

No. 690 Fall 1997

## Minnesota Farmland Prices Up Again

Steven J. Taff

Minnesota average farmland sales prices just keep on climbing. The buying enthusiasm I reported a year ago seems unchecked, at least from the evidence of our newest price study. The increases are smaller than last year, but they're still quite noticeable.

In Minnesota we report farmland sales prices, not survey estimates of farmland values. As far as I know, we're the only state that does this consistently. Both kinds of information are useful, but observed sales data is a better indicator of what's actually going on in agricultural parts of the state.

Land economists frequently use the magnitude and the movement of observed prices to assign market values (that is, expected sales prices) to farmland as a class. Many readers consider these to be useful indicators of rural prosperity, or of investment opportunities, or of potential sales income.

This article is not the place to challenge any of these common convictions. Nor will I provide my own estimates of land values. I can tell you with great confidence what *did* happen in the state's many land markets. It's up to you to figure out what *will* happen.

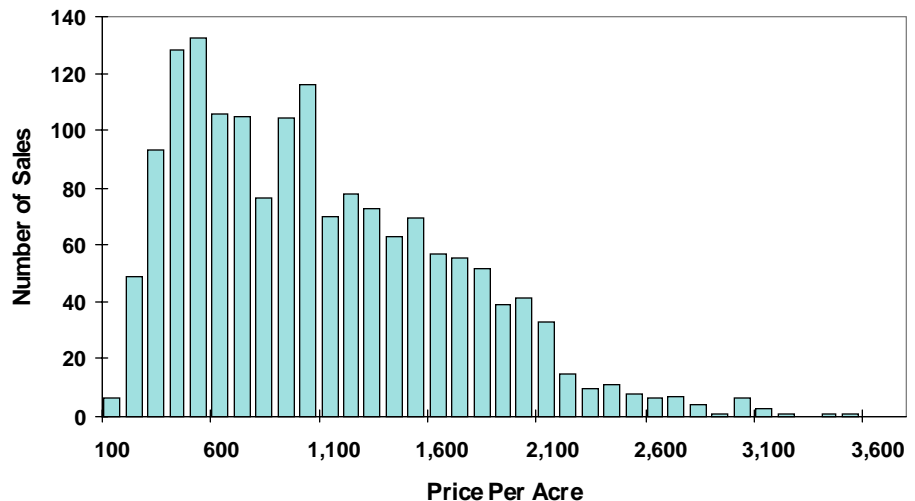
All of the basic sales data are available for downloading from my web site ([www.tc.umn.edu/~sjtaff](http://www.tc.umn.edu/~sjtaff)). Please feel free to try your own hand.

### The Data

Each year the Minnesota Department of Revenue compiles every farmland sale in the state into a single dataset that includes sale price, parcel, size, number of tillable acres, terms of sale, and other pertinent items. From these data I calculate average prices for different levels of aggregation. These averages constitute the bulk of this article.

(See *Prices* page 2)

Figure 1. Distribution of 1997 Minnesota Farmland Sales Prices



## Agriculture Finance Trends: Real Data from Real Farms

Dale Nordquist and Kent Olson

We hear stories about farmers in financial difficulty. Then we hear that a parcel of land sold for \$3,000 an acre. What's going on? Are we returning to the mid-'80s? Or have farm incomes risen to the point that they can support higher land values and more debt?

In this article we look at the financial well-being of a group of farms in southwestern Minnesota. In particular, we will look at how these farms came through the financial crisis of the mid-'80s and their performance since then. Maybe these farms' actual records can help us understand current conditions.

The data come from the annual reports of the Southwestern Minnesota Farm Business Management Association (SWFBMA). This group is not, strictly speaking, a representative sample of all farms in Minnesota or even in southwestern Minnesota. Its

farms tend to be larger and more efficient than the average. Also, this group does not include many of the extremely large farms that have popped up in recent years. Nor does it include many part-time farmers who earn the major share of their income from off-farm sources.

But this group represents the set of traditional commercial farms that earn the majority of their income from the farm and are either sole proprietors or small family partnerships/corporations.

(See *Trends* page 5)

(Prices continued from page 1)

An average is simply a “best guess if you have to guess,” a single number that is intended to capture an entire spectrum of (in this case) prices, such as that shown in Figure 1.

Because land prices vary widely across Minnesota—across regions, across counties, and even across townships—attempts to lump them into any one number can lead to serious errors of interpretation.

In this report, I’ll provide averages, but I’ll also give you enough additional information that you can judge just how representative the single numbers really are (or aren’t).

### New Reported Price

The official price for land is not always what the buyer and seller agreed upon. A sizable proportion of the sales is by contract for deed (Figure 2), whereby the seller agrees to accept a portion of the proceeds immediately, followed by several years of annual payments (perhaps with a balloon payment at the end), until the agreed-upon payment level is reached. Sometimes only the first payment is reported in official summaries.

