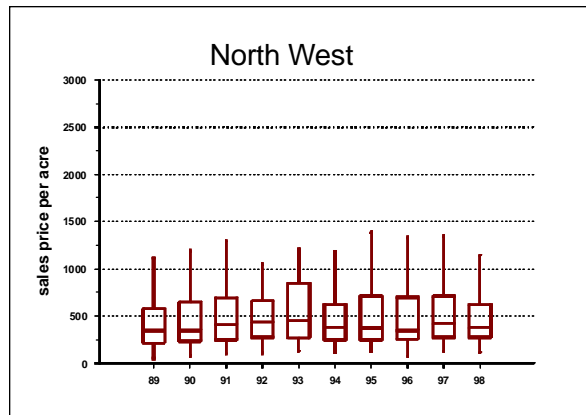
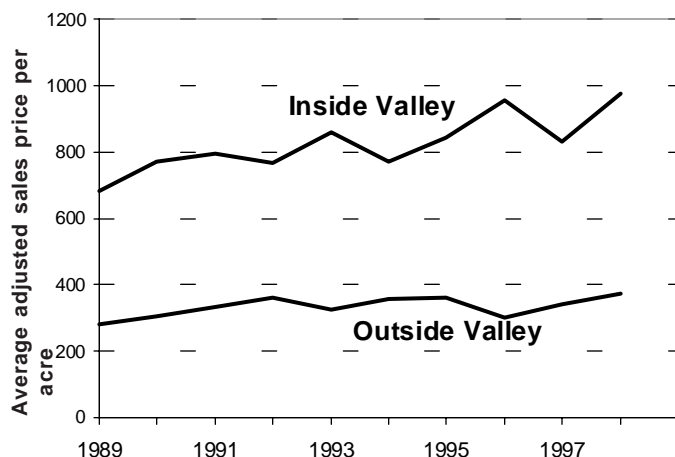


Figure 7. Average Sales Prices in Northwestern Minnesota



What Do Sales Really Tell Us About Markets?

Let's look at the dynamics of a sale. When owners are ready to sell farmland, how do they set the asking price?

Sellers usually start with their annual property tax assessment, which contains the local assessor's estimate of what the property is worth. Under Minnesota law, this estimate is for full market value, the price the assessor expects the property to fetch if it went onto an "open market" today.

How did the assessor come up with that estimate? By combining knowledge of local economic conditions with records on previous local land sales. Assessors also draw on township-level value estimates that Barry Ryan and I calculate for the Department of Revenue each November. These estimates are based largely on the same set of sales that the assessors already have, although we can use information on sales outside the county, which many assessors for political reasons are unable to do.

So, assessors build their estimates on observed sales in the vicinity, and sellers base their initial asking price on the assessors' estimates.

But sellers usually don't stop here. They frequently hire a professional appraiser to evaluate the property in much greater detail than the assessor can. Assessors, after all, have thousands of properties on which value estimates are due each year. They necessarily use what can be called "mass appraisal" and generally treat farm properties as a class rather than as individual parcels of land.

Appraisers can combine an examination of local market conditions, the characteristics of the property itself, and a professional judgement of what the property should sell for. They make frequent use of what they call comparable sales, a handful of nearby properties with very similar characteristics that happen to have sold recently.

Many times appraisers will do an income analysis as well—something that assessors are not permitted to do. This method values the property using its long-term earning potential. Some appraisers also incorporate judgements about risk in their income analysis. A land buyer can get cheaper land in more northern climes but the riskiness of operations on these lands may obviate any savings on land purchase. (Indeed, in a perfect market, the land is cheaper exactly to the extent that it has riskier returns on investment.)

A final source of guidance for the prospective seller is surveys of land values such as those published by the USDA, extension services, or others. These surveys basically ask a set of "local experts" (often assessors and appraisers) what they think land is selling for in their areas. Their responses are averaged into a single value for the region or, more frequently, the whole state. One such survey, that conducted by the USDA, is shown in figure 3.

(A personal aside. I'm continually disturbed—but no longer surprised—by the number of landowners, often heirs no longer living in the state and certainly no longer farming, who use area averages as

their sole guide to the pricing of their farms or the setting of their rents. It is enormously imprudent to believe that the average price says anything about the value of a particular piece of property.)

So assessors, appraisers, analysts, buyers, and sellers all rely upon previous sales in the vicinity to decide on the value of a particular property. But these (few) sales were themselves at prices strongly influenced by the judgements of these same (few) assessors, appraisers, and analysts. And these judgements are based on the evidence of previous sales prices that they themselves were influential in setting in the first place.

I'm concerned that the "market" we think we observe from a distance is really one that we've "made" ourselves, not a collection of independent decisions made by anonymous market participants.

Is There Really a Market for Land?

The circularity in price formation is exacerbated by the very, very few transactions that take place in any given "land market." The market average I report is just a compilation of the sales from hundreds of smaller "markets."

