

Evaluating the Financial Performance of Texas Farm Businesses in the 1980s

Aditi K. Angirasa*

Bob Davis

Southwest Texas State University, 601 University Drive, San Marcos, TX 78666-4616

ABSTRACT

The DuPont system of financial analysis is used to analyze the financial performance of the Texas farm sector during the recovery period of the 1980s. The results are compared with the performance of the U.S. farm sector during the same period. Although Texas farms showed a considerable improvement, their level of performance was consistently lower than for U.S. farms. Most gains appear to be concentrated in the areas of livestock, livestock related products and cotton. Cash crop farms have yet to realize full benefits of the farm recovery. These are the farms expected to be hit harder by the proposed cuts in farm subsidies under the 1990 Farm Bill. That may further slowdown the already slow farm recovery process in Texas.

KEY WORDS: ratio analysis, farm recovery, performance measures, farm sector.

Although the eleven billion dollar sales of Texas agricultural products in 1989 represent only 2% of Texas' total economic output, the agriculture industry is far more important than that share would suggest (USDA, 1991; Bullock, 1990). Texas ranks second in the nation in agricultural sales behind California, has more farms and ranches than any other state, and ranks first in sales of livestock, livestock related products and cotton (USDA, 1991; Bullock, 1990). The economic impact on the Texas economy is even more significant. Each dollar sale of agricultural products generates \$3.16 in the state economy, more than oil and gas or manufacturing (Bullock, 1990). Since agriculture plays such a vital role in the Texas economy, an evaluation of its financial performance is desirable to determine the financial health of Texas farm businesses. This information can be helpful to farm borrowers, lenders, and investors in pointing out trends.

The 1980s boom-bust situation has left proportionally more Texas farm borrowers and lenders exposed to financial risk by causing greater variability in net farm income than the national average (USDA, 1990a). For example, following a nationwide recovery in the farm sector, although net farm income in Texas increased from \$2.05 billion in 1985 to \$3.01 billion in 1989, a turnaround in the farm real estate situation has yet to occur (USDA, 1991, 1990b). In contrast to increasing

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farm real estate values at the national level, the average per acre value of farmland and buildings in Texas has continually declined from a high of \$694 in 1985 to \$517 in 1989 (USDA, 1990b). Moreover, in 1988 when Texas net farm income was a record high \$3.20 billion, only 37% of Texas farm businesses, compared with 46% of the U.S. farm businesses, had a favorable financial position, i.e., positive net farm income and a debt-to-asset ratio of less than 0.40 (USDA, 1991, 1990a). The collapse of farm real estate values that began in 1986 and a relatively large number of farm businesses with low or negative net farm income were partially responsible for a record number of Texas bank failures through 1989. That year they peaked at 133, two-thirds of all bank closings in the nation (Sharp, 1991).

Declining farmland values and a relatively high percentage of farm businesses with an unfavorable financial position in Texas at a time when the overall position of U.S. farm businesses was improving suggest the need for an in-depth evaluation of the Texas farm sector. This need is further evident in that past investments and loan decisions based primarily on capital gains and rising asset values have resulted in a record number of farm business foreclosures and bank failures in the state as those asset values have taken a sharp downturn (Klinefelter, 1987). The 1990 Farm Bill has added yet another reason for evaluation because under its provisions farmers will receive 15% less in subsidies for program crops and will face more uncertainty in marketing the production of any unsupported crop (Sullivan, 1991). The adverse effect on farm incomes caused by lower subsidies and increased uncertainty in the product markets may further slowdown the farm business recovery process in Texas.

Numerous studies have analyzed the financial performance of farm businesses from national, regional, and state perspectives (Morehart et al., 1988, 1990; Barbieri et al., 1989; Lines and Morehart, 1987; Penson, 1987; Lins et al., 1987; Lins, 1985; Lines and Zulauf, 1985; Hughes et al., 1985; and Musser et al., 1984). However, with the exception of Morehart et al. (1988, 1990) and Barbieri et al. (1989), the focus of all studies has been on the farm financial crisis of the early 1980s and not on the recovery period of the second half of that decade. The studies by Morehart et al. (1988, 1990) and Barbieri et al. (1989) describe the financial characteristics of U.S. farm businesses by region, type, and economic class in a given year, but make no comparative analysis over time. Moreover, no prior study has separately analyzed the financial performance of Texas farm businesses.

