

ANALYSIS OF CHANGES IN THE FINANCIAL CONDITIONS
OF KANSAS FARMERS, 1973-1984

by

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A MASTER'S THESIS

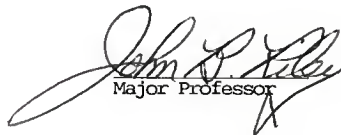
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To all those who made my 'second coming' a reality!

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CHAPTER I

INTRODUCTION

Overview

The financial condition of U.S. farmers has worsened since the beginning of the 1980s. Prolonged excess production capacity is reflected in current price-depressing surpluses and relatively low net farm incomes. As a result, many of the farmers who are heavily financially leveraged have been unable to service their debt obligations and have faced foreclosure on their operation.

The present financial predicament of U.S. farmers is not of recent origin but rather, is rooted in the events of the 1970s. The boom in the early 1970s, especially in 1973, resulting from large export demand (due to unfavorable climatic conditions around the world), accelerating inflation, and low real interest rates, resulted in income from farming reaching an all-time high. Farmers were convinced that rising farm prices and income would be permanent. Misled by these rising income and price expectations, many farmers used debt aggressively to finance expansions. From 1970 to 1979, the annual change in farm debt rose from \$2.5 billion to \$22.5 billion. [USDA, Handbook of Ag. Charts, 1982, p.6]. As the boom of 1973/74 ended and farm prices declined, the unprecedented rise of interest rates made debt service difficult.

Income from farming has been extremely volatile. In current dollars, net farm income declined 40 per cent from 1973 to 1976, trended upward to the 1973 high again in 1979 and 1981, but steadily declined from 1982 to 1984

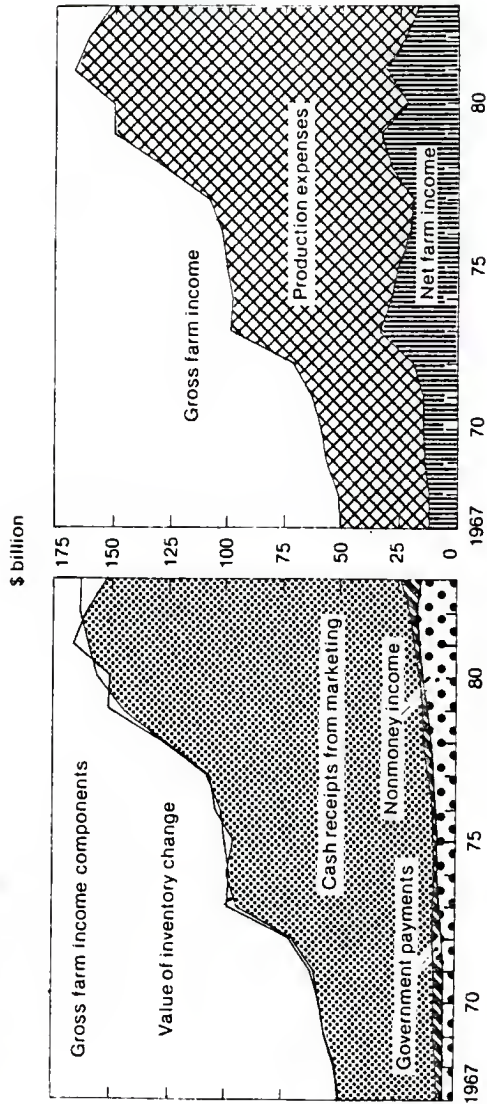
(Figure-1). Until 1980, gross farm income steadily increased from the 1973 figure of about \$100 billion to about \$150 billion in 1980. However, production expenses increased exponentially so that net farm income actually declined from the 1973 peak of \$33.4 billion to about \$25 billion in 1980.

On the international scene, the devaluation of the dollar in the early 1970s lowered the value of the dollar in international exchange, thus stimulating foreign demand for U.S. agricultural products. Further, many of the third world countries, especially the oil-exporting countries, witnessed a higher GNP per capita as a result of increased oil prices which enabled them to increase their demand for U.S. agricultural products. From 1970 to 1973, the volume of farm exports nearly tripled from 64 million metric tons to 163 million metric tons. As a proportion of total farm marketings, farm exports grew from 14.4 per cent to 29.6 per cent over the same period.

Beginning in 1980, there was a reversal in trend of the elements that had been a driving force in the buoyancy of U.S. agriculture. In 1982, exports declined by 15 per cent, while recession weakened the domestic demand. Land values peaked in 1981 and have since been drastically declining. These elements have severely damaged the financial health of many farmers and have led to an increasing number of farm foreclosures.

Figure 1

Income from Farming



Source: USDA, 1984 Handbook of Agricultural Charts, chart 8.

Current Financial Situation

A number of measures/indicators have been used to ascertain the presence of farm financial stress. The measures include:

A. Debt-to-asset ratio.

In the 1970s, farmers' debt rose an average of ten per cent per year; but the price rise during the period, coupled with the rising land values and income of farmers, cushioned such increase in debt [USDA, The Current Financial Condition of Farmers and Lenders, page vi].

The 1980s have reversed the trend. Debt-to-asset ratios in the 1980s have drastically increased. The incidence of farm financial stress as measured by debt-to-asset ratio can be classified into three categories:

1. Debt/asset ratio of 0.0-0.4. Farmers in this category are apparently solvent and can meet their financial obligations.
2. Debt/asset ratio of 0.4-0.7. Farmers experience serious financial stress in this category. The category includes 243,000 farms (11.1 per cent of all farms in January 1984).
3. Debt/asset ratio of 0.7 and over. This group accounts for 143,000 farms (6.6 per cent of all farms) that are in extreme financial stress. There has been a dramatic increase in the number of farmers in this category. Between 1980 and 1984, there was an increase of about 94 per cent.