In a yearly study for the Department of Revenue, my colleague Barry Ryan and I approximate the “true” sales price by constructing the full payment stream and discounting it to present value at a standard interest rate. (We also adjust sales prices to a hypothetical January 1 sale date, the official value date for real estate under Minnesota property tax law.) The resulting “adjusted sales price” is sometimes quite different from the reported price.

The difference is little noticed at the regional and state levels of aggregation, but it could be more substantial at smaller unit levels such as counties, where there are fewer sales records.

For this year’s article, I decided to shift to the adjusted price because it’s closer to the price the buyers and sellers settled on.

The present report includes the last several years of sales history based on the new price series. Please don’t try to compare the numbers here with those I gave you last year—they’re not the same series. Everything you need to know about the recent behavior of Minnesota land prices is contained in the version you’re reading.

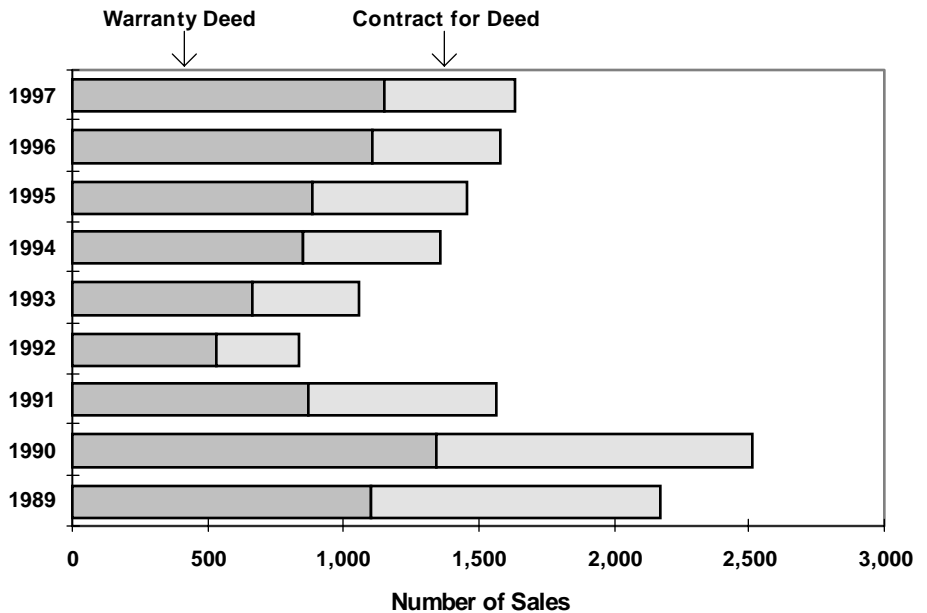
### New Reporting Districts

There’s a further departure this year. I’ve changed the boundaries of the sub-

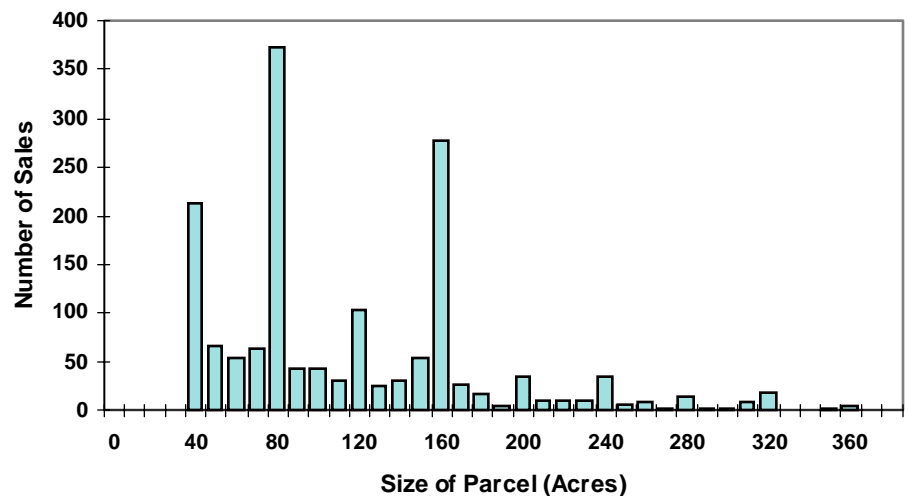
**Table 1. Minnesota Farmland Sales Summary**

Sales Year	Number of Sales	Acres Sold	Average Price (\$/acre)	
			Mean (acreage weighted)	Median
1995	1,453	181,620	774	759
1996	1,579	187,276	912	901
1997	1,634	205,886	939	916

**Figure 2. Deed Type for Minnesota Farmland Sales**



**Figure 3. Parcel Sizes for 1997 Minnesota Farmland Sales**



state reporting districts. The old boundaries, which did have the merit of remaining unchanged for decades of land value reports, just didn’t fit current Minnesota land markets. For example, it no longer makes sense to lump sales from as far west of the Twin Cities as Meeker County with those from as far to the southeast as Houston County. Also, the distinct South Central

agronomic region was split into two districts under the old grouping.