Therefore, the objective of this study is to evaluate the financial performance of Texas farm businesses during the farm recovery period of the 1980s and to compare it with the overall performance of U.S. farm businesses during the same period. The analyses and comparisons are made through the use of various financial ratios explained in the methodology section. The most common currently used measures of financial performance are reviewed in the following section.

CURRENTLY USED MEASURES OF FINANCIAL PERFORMANCE

The debt-to-asset ratio is the most commonly used indicator of the financial health of a farm business (Penson, 1987; Lins et al., 1987; Jolly et al., 1985). It is a balance sheet measure, computed by dividing the total liabilities by total assets at a specific point in time. The ratio is a measure of the financial solvency of a business if the business is sold. When used by itself, the debt-to-asset ratio is a poor indicator of a farm's financial position because it shows little about the income-generating potential of the business. For example, a relatively high debt-to-asset

The decomposition of the return on total assets into two relational components, the net profit margin and the asset turnover ratio, provides important information on the quality of management planning for profits and, therefore, to a large extent, loan repayment capacity.

The net profit margin measures the income the farmers produce after paying all costs of operating their businesses. It indicates their ability to control the level of farm business costs relative to the volume of revenues generated. The asset turnover ratio measures efficiency in asset management. The higher the value of this ratio, the more sales produced per dollar of assets invested. Turnover ratios lower than the overall industry average may represent possible under-utilization of the assets.

When a portion of a business's assets is leveraged (debt financed), the return on total assets may differ from the return on equity and the magnitude of any difference depends upon the degree of financial leverage which is measured by the debt-to-equity ratio. As the percentage of borrowed capital increases, the debt-to-equity ratio increases, indicating greater leverage. The use of borrowed capital can increase business profit and the return on equity capital. However, the converse is also true if the business is not profitable enough to have a return on total assets equal to or greater than the interest rate on borrowed capital. In that case, income earned on borrowed capital is insufficient to cover the interest charges. Given a combination of relatively high leverage and a low return on total assets, a business may be forced to use equity capital to pay part of the interest on borrowed capital. Thus, if used successfully, financial leverage increases returns to the farmer's capital; but if unsuccessful, it can contribute to an inability to pay fixed charge obligations and, ultimately, result in operating difficulties leading to financial distress or bankruptcy. Therefore, it is important to both farmers and farm lenders to evaluate the effects of financial leverage on profitability. The financial leverage multiplier which measures the percent of assets financed by net worth or equity and consequently provides an indicator of lender's risk, is also included.

Taken together, the three performance measures discussed above provide a basis for evaluating the financial performance of farm businesses over time. All ratios used in the study are defined in Table 1.

DATA

The data used in this study were obtained from Economic Indicators of the Farm Sector published annually by the U.S. Department of Agriculture. The publication provides data on farm sector balance sheet and income statement by state. Farm sector balance sheets contain the current market value of assets, liabilities, and net worth. Since the objective of this study is to analyze the financial strength of the farm businesses, personal assets and liabilities are not included on the balance sheets. Moreover, personal assets in most cases are not available to support business liabilities.

Farm sector income statements include cash and noncash components in both income and expense categories. Noncash income consists of home consumption of commodities produced on farms, imputed rental value of all farm dwellings, and the value of the change in farm business inventories. A farm business is defined as an establishment that sold or normally would have sold at least \$1,000 worth of agricultural products during the previous year (Morehart et al., 1988).

Noncash expenses, on the other hand, include capital consumption (depreciation

and accidental damage) and prerequisites to hired labor. Net farm income reflects the net value of agricultural production during a calendar year. Using the data given in the state balance sheet and income statement, the financial ratios were computed for the Texas and U.S. farm sectors for the 1985-89 period. The results are presented in the following section.

Table 1. Definition of financial ratios used in the study.