Since 1980, the number of farms classified as insolvent, the number experiencing extreme financial problems, and the number in serious financial problems have been increasing exponentially. This situa-

tion has been escalated by cash shortfalls for most of the farmers, and has resulted in inability to service debt obligations.

In January 1984, 30,000 family-commercial farms¹ were insolvent with indebtedness of \$14 billion. These farms had more debt than asset value (debt/asset ratio of over 1.0). By January 1985, the figure had increased by 43 per cent to 43,000 farms with an indebtedness of \$19.7 billion. Similarly, those farms in extreme financial problems (debt/asset ratios between 0.70 and 1.0) totalled 34,000 farms in January 1984, and had increased to 50,000 farms by January 1985, with indebtedness of \$23.5 billion. Those in serious financial problems (debt/asset ratios of 0.40-0.70) totalled 114,000 farms in January 1984, and had increased to 136,000 farms with indebtedness of \$54.9 billion by January 1985 (Table 1). This is undoubtedly a clear indication of the presence of farm financial stress.

By type of farm, poultry and egg farms exhibited the highest proportion of farms in the 0.4-0.7 debt/asset ratio category, and were followed by dairy farms (Table 2). Nursery, vegetable and melon, and cash grain farms had the highest proportion of farms among the crop farms. In the 0.7 and over debt/asset ratio categories, poultry and egg farms still showed the highest proportion among animal livestock farms, while field crop and cash grain farms were highest among the crop farms.

¹Farms with \$50,000 to \$500,000 in sales.

TABLE 1

Number and indebtedness of family-commercial farms under financial stress
(January, 1984 and 1985).

Category (D/A Ratio)	<u>Jan. 1984</u>		<u>Jan. 1985</u>	
	No.	Indebtedness (\$billion)	No.	Indebtedness (\$billion)
Insolvent (>1.0)	30,000	14.0	43,000	19.7
Percent of farms	4.40		6.30	
Extreme Financial Problem. (0.7-1.0)	34,000	16.1	50,000	23.5
Percent of farms	5.00		7.40	
Serious Financial Problem (0.4-0.7)	114,000	46.6	136,000	54.9
Percent of farms	16.80		20.00	

Source: USDA, Current Financial Condition of Farmers and Lenders, #490, 1985.

TABLE 2

Debt/asset ratio by type of farm, January 1, 1984.

Type of farm	<u>0.4-0.7 D/A Ratio</u>		<u>OVER 0.7 D/A Ratio</u>	
	Class %	80-84 %increase	Class %	80-84 %increase
Cash Grain	14.2	25.0	7.6	81.0
Field Crop	11.8	27.0	8.9	123.0
Veg. & Melon	17.8	107.0	6.3	26.0
Fruit & Nut	7.7	31.0	4.0	111.0
Gen. Crop	6.7	-7.0	4.6	92.0
Gen. Livestock	10.6	47.0	7.1	163.0
Dairy	17.8	60.0	8.7	295.0
Poultry & Egg	17.9	30.0	17.7	216.0
Other Livestock	12.6	48.0	9.1	165.0
Nursery	21.7	131.0	N/A	-
All Farms	11.1	26.0	6.6	94.0

Source: USDA, Current Financial Condition of Farmers and Lenders, #490, 1985, p.8.

B. Cash Flow

A USDA study revealed that cash shortfalls exist for all sizes of farms in the highly leveraged category (debt/asset ratio of 0.7 and above) and for all farms with sales of less than \$100,000 [USDA, The Current Financial Condition of Farmers and Farm Lenders, #490, p.9]. However, a large debt/asset ratio does not necessarily indicate a financial problem. For example, farms with less than \$40,000 in sales often obtain the greater share of their total income from off-farm sources. Large farms of over \$500,000 sales tend to be highly specialized and even though they may have a high debt/asset ratio, generally have positive cash flows.

On the average, there was a decrease in 'Cash Flow Before Interest' from the peak of \$83 billion in the 1972-75 period to \$72 billion in 1984 (Table 3). The same trend was indicated by the 'Cash Flow After Interest' payment which declined from \$74 billion in the 1972-75 period to \$50 billion in 1984.

C. Declining Land Values

ASCS Economist, Larry Walker, examined the value of land over the 1921-1970 period and concluded that [Boxley and Walker, Impact of Rising Land Values On Agricultural Structure, page 93.]:

1. Land income and land value tend to move together.
2. Land has been a competitive investment based solely on the net rental income stream during the period of the study.
3. There has been a high degree of stability in rent-to-value ratios. The 1970s through 1981 witnessed a rising land value. Farmland value peaked in 1981, and since has been declining. By April 1984,

TABLE 3

Farm cash flow, income, and expense for selected periods.

(Averages in billions of 1984 dollars)

Item	Pre-boom	Boom	Recession	Boom	Recession	1984
		I	I	II	II	
	1970-71	1972-75	1976-77	1978-79	1980-84	
Gross income.....	134	173	162	184	163	162
Less:						
Operating expenses....	76	90	96	104	95	90
Equals:						
Cash flow before interest	58	83	66	80	67	72
Less:						
Interest.....	8	10	12	16	21	22
Equals:						
Cash flow after interest	50	74	53	64	46	50

Source: Melichar, Farm Financial Experience and Agricultural Banking Experience, Oct. 1985, p.3

farmland value had dropped from the peak by as much as 28 per cent in the Corn Belt [USDA, The Current Financial Condition of Farmers and Farm Lenders, page 6]. The conclusion of Walker that land income and value tend to move together seems to hold because after 1981, land income started to fall and land value trended downward. According to the USDA survey, Ohio, Iowa, Nebraska, Indiana, and Illinois have experienced the largest decline in farmland values (Table 4).