The reason we’d like to report at a sub-state level in the first place is the obvious fact that Minnesota covers such a wide range of landforms and agricultural landscapes. A single price for the state as a whole is not very revealing. We’d like farmlands within reporting districts to be more homogeneous, so a

single average sales price better reflects “typical land” in the area.

The particular boundaries of these regions is the subject of lively debate in land economics circles. Obviously, there is no single set of boundaries that will meet all needs.

I decided to switch to a widely used set of sub-state regions, that used by the National Agricultural Statistics Service in reporting crop and livestock data. The state is divided in nine districts of approximately equal size (Figure 6).

This new grouping has some problems, as did its predecessor. For example, the Red River Valley, with its two worlds-apart farmland markets, is still lumped into a single reporting district. And the Twin Cities metropolitan area is now sundered into three different regions.

But the NASS reporting districts do give us more homogeneous agronomic regions. If land prices are dependent upon agronomic potential, this grouping should yield average prices with smaller variances than did the previous boundaries.

### The Sales

As Figure 3 shows, most 1997 sales were for parcels 160 acres or less in size. This reflects a modern Midwest farmland sales market where hardly anyone buys whole farms anymore. Most transactions are for pieces of farms, and purchasers are not new farmers, but neighbors rounding out existing operations.

Figure 4 presents the movement of our statewide average observed price compared to three other land price series. The USDA series is based upon a survey that asks a handful of people each spring, “What do you think land is going for in your state?” Their responses are combined and reported as a single statewide average.

The second series is from county assessor reports. Each year they estimate the expected sales price (market value) of each property in their jurisdictions, for use in property tax administration. For Figure 4, I aggregated these estimates to the township level, divided the result by the number of farmland acres in the township, and averaged all these per-acre estimates across the state.

Finally, Figure 4 tracks the inferred price of just the tillable land portion of each parcel. One might think of this as the price of “real” farmland, because it (in brief) subtracts building values and non-tillable land values out of the

Figure 4. Selected Minnesota Real Estate Prices

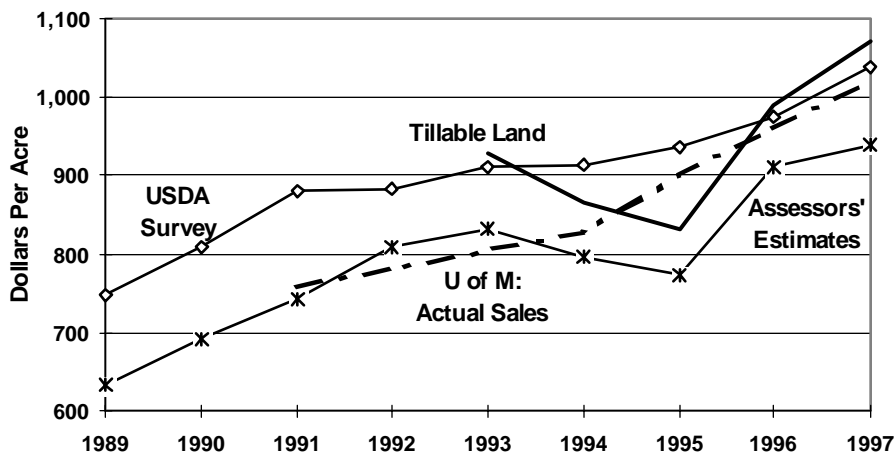


Figure 5. Minnesota Farmland Sales Price Movements in Selected Regions: Percent Change Over Previous Year