Performance Criterion	Ratio	Definition
Efficiency	Net Profit Margin	$\frac{\text{Net Farm Income}}{\text{Gross Farm Income}}$
Efficiency	Total Asset Turnover	$\frac{\text{Gross Farm Income}}{\text{Total Farm Assets}}$
Profitability	Return on Assets	$\frac{\text{Net Farm Income}}{\text{Total Farm Assets}}$
Solvency	Financial Leverage Multiplier	$\frac{\text{Total Farm Assets}}{\text{Net Worth}}$
Profitability	Return on Equity	$\frac{\text{Net Farm Income}}{\text{Net Worth}}$

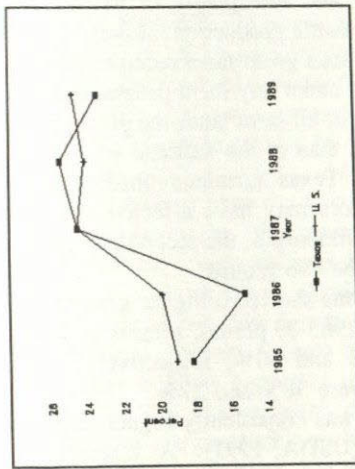
RESULTS

Five financial ratios used to evaluate the financial performance of the Texas farm sector for the 1985-89 period are presented in Table 2 and Figure 1. Based on the measures of profitability, efficiency, and solvency, the farm sector showed an improvement over time. The return on total assets, an overall measure of profitability, increased 64%, from 2.37% in 1985 to 3.88% in 1989. However, a combination of drought and low farm product prices resulted in the lowest rate of return on assets in 1986. Even though the drought conditions continued in 1987, return on total assets almost doubled compared to the previous year due largely to a 47% increase in government payments to farmers, from \$978 million in 1986 to \$1,441 million in 1987 (USDA, 1991).

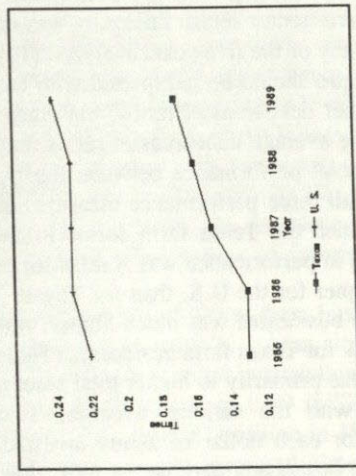
In 1988, a decline of nearly 20% in the government payments from their 1987 level was more than offset by increased cash receipts from the sale of farm products that reached a record high \$10.2 billion (USDA, 1991). These record sales resulted from relatively high prices for cotton, food and feedgrains, and partial liquidation of herds due to poor grazing conditions and high feed costs brought on by the continuing drought (Bullock, 1990). The 1988 return on total assets was 4.07%, the highest during the 1985-89 period.

Table 2. Selected financial ratios of the Texas and U.S. farm sectors (calculated from USDA, 1991).

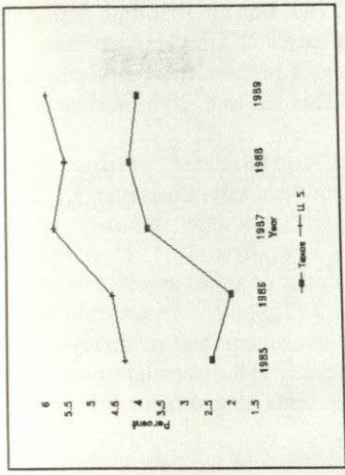
State and Year	Net Profit Margin (%)	Total Asset Turnover (Times)	Return on Assets (%)	Financial Leverage Multiplier (Times)	Return on Equity (%)
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Texas					
1985	18.15	0.13	2.37	1.17	2.77
1986	15.17	0.13	1.95	1.16	2.27
1987	24.45	0.15	3.70	1.15	4.27
1988	25.40	0.16	4.07	1.15	4.68
1989	23.30	0.17	3.88	1.14	4.44
U.S.					
1985	19.02	0.22	4.25	1.31	5.59
1986	19.82	0.23	4.49	1.29	5.79
1987	24.43	0.23	5.74	1.24	7.15
1988	24.03	0.23	5.47	1.22	6.67
1989	24.65	0.24	5.88	1.21	7.09