Farmland values are especially sensitive to farm income prospects and inflation in the general economy. Given the low inflation rate since 1984 and expected farm income prospects, farmland values will, for a while, likely continue to be on the decline.

D. Prices and Parity Ratio

Perhaps the most apparent of farm problems is the relatively low cost of food. U.S. consumers spend less than one-fifth of their income on food, including marketing services, while farmers continue to pay more for their farm inputs. This phenomenon is otherwise called the 'cost-price squeeze' [Tweeten, The Foundations of Farm Policy, Second Edition, page 334].

The 'cost' side of the squeeze refers to rising prices of farm inputs like fertilizers, insecticides, machinery, labor costs etc.. The 'price' side refers to the low prices farmers receive for their products. The 1970s were very profitable for farmers, but since 1981, prices of farm products have been very low. Therefore, farmers are caught between two opposing forces: the high cost of farm inputs, and the low prices for their products [Tweeten, The Founda

TABLE 4

Change in average value of farm real estate per acre (ten states), February 1977 to April 1984.

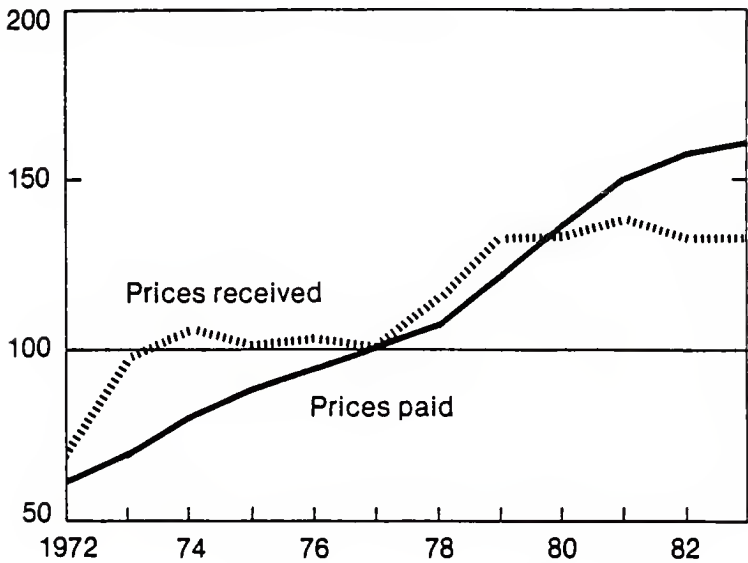
State	Change from 1977-1981 (percent)	Change from 1981-84 (percent)
Ohio	37.5	-28.0
Iowa	33.3	-28.0
Nebraska	33.8	-24.0
Indiana	37.9	-25.0
Illinois	30.6	-20.0
Minnesota	44.1	-20.0
Wisconsin	44.1	-13.0
Missouri	39.4	-19.0
Kansas	27.0	-11.0
Michigan	36.3	-10.0

Source: USDA, Current Financial Condition of Farmers and Lenders, #490, 1985, p.6

FIGURE 2

Prices Received and Paid by Farmers

% of 1977



Prices paid includes commodities and services, interest, taxes, and wage rates.

Source: USDA, 1984 Handbook of Agricultural Charts, chart 27.

tions of Farm Policy, Second Edition, page 334]. Using 1977 as the base year, prices received by U.S. farmers increased from 1973 to 1979, but after 1979, prices paid by farmers exceeded prices received (Figure 2).

Causes

The measures enumerated above provide ample evidence to confirm that general farmer-financial stress exists. A number of causes have been suggested. These causes include [W.K. Scarce, The Role of Government in Farm and Ranch Survival, OSU Extension, (Memeograph) page 8] :

- A. Excess Food Capacity. Worldwide increase in demand for agricultural commodities in the early 1970s, coupled with good weather conditions, significantly increased the overall worldwide supply of food and fibers.
- B. Efforts to Control Inflation. In the 1980s, efforts to control inflation contributed to recession, thus affecting demand for food and fiber products. That effort also led to slowing the U.S. inflation rate relative to other countries and has caused the value of the dollar to appreciate relative to other currencies. This had two effects:
 1. U.S. agricultural products became more expensive; hence, foreign consumers have had to pay more for U.S. exports. For instance, 60 per cent of U.S. wheat is exported. This represents a considerable amount of money for wheat importing countries. With the increasing value of the dollar, exports declined.
 2. The rising value of the dollar made imported foreign goods relatively cheaper to U.S. consumers. Thus, U.S. consumers have

purchased the less expensive foreign goods which has resulted in higher rates of unemployment for U.S. economy.

C. Falling Land Values. The effects of high interest rates and the dramatic slowing of inflation after 1980 contributed to the U.S. declining real land value. Farmland value increased from 1973 to 1981. However, after 1981, farmland values began to decline. The USDA data showed that ten states are mostly affected by the land value decline. In all of these states, changes in real estate value from 1977 to 1981 were positive, but changes from 1981 to 1984 were all negative. (Table 4).

Stop
KANSAS SITUATION

The problem of U.S farmers is universal. The degree of financial stress of U.S farmers varies from state to state. Though Kansas farmers may not be the most stressed of U.S farmers, they, however, have their own share of the problem.

Gross and net farm income

Gross Income of Kansas farmers decreased from \$4,175.9 million in 1973 to \$3,918.7 million in 1976, rose again to \$6,787.8 million in 1979, and then increased slightly to \$6,958.0 million in 1984. On the other hand, production expenses increased from \$3,110.2 million in 1973 to \$6,111.0 million in 1984 so that net farm income, with the exception of 1979, has been decreasing from the peak of \$1,525.2 million in 1973 to \$992.0 million in 1984. In 1979, net farm income was \$1,276.3 million, which was a dramatic increase from the previous year of only \$813.0 million (Table 5). The trend in gross and net farm income of Kansas farmers correlates with the national trend.