Anecdotal evidence suggests that almost all bidders for farmland in Minnesota are neighbors. Very rarely does a new farmer enter the community by buying a whole farm, and even more rarely do outside investors buy into a community for farming purposes. As a result, a typical farmland property up for sale probably sees at most two or three offers. This is not a market in the usual sense: few of the usual features of markets beloved of economists can be expected to hold.

In particular, there is little reason to believe that the observed sales price represents a true compromise between buyer and seller based on the income potential, the capitalized value, of the property. Instead, the price strongly reflects the professional judgement of a single local assessor or a single real-estate appraiser—flavored by whatever whimsy happens to enter the transaction.

Compilations can be used to infer economic conditions common to all the local markets, but we should not fool ourselves into thinking that land is a commodity, that it has a single price, or that there are very many participants in any given land sale.

The Upshot of All of This Is Worrisome

Who cares if land prices are generated in such a circular and narrow fashion? You should. You presumably wonder about prices because you think they tell us something about some other thing you care about. Important things such as farmer prosperity, community vitality, or the performance of an investment asset. How comfortable are you about these links—really?

I, for one, would be happier if someone took the trouble to zoom in on land sales in one or more counties, and looked at who sold what to whom and at what sales price. Where do the buyers live? What did the buyers do with the land after the sale? Were there any other offers for the property? Was the seller under financial stress when he or she sold the land? Where did the sellers go? What are they doing now? How many sales weren't reported in official statistics because the assessor did not consider them an arms-length sale?

If I had detailed (and confirming) information about the behavior of the land "market" in such a relatively small geographic area, I might be more comfortable making some of the sweeping claims commonly associated with farmland sales reports.

So why don't I do such a study? Well, maybe I will—someday. Life is short; the list of things to do is long. But, even if I do, I wager there will continue to be substantial demand for our annual summary of land sales activity, summarized across the diverse farming regions of the state, relying heavily on that much abused statistic, the average price of land.

How Much Can Be Generalized?

Movement over time of an average price does not mean, of course, that the value of any given parcel is increasing (or decreasing) as well.

The problem is, farms don't move very fast in Minnesota. My records show that only about one percent of the state's farmland is sold in any given year. Is the "sample" I have drawn—farmland actually sold—a good indicator of the potential movement of prices for all those millions of acres of land that have not been sold?

I am reasonably confident that it is, based in part on examination of figure 8, which shows that each sample drawn in each of the past several years is consistent with the others. The average parcel size is about the same, the average productivity (the average Crop Equivalent Rating for the whole parcel, ranging from a low of 0 to a high of 100) is about the same, and the distribution of sales throughout the state is about the same.

The sample I'm given, over which none of us has any control, seems to be drawn from a pool of parcels that share certain common characteristics in aggregate; otherwise different averages could be seen each year. (The slight drop in average cropland productivity might be worth looking into. Any takers?)

I'm currently looking into construction of a new Minnesota land price series, a price index that would better deal with some of the shortcomings of the statewide averages we've traditionally used. It would couple the superior statistical sampling procedures of the NASS series with the superior raw data of the University series. Because it would not be subject to the Problem of Composition, the index would more accurately track movements in the price of a "typical" piece of Minnesota farmland. I hope to unveil the index in next year's farmland price report.

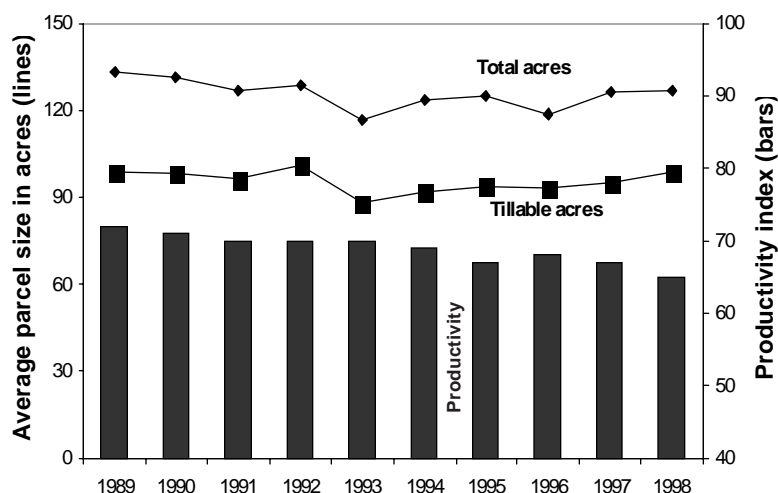
Be Careful Out There!

Now, more than ever, potential land buyers should avoid strapping their families with additional debt unsupported by a decent and long-run flow of income or by nonfinancial benefits that come from owning land. Few families can afford the luxury of retaining those lands in agriculture without economic justification.

If current low crop and livestock price levels prove to be the rule—not the exception—over the next several years, land prices have nowhere to go but down.

Steven J. Taff is an associate professor and extension economist with the Department of Applied Economics, University of Minnesota.

Figure 8. Characteristics of Parcels Sold in 1998



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Stanley C. Stevens (Corn Prices), and *Brian Buhr* (Livestock Prices).

Estimating the Size of the Soybean Industry in Minnesota

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Energy Use in Minnesota Agriculture

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