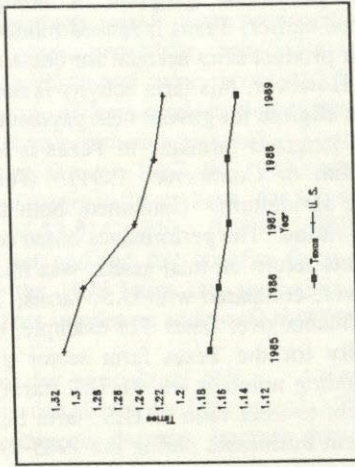
(a) Net Profit Margin



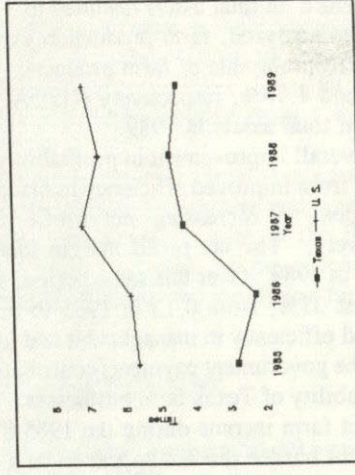
(b) Asset Turnover Ratio



(c) Return on Assets



(d) Financial Leverage Mult.



(e) Return on Equity (Percent)

Figure 1. Selected financial ratios for the Texas and U.S. farm sectors.

The return on total assets declined to 3.88% in 1989. For the first time during the five years analyzed, farm production expenses increased at a higher rate than cash receipts from the sale of farm products. The increases in these two categories were 5.95% and 4.96%, respectively (USDA, 1991). This led to a slight decline in the return on total assets in 1989.

The overall improvement in profitability of Texas farm businesses discussed above resulted from improved efficiency in management and total asset investments. These are evident in increasing net profit margins and total asset turnover ratios, respectively. The net profit margin increased 28.37%, from 18.15% in 1985 to 23.30% in 1989. Over this same period, sales per dollar of assets invested increased by almost 31%, from 0.13 in 1985 to 0.17 in 1989 (Table 2). In addition to the improved efficiency in management and total asset investments and relatively higher prices, the government payments contributed significantly to the overall improvement in profitability of Texas farm businesses. These payments ranged from 36% to 63% of the net farm income during the 1985-89 period.

The debt burden did not appear to be a serious problem as the debt-to-asset ratio never exceeded 0.14 during the study period (USDA, 1991). Given its relatively low financial leverage, the farm sector return on equity was only 14 to 17% higher than return on total assets in any of the five years analyzed (Table 2). However, the relatively low debt-to-asset ratio should be interpreted with caution. There may be a number of farms with higher debt-to-asset ratios, but since the data used in the study are aggregated data, the average debt-to-asset ratios may include some bias.

A comparison of the financial performance between the U. S. and Texas farm sectors shows that based on all three performance measures used in the study, the U. S. farm sector outperformed the Texas farm sector in each of the five years analyzed. Although the trend in performance was similar for both groups, the level of performance was much higher for the U.S. than for Texas. For example, return on total assets for U. S. farm businesses was much higher, ranging from 4.25% to 5.88% versus 1.95% to 4.07% for Texas farm businesses (Table 2). This difference in return on total assets was due primarily to higher total asset turnover ratios at the national level. Compared with the national average, Texas farm businesses generated less annual sales for each dollar of assets invested. This lower asset turnover ratio for Texas farm businesses may be, in part, due to the type of farm activities performed (program vs. non-program) and the quality of assets. As mentioned earlier, Texas is ranked number one in cattle production. Livestock and livestock product sales account for one-half of the total gross farm receipts (USDA, 1991). However, this farm activity is not covered under any farm program and is, thus, not eligible for government payments. Also, of all farm land, the proportional share of irrigated farmland in Texas is much less than at the national level (U.S. Department of Commerce, 1991). This makes Texas farmland unsuitable for intensive agriculture. Combined, both these factors may have affected the asset turnover ratios. The performance based on net profit margin, the second component that affects return on total assets, was mixed for the two groups.