TABLE 5

Gross and net farm income (Kansas), 1973-1984.

Year	Gross Income	Production Expense (\$ million)	Inventory Change	Net Income
1973	4,473.2	3,110.2	162.2	1,525.2
1974	4,175.9	2,823.9	-326.0	1,026.0
1975	3,621.2	3,005.8	142.1	757.5
1976	3,918.7	3,407.8	-27.3	483.6
1977	4,358.0	3,704.0	-188.8	465.2
1978	4,801.9	4,317.7	328.7	813.0
1979	6,787.8	5,441.9	-69.6	1,276.3
1980	6,217.7	5,501.5	-206.4	509.9
1981	6,237.3	5,394.9	-13.4	829.0
1982	6,567.9	5,706.6	25.4	886.7
1983	6,439.1	5,781.1	-61.2	596.8
1984	6,958.0	6,111.0	145.0	992.0

Source: Kansas Crop and Livestock Reporting Service, 67th Biennial Report and Farm Facts, 1984, p.226

Farm debt, asset, and debt/asset ratio

Total amount of debt owed by Kansas farmers increased steadily from \$2,693 million in 1973 to \$8,334.5 million in 1984. The nonreal estate debt was slightly greater than the real estate debt on average.

Similarly, there was a dramatic increase in total assets from 1973 to 1984. Total assets increased from \$15,130 million in 1973 to \$34,502.2 million in 1983 and \$33,531.6 million in 1984. Real estate assets accounted for over 75 per cent of total assets [USDA, Economic Indicators of the Farm Sector - State Income & Balance Sheet Statistics, 1970 to 1984, p.155]. Average debt/asset ratio of Kansas farmers rose from 0.08 in 1973 to 0.25 in 1984 (Table 6).

Prices

Using 1977 as the base year, the index of prices received by Kansas farmers increased from an annual average of 131 in 1978 to 162 in 1984. But for the two major commodities produced in Kansas (wheat and livestock), prices received for wheat decreased from \$3.75 per bushel in 1973 to \$3.35 per bushel in 1984 (Table 7). Livestock value, on the other hand, increased from \$1.7 billion in 1973 to \$2.2 billion in 1984, with a dramatic decrease from \$2.3 billion in 1974 to a mere \$0.9 billion in 1975. Conversely, prices paid, represented by total production expenses, rose from \$3,110.2 million in 1973 to \$5,781.1 million in 1983.

PROBLEM AND OBJECTIVE *Start*

Recent literature on the plight of U.S. farmers since the turn of the decade has concentrated on measures to validate the presence of farmers' financial stress. These measures, among others, include the debt to asset ratio, cash flow, declining land value, prices, and debt/dollar of net farm

TABLE 6

No

Asset, debt, and debt/asset ratio (Kansas) by year.

Category	<u>Year</u>						
	73	75	77	79	81	83	84
	(\$ million)						
Asset	14205.0	19832.0	23571.2	30291.5	35715.6	34504.2	33531.6
Debt	1243.0	1544.0	4096.2	5364.8	6653.0	8291.4	8334.5
D/A*	8.8	7.8	17.4	17.7	18.6	24.0	24.9

Source: USDA, Economic Indicators of the Farm Sector - State Income & Balance Sheet Statistics, 1970 to 1984.

*Debt/Asset Ratio (percent).

TABLE 7

Prices received and prices paid (Kansas) for selected years

Item	Year											
	73	74	75	76	77	78	79	80	81	82	83	84
Livestock (value \$billion)	1.7	2.3	0.9	1.3	1.3	1.4	2.4	2.9	2.7	2.1	2.1	2.2
Wheat (\$price/bushel)	3.75	3.86	3.42	2.59	2.24	2.89	3.72	3.78	3.76	3.56	3.46	3.35
Production- expense (\$million)	3.1	2.8	3.0	3.4	3.7	4.3	5.4	5.5	5.3	5.6	5.7	-
Index (1977=100)	-	-	-	-	100	131	163	162	160	154	156	162

Source: Kansas Crop and Livestock Reporting Service, 67th Biennial Report and Farm Facts, 1984, pp.226-237

income. Various causes have also been advanced for farmers' financial predicament, namely: excess food capacity, inflation, recession, high real interest rates, and rising value of the dollar. These findings, however, only illuminate general measures or causes, but fail to reveal what the problem is for the individual farm.

To be sure, a high debt/asset ratio can indicate vulnerability to insolvency, but one cannot be specific as to what actions the farmer has taken to cause the debt/asset ratio to be high. The focus of this study is on the question "why?". Two specific areas are explored: expansion, and inefficiency.

Nationally, economists agree on the existence and the gravity of farmers' problem, but they are polarized as to why the problem exists. Emanuel Melichar, senior economist of the Federal Reserve System, and the USDA cited expansion in land and machinery, among others, as the culprit for farmers' financial problems [Melichar, Incidence of Financial Stress in Agriculture, Nov. 1984, p.2; and USDA, The Current Financial Condition of Farmers and Farm Lenders, #490, p.vi]. John Marten, Farm Journal staff economist, on the other hand, contends that farmers were financially stressed but neither from expansion in land or machinery nor from inefficiency [E. C. Williams, Farm Journal, June/July, 1985, p.17].

As stated above, the current farm condition is rooted in the events of the 1970s when the farm income was at its peak. This favorable condition could have given farmers a false security, thereby encouraging over expansion in land and machinery. On the other hand, the present problem may have arisen from farmers' inefficiency in allocating resources such as land, labor, capital, and fertilizer.