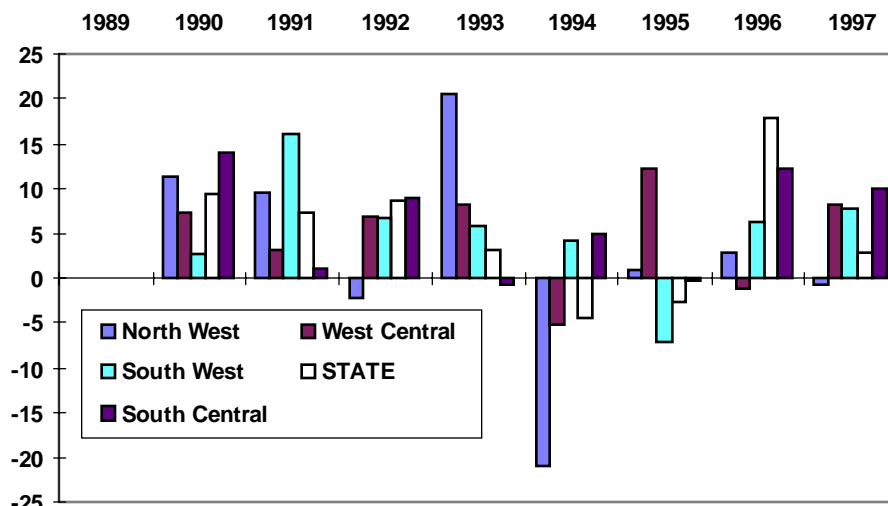


Figure 6. New Farmland Sales Reporting Districts

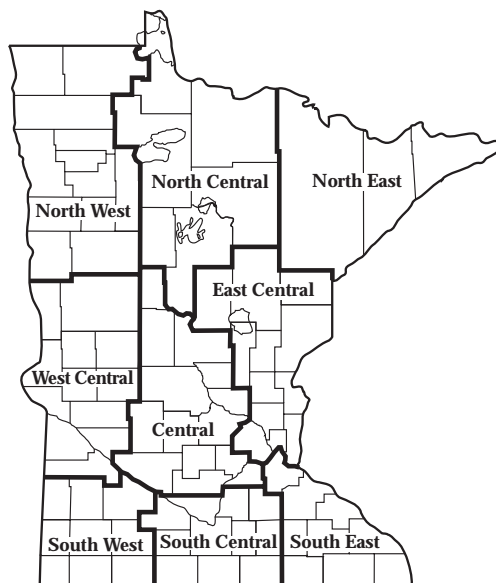
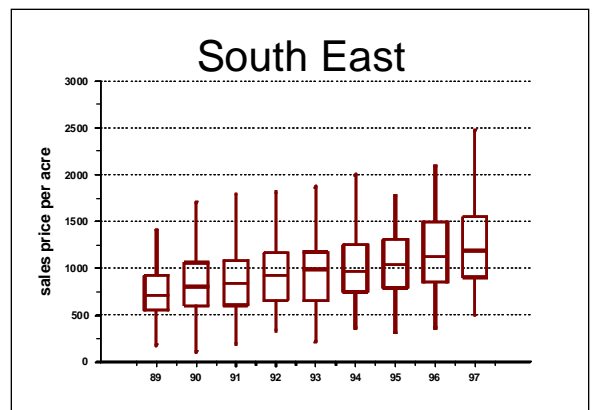
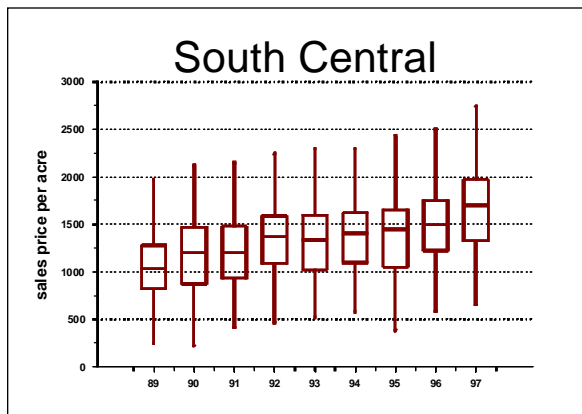
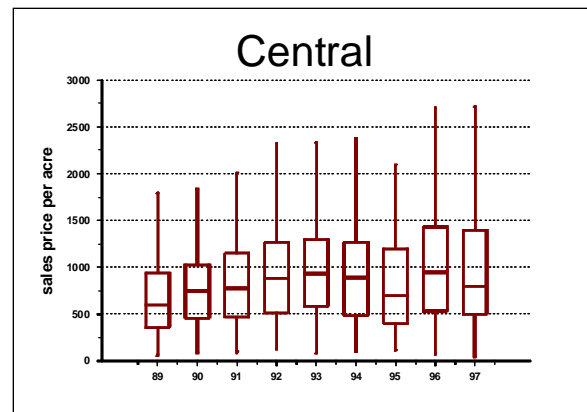
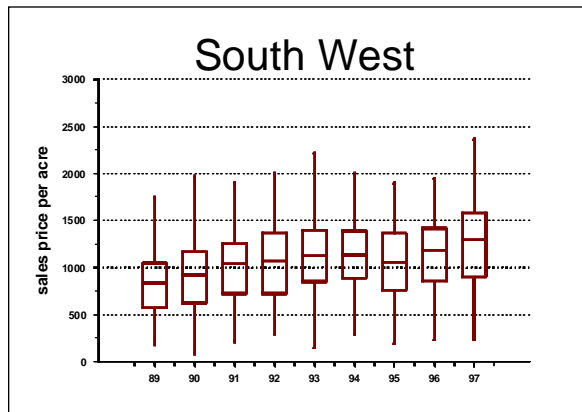
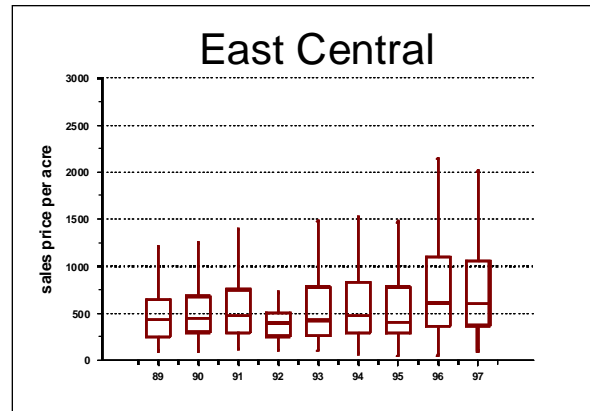
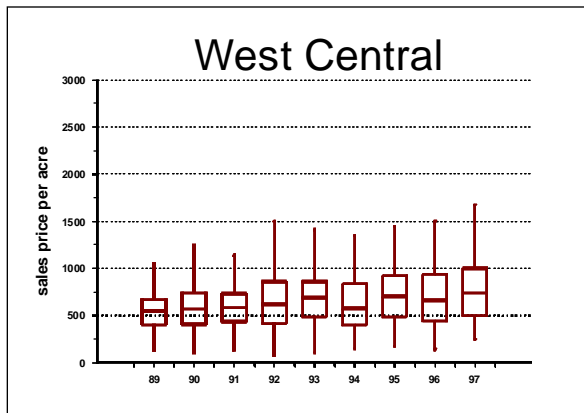
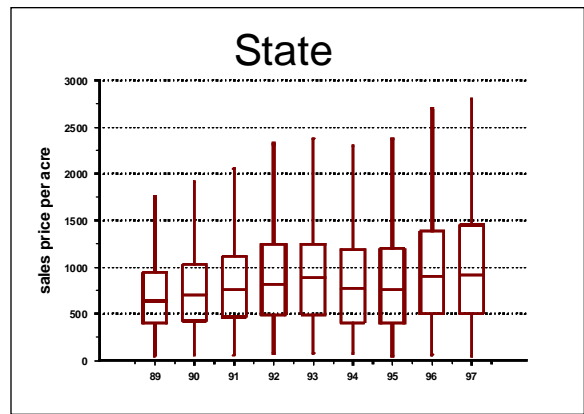
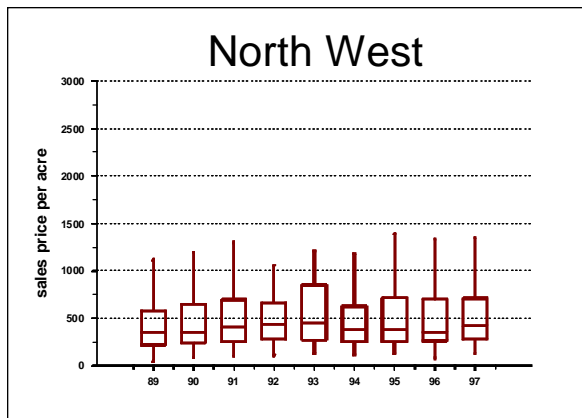