However, compared with U.S. farms, Texas farms showed a higher growth rate in performance over time. For example, over the 1985-89 period, returns on assets and equity for the Texas farm sector grew 64% and 60%, respectively. The corresponding numbers for the U.S. farm sector were 38% and 27%.

The debt-to-asset ratio of U.S. farm businesses was consistently higher than for Texas farm businesses during the 1985-89 period (USDA, 1991). As a result, the

U.S. farm sector had a higher financial leverage multiplier in each of the five years studied. It ranged from 1.31 in 1985 to 1.21 in 1989. Combined, the relatively higher return on total assets and a successful use of higher financial leverage generated a return on equity for U.S. farm businesses ranging from 1.42 to 2.55 times that of Texas farm businesses (Table 2).

In general, both groups showed improvement in returns on total assets and equity, were successful in generating more sales per dollar of investment, and were able to reduce their debt during the 1985-89 period. However, in each of the five years analyzed, the level of performance with respect to each of the three criteria, profitability, efficiency, and solvency, was much lower for the Texas farm sector than for the U.S.

SUMMARY AND CONCLUSIONS

The financial ratio analysis of the Texas farm sector for the 1985-89 period shows a recovery from the financial stress of the early 1980's. Following a nationwide trend, the Texas farm sector realized higher returns on assets and equity and lower debt-to-asset ratios over this period. However, the recovery process has been relatively slow. As discussed in the results section, the financial performance of Texas farm businesses was at a relatively lower level than that of U.S. farms.

Even this relatively low performance of the Texas farm sector warrants a careful interpretation. The improved returns on assets and equity may be due, in part, to the declining value of farm assets which fell 10.3%, from \$86.3 billion in 1985 to \$77.4 billion in 1989 (USDA, 1991). As mentioned earlier, these rates of return could overstate the operative effectiveness of farmers in years of declining asset values (Penson, 1987).

The relatively low performance of Texas farm businesses has affected farm real estate values which continue to decline. Also, it has forced some farmers to liquidate part or all of their assets to retire outstanding debt that declined 22%, from \$12.38 billion in 1985 to \$9.68 billion in 1989 (USDA, 1991). As a result, farm sector equity in Texas fell 8%, from \$74 billion in 1985 to \$68 billion in 1989. In contrast, the U.S. farm sector equity increased almost 19% over the same period (USDA, 1991).

Besides livestock and livestock related products, major crops produced in Texas include cotton, food and feedgrains, oil crops, vegetables, and fruits and nuts. However, livestock and livestock related products and cotton accounted for all the gains in cash revenues generated from the sale of farm products during the 1985-89 period. Revenues generated by the other farm commodity groups have yet to reach 1985 levels (USDA, 1991). After declining through 1987, the 1989 cash receipts of \$3,897 million from the sale of all farm crops in Texas have, for the first time, barely surpassed the 1985 cash receipts of \$3,814 million (USDA, 1991). This shows that cash crop farmers have not yet realized full benefits from the farm recovery. Cuts in farm subsidies under the 1990 Farm Bill are bound to lower further their already low income levels. That implies an additional slowdown in the already slow recovery process in Texas.

The results have important implications for agricultural policy. As mentioned earlier, the low income level, not debt burden, beset the farm sector. Therefore, policies that are conducive to higher incomes are desirable because they not only solve the income problem, but indirectly, the debt problem as well. That means the

implementation and continuation of favorable macroeconomic policies and "policies that encourage farmers' participation in educational and assistance programs that emphasize understanding, attainment, and maintenance of good farm business financial health" (Lines and Morehart, 1987) are crucial to farm sector recovery.

A major limitation of this study is its use of highly aggregated data. Ratios computed from highly aggregated financial statements tend to cause their interpretation to be more biased (Penson, 1987). Also, since the farm sector includes farms of all sizes and types, it is not possible to relate the results derived from aggregated data to those individual sizes and types of farm businesses. Even though the financial ratios developed separately for farm businesses of different size, type, and region are more meaningful to farmers, farm lenders, and investors in understanding their financial performance, lack of sufficient data at that detail level continues to be a problem for researchers. Fortunately, as the USDA Farm Costs and Returns Survey continues to refine and collect more data on farm businesses, researchers will have more flexibility in analyzing those data and interpreting results.

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