The objective of this study is to examine changes in the financial condition of Kansas farmers over the 1973/84 period to determine:

1. The extent that financial problems exist. This is enhanced by:
 - a. Determining the debt/asset ratio of farmers during the period.
 - b. Determining the number of farms in each category of debt/asset ratios.
2. The extent that financial problems resulted from expansion in operation through either:
 - a. Expansion in land owned.
 - b. Expansion in capital purchased.
3. The extent that financial problems resulted from inefficiency in operation as measured by:
 - a. Margin.
 - b. Turnover.
 - c. Net farm income per man.
 - d. Gross farm income per man.
 - e. Capital managed per man.
 - f. Crop machinery investment per acre.
 - g. Crop expense per acre.
 - h. Net income per acre (crop).
 - i. Return per dollar of investment and labor.
4. The extent that financial problems vary by farm type and class size.

CHAPTER II

REVIEW OF LITERATURE

Incidence of financial stress

The Division of Research and Statistics of the Board of Governors of the Federal Reserve System reported in November 1984 that cash flow before interest payments was down from boom peaks of 1973, but remained above the 1970-1971 pre-boom period. In contrast, cash flow after interest payments was significantly lower. Heavily indebted farmers fared worse because of their relatively greater interest payments [Melichar, The Incidence of Financial Stress in Agriculture, (Memeograph) November 1984, page 2].

Based on 1984 data, Melichar estimated the percentage distribution of all farm operators, their debt, and assets by relative debt level and size groups, and found that among the 625,000 farms in the annual sales range of \$40,000 to \$499,999, those heavily indebted (debt/asset ratio greater or equal to 0.70) were prone to financial stress. In addition, he found that very large cash grain farms that were heavily indebted also experienced financial problems, while similarly leveraged operators engaged in contract or speciallity-crop production on smaller farms tended to have high profitability [Melichar, The Incidence of Financial Stress in Agriculture, (Memeograph) November 1984, page 14].

Heavily indebted operators in the \$40,000-\$499,999 sales category constituted 9 per cent of all operators, owned about 14 per cent of total operators' assets, and owed about 39 per cent of total operators' debt (Table 8).

TABLE 8

Estimated percentage distribution of all farm operators and their debt and assets, by debt level and size groups, January 1, 1984.

Sales (\$ thousand)	Ratio (%) of farm operator debt to assets			
	0-10	11-40	41-70	71 and over
	<u>Operators (%)</u>			
500 and over.....	.2	.4	.3	.2
200 to 499.....	.7	1.2	.8	.6
100 to 199.....	1.9	2.8	1.5	1.2
40 to 99.....	6.0	5.2	2.7	2.1
20 to 39.....	5.4	3.2	1.3	1.0
10 to 19.....	6.9	2.6	1.1	.9
5 to 9.....	9.0	2.1	1.1	.7
2.5 to 4.9.....	10.1	2.3	.9	.6
Under 2.5.....	17.4	3.7	1.5	.7
	<u>Assets (%)</u>			
500 and over.....	2.3	3.8	2.3	1.8
200 to 499.....	3.7	4.9	2.7	1.6
100 to 199.....	4.9	6.9	2.9	1.6
40 to 99.....	9.6	7.4	3.2	1.7
20 to 39.....	5.5	2.8	.9	.5
10 to 19.....	5.1	1.8	.6	.3
5 to 9.....	4.6	1.1	.5	.2
2.5 to 4.9.....	4.7	1.0	.3	.1
Under 2.5.....	6.1	1.6	.5	.2
	<u>Debt (%)</u>			
500 and over.....	.4	4.0	5.2	8.1
200 to 499.....	.5	5.2	6.1	6.3
100 to 199.....	.8	7.1	6.5	6.3
40 to 99.....	1.2	7.2	7.2	6.8
20 to 39.....	.5	2.7	2.0	1.9
10 to 19.....	.4	1.6	1.4	1.3
5 to 9.....	.3	1.0	1.0	1.0
2.5 to 4.9.....	.2	1.9	.8	.6
Under 2.5.....	.3	1.5	1.2	.7

Source: Melichar, Incidence of Financial Stress in Agriculture, #490, 1984

In total, they numbered about 210,000 operators, owned assets valued at \$107 billion, which was one-tenth of total farm assets, and owed close to \$73 billion--about one-third of total farm debt.

The high volume of sales per dollar of assets was said to be largely responsible for the high profitability of large farms (\$500,000 sales). While representing only 10 per cent of operator's assets, these farms generated 29 per cent of gross income and 48 per cent of net farm income (Table 9). An estimated average rate of income return to operators' assets was about 18 per cent, which is far above the average interest rate of 10 per cent being paid on outstanding debt. The income return to equity was estimated at 24 per cent. Hence, high debt levels generally posed no problems for these farms.

Melichar also indicated that the high profitability of large farms stems from product composition and expenses of these farms. For example, cattle, poultry, vegetables, and fruit production on very large farms provided above-average shares of cash receipts while the shares from corn, soybeans, and wheat were below the average for all farms.

From the study, Melichar concluded that:

1. Heavily indebted operators have been the primary financially-troubled group of farmers.
2. Financial stress is almost non-existent among the smaller farms (\$2,500-\$39,000 sales), on which off-farm income is dominant, and among the very large farms (\$500,000 sales and above) which tend to be highly profitable.