Figure 7. Minnesota Farmland Price Distributions by Reporting District



**Table 2. 1997 Minnesota Farmland Sales by Reporting District**

Reporting District	Number of Sales	Acres Sold	Average Price (\$/acre)	
			Mean (acreage weighted)	Median
North West	200	34,835	456	423
West Central	276	37,339	782	741
Central	359	39,637	966	799
East Central	148	17,379	719	605
South West	211	27,418	1,184	1,300
South Central	225	21,779	1,677	1,700
South East	165	20,538	1,259	1,192

reported sales price and then averages the result over only the parcel's tillable acres. This indicator jumped more than did the all-land price over the past few years.

### Price Movements

The year-to-year movements of price can vary dramatically, as seen for a few regions in Figure 5. The height of each bar is the percentage increase (or decrease) of average region prices compared to the previous year. The volatility of the North West reporting district is especially evident.

In Figure 7 I've broken out price distributions for seven sub-state reporting districts. (There were too few farmland sales in the North East and North Central districts for meaningful analysis.)

Each year's box for each region in Figure 7 contains half the sales. The median price is shown by the horizontal bar. The upper and lower lines span essentially the entire price distribution.

So, for example, 1997 East Central sales ranged from \$101 to \$3,305. The median was \$605, and half the sales were between \$369 and \$1,056. The regional summary statistics are listed in Table 2.

### As Ever, a Caution ...

For years I've railed against excess enthusiasm over farmland values in Minnesota. Some of the high prices we see simply cannot be supported by conventional farming income from the parcels themselves.

I am prepared to accept the explanation of many farmers and lenders who tell me these prices do indeed make sense from a whole-farm perspective. It seems that as long as farms continue to be cannibalized by neighbors seeking to round out their land base, there will exist this upward pressure on market prices in farming areas.