TABLE 9

Estimated percentage distribution of farm operators and their assets, debt, and income, by size of farm, January 1, 1984

Sales	Operators	Assets	Debt	Gross cash farm income	Net farm income
(\$ thousand)	(%)	(%)	(%)	(%)	(%)
All farms.....	100	100	100	100	100
500 and over.....	1	10	18	29	48
200 to 499.....	3	13	18	19	19
100 to 199.....	7	16	21	19	17
40 to 99.....	16	22	22	20	15
20 to 39.....	11	10	7	6	3
10 to 19.....	12	8	5	3	0
5 to 9.....	13	6	3	2	0
2.5 to 4.9.....	14	6	2	1	-1
Under 2.5.....	23	8	4	1	-1

Source: Melichar, Presentation to the Congressional Budget Office, November, 1984.

Farm debt

James S. Plaxico of the Department of Agricultural Economics, Oklahoma State University, found a persistent increase in farm debt from 1950 to 1980 [Plaxico, The Current Situation of the Agricultural Economy in Perspective, OSU Department of Agricultural Economics (Mimeograph) page 4]. The farm debt increases over time, excluding CCC loans¹, reflected rising asset prices which is typical of commercial agriculture production units and increasing utilization of capital-based technology. From 1950-1982, total debt increased from \$10.7 billion in 1950 to \$186.6 billion in 1982, an annual compounded rate of increase of over 9 per cent (Figure 3). The 1972-1982 rate was over 12 per cent per year. Debt flow² stabilized during the 1950-1970 period, rose over the 1970-1980 period, declined in 1980, and slightly increased in 1981.

Plaxico also found that while debt has not increased relative to equity, it has increased relative to cash income. There was less than \$1.00 of debt per dollar of cash income in 1950. By 1960, there was about \$2.00 of debt per dollar of cash income. But by 1981, farmers held \$6.00 of debt for each dollar of cash income from farming (Figure 4). Viewing this from the debt-net farm income ratio, he found that there was \$1.30 of debt per dollar of net farm income in 1950; by 1981, there was more than \$13.00 of debt for each dollar of net farm income.

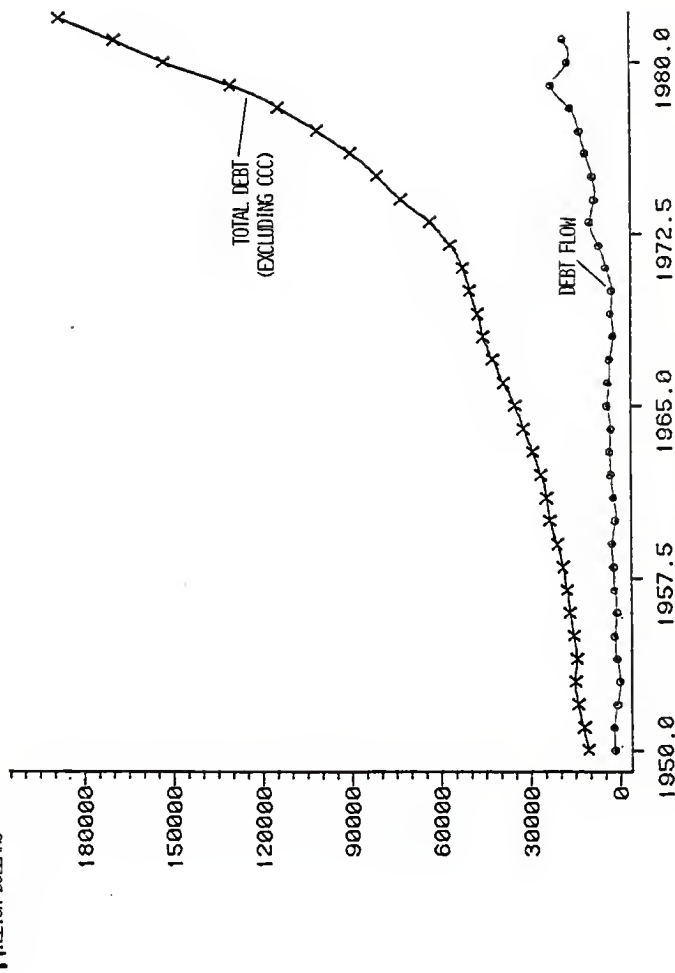
Further, debt flow as a percent of capital flow was less than 25 per cent in most of the 1950-1970 period. The percentage was almost 70 per cent

¹The CCC loans are excluded because the debt is largely in the form of non-recourse loans provided as a price support measure.

²Change in debt during the year.

Figure 3

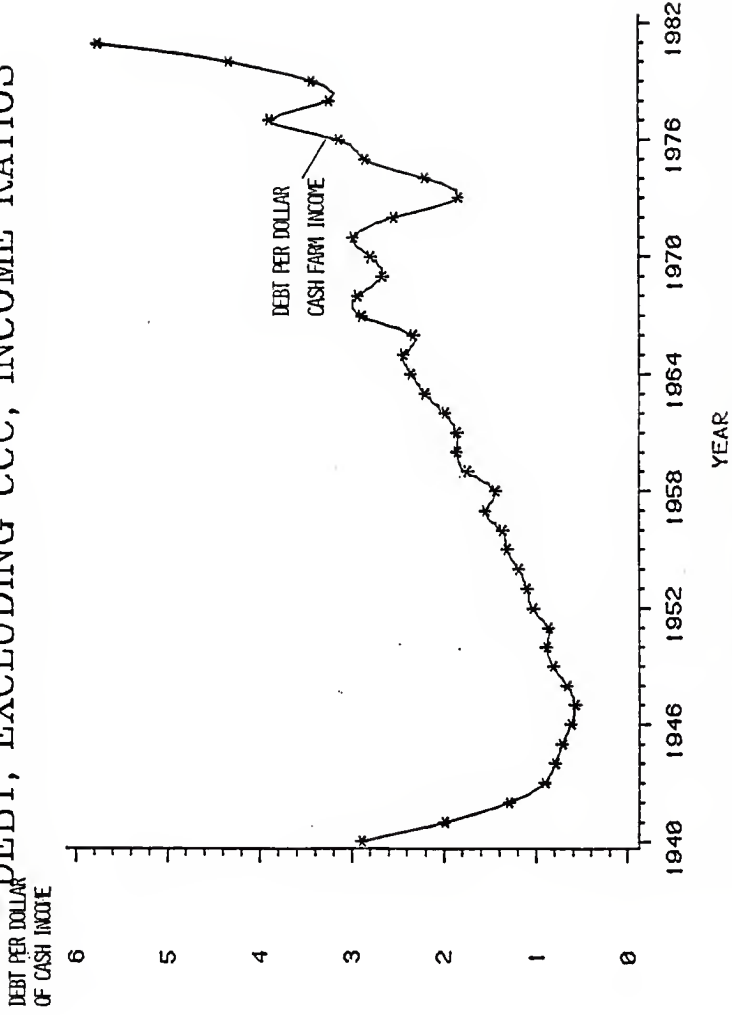
AGRICULTURAL DEBT AND DEBT FLOW, UNITED STATES, 1950-81.



Source: Plaxico J., *The Current Situation of Agricultural Economy*, (mimeograph), p.4a.

Figure 4

DEBT, EXCLUDING CCC, INCOME RATIOS



Source: Plaxico J., The Current Situation of Agricultural Economy, (mimeograph), p. 5a.

in 1981. Thus, of new farm capital investment during the 1950s, 75 per cent was equity financed, but by 1981, only about 30 per cent was equity financed.

Net capital flow¹ fluctuated over the 1950-1970 period and was on average, 50 per cent debt financed. Debt flow as a per cent of net capital flow rose to over 200 per cent from 1970 to 1980, and was higher in 1981. Therefore, farm debt was increasing twice as much as net farm investment. It further implies that in 1981, more than one-half of new farm debt was incurred to meet cash flow and family consumption requirements instead of increasing the net capital stock.

The study by Plaxico indicates that a high proportion of farm operators are leveraged to the point that income has been insufficient to meet cash flow requirements.

Farm income and resource returns

Plaxico calculated the rate of return from capital gains² for a 41-year period (1940-1981) [Plaxico, The Current Situation of The Agricultural Economy in Perspective, (Mimeograph) OSU Department of Agricultural Economics, page 3]. The calculation was done by expressing the annual changes in the value of farm assets (land price increases) as a per cent of equity. The study indicates that the rate of return from capital gains exhibited more volatility than residual returns³ over the period. Capital gains exceeded residual returns except for six years (1948, 1949, 1952, 1953, 1954, and 1981) of the 41-year period. In each of the years, Plaxico found that

¹Capital flow less capital consumption attributable to depreciation and casualty loss.

²The unrealized capital gains or losses in farm assets.

³Net income as a percent of equity.

residual returns were positive; capital gains were negative in only four years (1952, 1953, 1954, and 1981). However, the 1970s showed an interesting trend. Capital gains were, on the average, four times residual return rates (Figure 5). Both the net farm income and the rate of return data indicated low levels of average returns and profit rates relative to historical references. The current return levels and profit rates seemed to be similar to those obtained in early 1930s with the only difference being that asset values over the 41-year period, including equipment and livestock, continued to provide a basis for credit finance.

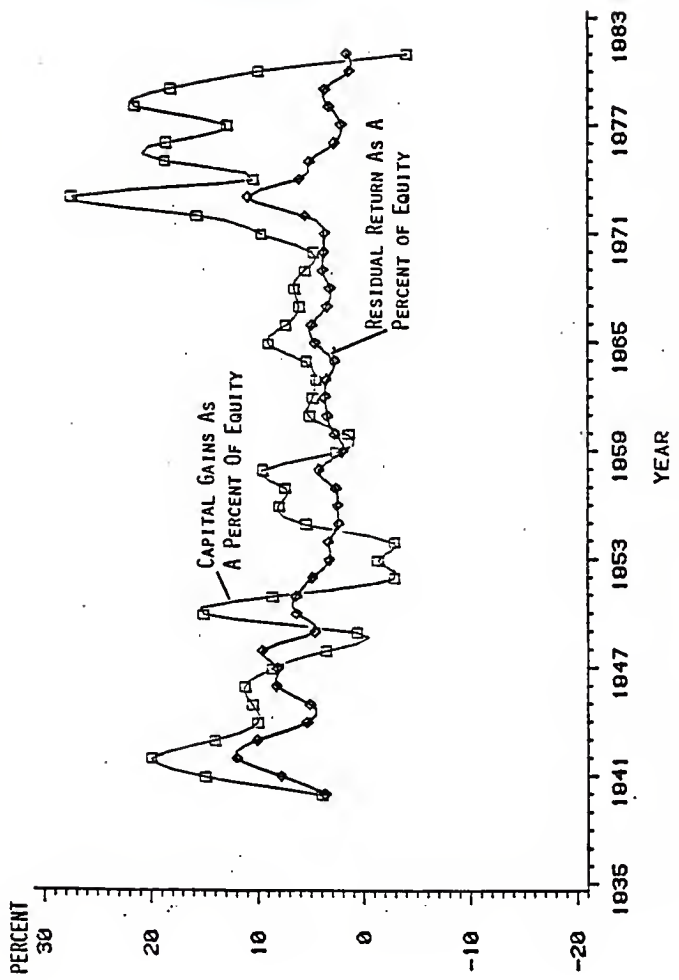
Over expansion and inefficiency

While recent literature has cited over expansion in land and machinery and inefficiency as probable causes of the current farm financial problem, Farm Journal staff Economist, John Marten, has found evidence contrary to this assertion [E. C. Williams, Farm Journal, June/July 1985 page 17]. In a nationwide survey conducted by the Farm Journal, it was found that Central region farmers under 35 years old who owned land bought an average of 128 acres while those with a 70 per cent debt/asset ratio had purchased an average of only 38 acres in the past ten years.