And it's also true that as long as residential development pressures at the edge of big and small towns remain

unchecked by effective land use policies, there will remain an upward price pressure on farmland for conversion into residential use.

And as long as people are prepared to buy farms to retire on, to enjoy on weekends, to hunt on, or simply to enjoy the pleasures of ownership, there will be upward pressure on prices.

None of these plausible and quite evident sources of farmland value has much to do with the traditional rationale of farmland value, however. The production component seems to be losing its prominence—even in traditional farming areas—to the financial, locational, and speculative components.

Our continued use of farmland price data (generated for articles like this) needs scrutiny. Is "agricultural land" really a separate market? If it is, are we properly identifying it from land sales records? Are our land appraisal and property value assessment procedures out of date, because they rely so much upon the production component of value?

Should we instead be shifting toward analysis of a single "land" market in rural areas, one that operates independently of intended uses, whether they be crops, recreation, timber, or speculation?

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*(Trends continued from page 1)*

### Farm Profitability

Traditionally farmers and farm lenders focus on solvency (net worth) and liquidity (cash flow). But it's profitability that drives the long-term financial health of businesses. Figure 1 shows the net farm income of the average farm in our data set over the past 15 years. All prices are nominal (not adjusted for inflation) unless otherwise noted. Net farm income represents returns to unpaid labor, management, and equity capital before taxes.

Like many, these farmers suffered from the financial crisis of the mid-'80s. Since then, profits have risen. The 1987-1990 period showed the most profitable years ever experienced by the average farmer in the association. This relative prosperity was tempered in the early '90s by a series of poor growing

seasons—spring floods and an early frost in 1991; a wet, cool growing season in 1992; another wet, cool season in 1993. In the past two years, incomes rebounded to more profitable levels. By 1996, the average farm in the association earned a net farm income of \$62,700.

Figure 1 also shows government payments. "Price support payments" are deficiency and diversion payments under previous programs and transition payments under current policy. (See Stinson and Ryan, *The New Farm Program Payments*, MAE, Winter 1997.) "Other government payments" is mostly disaster payments resulting from poor crop production conditions.

In 1996, the average farm received \$9,075 in government payments with \$7,318 or 12% of net farm income coming as transition payments.

It is important to remember that these figures represent averages. Each year,

there are farms that see higher profits and others that make much less. For example, in 1996 the average net farm income for the 41 member farms with the highest profits was \$157,052. The 41 farms with lowest profits averaged \$6,010. This wide range of returns is the norm, not the exception.

Figure 2 shows the range in profitability for these farms over the past 15 years. The farms in the low profit group lost money each year except during 1987-1990. Meanwhile, the 40 most profitable farms normally average profits close to or more than \$100,000 per year.

The same farms do not appear in these groups from year to year. A previous, unpublished comparison showed that there is more mobility into and out of the low profit group than in to and out of the high income group.

Two of the most common measures of business profitability are rate of re-

turn on assets (ROA) and rate of return on equity (ROE) capital. Rate of return on assets can be interpreted as the interest earned on the total investment in the business, whether that investment came from a farmer's own money or was borrowed. Rate of return on equity is the rate earned strictly on the owner's share of the investment. For 15 years, these two measures for SWFBMA farms have followed a similar, but not identical pattern (Figure 3).

A goal for any business is to show a return on equity higher than the return on assets. This provides residual returns after interest payments as added returns to equity capital. If ROE is less than ROA, debt is not paying for itself.

This was the case in 8 of the 15 years in this time series. Look in particular at 1984 and 1985, when ROA was low, interest rates were high, and the average farm had \$250,000 to \$300,000 of debt. The result was negative returns to equity for the average farm.

If we look just at the post-financial crisis years (1987-1996), farms have earned an average ROA of 9.2% and an ROE of 10.3%. Outside of the low production years of the early 1990s, the average association farm has been profitable since 1987. Of course, low return years are a part of farming, but it appears that these farms are currently structured to be profitable under normal circumstances.

### Repayment Capacity

One of the paradoxes of business finance is that debt usually increases during profitable times. Many farms came out of the financial crisis in the 1980s with restructured financing—part of their debt had been forgiven or rewritten with different terms. Since that time, the debt level on SWFBMA farms has increased steadily, from an average of \$172,714 in 1988 to \$279,619 at the end of 1996. (These figures do not include deferred tax liabilities.)

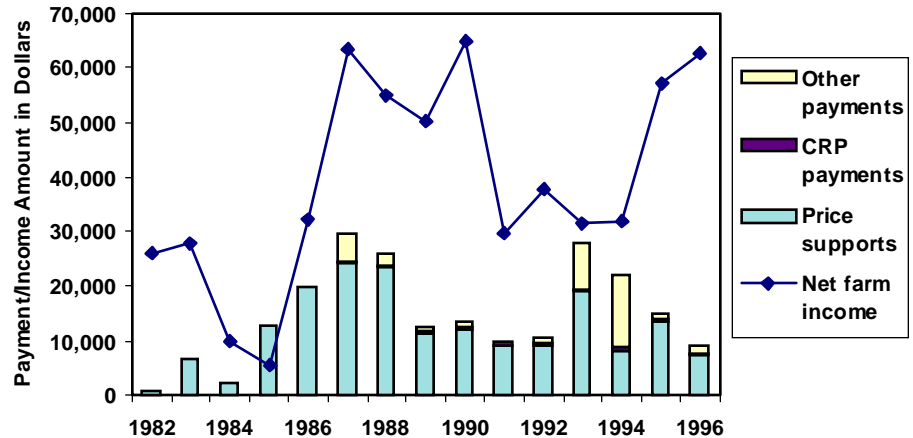
Even accounting for inflation, debt levels have increased by almost \$60,000 over 10 years (Figure 4). While this increase in liabilities has been tracked by an increase in assets, it is farm earnings, not farm assets, that repay debt.

The ratio of net cash farm income (before inventory changes and depreciation) to total liabilities is one way to track repayment capacity of farms. This ratio has varied substantially from year to year (Figure 4). In the early '80s, the average SWFBMA farm generated cash

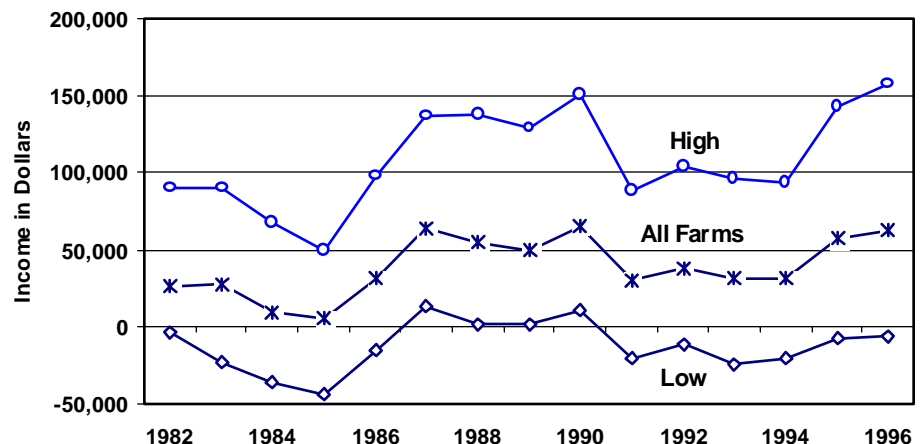
farm income equal to about 15 to 20% of outstanding debt. As these farms emerged from the mid-'80s, with restructured finances and much higher incomes, net cash income reached a

peak of 34% of liabilities in 1990. In the past two years, earnings as a percentage of total debt have been on an upward trend with the relationship standing at 29% at the end of 1996.

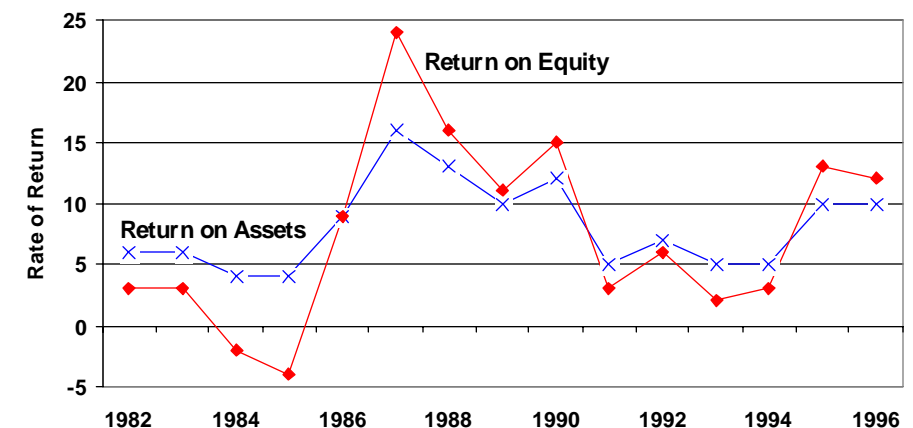
**Figure 1. Average Net Farm Income and Contribution from Government Payments, 1982-1996**



**Figure 2. Net Farm Income for High and Low Profit Farms 1982-1996**



**Figure 3. Rate of Return on Assets and Rate of Return on Equity, Assets at Cost, Average of All Farms, 1982-1996**



## Farm Size

Larger farms are usually thought to be more profitable than smaller ones. Is this true? Table 1 shows net farm income, rate of ROA and rate of ROE for various size groups measured by gross farm income.

Over the past ten years, farms grossing less than \$100,000 per year averaged lower returns than larger farms. Mid-sized farms earned adequate returns, but not at levels sufficient to provide substantial equity growth. Only farms with sales of \$200,000 or more show desired performance ratings.

How large must a farm be to gross at least \$200,000? A crop farm would need about 650 to 700 crop acres. For a specialized dairy farm it would take about 75 cows, while a farrow-to-finish hog farm would need about 120 sows.

## Farm Type

Have there been substantial differences in the profitability of the different types of farms? In Table 2 we sort farms based on percentage of farm sales with a 70% cutoff. For example, a farm is considered a crop farm if 70% of its gross farm income was from crop sales. If prices or sales change, a farm could be considered a crop farm one year and a crop/hog farm the next.

Sample sizes are small for some of the livestock groups (particularly for specialized dairy, beef, and hog farms along with crop and dairy farms). In general, farms with livestock produced higher net farm incomes than specialized crop farms. Livestock farms (other than beef farms) also generated higher average rates of return on assets.

Although sample sizes are too small to draw strong conclusions, it appears that specialized livestock farms may face more income variability than crop farms. With risk management a key concern for farmers, especially with the elimination of government crop programs, we plan to take a closer look at the variability of income for different types of farms in future studies.

## Conclusion

Farming is a risky business. The fluctuations of net farm income and rates of return reported show this graphically.

But some farms perform much better financially in any kind of year, no matter what the growing conditions or economic environment. While we cannot rule out luck and who happened to buy the good land, a recent study found that having at least a bachelor's

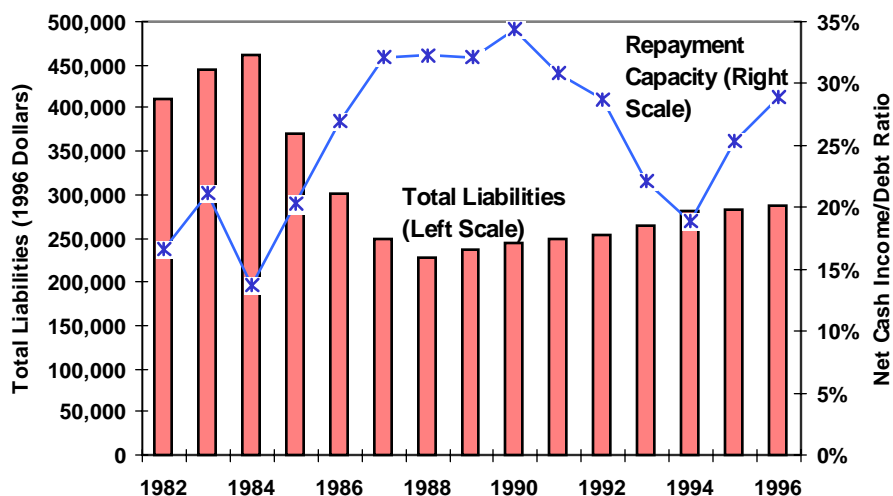
degree, high soil quality, diversification, spending time on management, newer machinery, and letting neighbors try new technology first were strongly and positively related to superior financial performance.

Farms with higher incomes and better debt position relative to income can afford to pay higher prices for new land. If it is these better positioned farms that are paying the high land prices discussed in the other article in this issue, the farm sector is not likely to be heading toward the same problems experienced in the mid-'80s.

We will soon be able to compare 1997 results to these trends. Indeed, if support is forthcoming, we hope to extend these long-term studies to farming regions throughout the state. Given the good growing and harvest seasons as well as favorable fall product prices, financial performance will probably be positive for many Minnesota farms.

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**Figure 4. Repayment Capacity and Total Liabilities Average of All Farms, 1982-1996**



**Table 1. Average Profitability by Size of Farm, 1987-1996**

	Number of Farms	Net Farm Income	Return on Assets	Return on Equity
\$ 40,000-100,000	20	18,072	2.9	0.9
\$100,000-200,000	63	33,625	7.2	7.1
\$200,000-500,000	90	53,850	9.9	12.1
\$500,000 & over	26	91,936	10.2	12.1
<b>All farms</b>	<b>201</b>	<b>48,272</b>	<b>9.2</b>	<b>10.3</b>

**Table 2. Average Profitability by Type of Farm, 1987-1996**

	Number of Farms	Net Farm Income	Return on Assets	Return on Equity
Crop farms	50	44,314	8.0	9.0
Dairy farms	6	51,287	8.8	10.3
Hog farms	13	57,331	10.6	13.3
Beef farms	10	57,037	7.7	7.4
Crop and dairy	9	64,018	11.0	14.1
Crop and hog	52	53,383	11.0	14.3
Crop and beef	22	55,068	8.5	8.4
Other	43	35,708	7.7	7.8
<b>All farms</b>	<b>201</b>	<b>48,272</b>	<b>9.2</b>	<b>10.3</b>

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