The percent of farmers under 35 years of age who have any real estate debt range from 44 per cent in the Southern region to 68 per cent in the Western region with a national average of 58.4 per cent (Table 10). Between the 35 to 44 years age range, the per cent of farmers holding real estate debt ranged from 69 per cent in the Southern region to 82 per cent in the Central region with a national average of 74.5 per cent. The percentage of all farmers that have any real estate debt ranged from 51 per cent in the

Figure 5

RESIDUAL RETURNS AND CAPITAL GAINS



Source: Plaxico J., The Current Situation of Agricultural Economy, (mimeograph), p.4a.

TABLE 10

Percent of people in each age group that have any real estate debt.

Age	Central	East	South	West	National Average
Under 35	65.0	57.0	44.0	68.0	58.4
35 to 44	82.0	71.0	69.0	76.0	74.5
Average of all farmers	59.0	51.0	50.0	64.0	55.7

Source: Farm Journal, June/July 1985, page 17.

Eastern region to 64 per cent in the Western region, with a national average of 55.7 per cent. Marten concluded that young farmers are under financial stress, but it is not from buying land.

Another paradox refuted by Marten is that those young farmers with high debt/asset ratios are inefficient. He concedes that young farmers generally have a high debt/asset ratio since young farmers need to borrow money. But debt financing today is more expensive to service, and that is what hurt young farmers most, not inefficiency.

The data indicated that the amount of debt owed by young farmers is less than that owed by farmers between the ages of 35 and 55. But a young farmer's debt/asset ratio is higher because he owns few assets. Farmers under 35 years of age owed an average of \$188,000 in the Central region; those between 35 and 44 years of age owed \$204,000; and those between 45 and 54 owed an average of \$197,000.

Marten concludes that 80 per cent of the young farmers will survive with a little upward trend of the economy. All of the 60 per cent of young farmers with a debt/asset ratio of under 50 per cent will stay in business, and more than half of those with higher debt/asset ratios have a good chance of surviving.

CHAPTER III

PRELIMINARY ANALYSIS

The Kansas Farm Management Association data bank served as the data base for this study. The Association has about 2,500 farms as members. Twelve-years of data, from 1973 to 1984, have been placed on magnetic tape for purpose of analysis. Of the 2500 farms, 793 farms were found to contain all twelve-years of data. Those 793 farms were utilized for this study.

Characteristics of data

The sample farms were classified by size, debt to asset ratio, and type¹. Gross income determined the size class to which a farm belongs. Size class ranged from the lowest class of \$20,000 gross income or less to the largest farms with \$500,000 gross income or more. Debt to asset ratio was computed by dividing the total debt by total assets. This classification ranged from the lowest ratio of 0.10 or less to the highest ratio of 1.70 and over. The Farm Management Association data bank has forty-four farm types; however, farms are concentrated primarily into seven farm types. Farm types selected were: cash-crop/dryland, cash-crop/irrigated, dairy, cash-crop/cow-herd, general farm, cash-crop/backgrounding, cash-crop/beef, and other.

¹Farm types as defined by the Farm Management Association can be found in Appendix B.

Data Base

The number of farms in the \$500,000 gross income and over size group increased from two farms in 1973 to thirty-one farms in 1984, (Table 11). Those in the \$200,000 to \$500,000 class also increased from 83 farms in 1973 to 172 farms in 1984. There was little change in the \$100,000 to \$200,000 class. A decrease occurred in the \$40,000 to \$100,000 class.

There was change in the number of farms in the 0-0.09 debt/asset ratio from 1973 to 1984, (Table 12). In 1973, 19.55 per cent of farms were in this category while 24.46 per cent had less than a 0.10 ratio in 1984. In the 0.6-0.69 debt/asset ratio the number of farms increased from 3.53 per cent in 1973 to 6.94 per cent of the farms in 1984. The 1.0 debt/asset ratio category increased from 0.25 per cent in 1973 to 1.77 per cent in 1984. There appeared to be a general decline over time in the number of farms with a debt/asset ratio of less than 0.60 while the per cent of farms with debt/asset ratio greater than 0.60 increased.

A positive relationship existed between the debt/asset ratio and the size of farm, (Table 13). The average debt/asset ratio increased as the size of farm increased. For example, in 1973, the average debt/asset ratio was 0.40 in the \$500,000 and over size category. It was 0.36 in the \$20,000 or less size category. In 1984, the average debt/asset ratio range was 0.55 in the \$500,000 and over farm size but was 0.16 in the \$20,000 or less size class. In general, the larger farms also tended to show an increased debt/asset ratio over time while smaller farms had a declining ratio over time.

TABLE 11
Farm size by year, 1973-1984

Farm Size (gross income \$thousand)	73	74	75	76	77	78	79	80	81	82	83	84
	(No. of farms and percent of total)											
500 and over	2	5	5	5	4	15	22	20	22	31	29	31
Percent	0.3	0.6	0.6	0.6	0.5	1.9	2.8	2.5	2.8	3.9	3.7	3.9
200 to 499.99	83	52	73	61	76	148	189	165	160	185	189	172
Percent	10.5	6.6	9.2	7.7	9.6	18.7	23.8	20.8	20.2	23.3	23.8	21.7
100 to 199.99	291	184	207	205	272	287	342	277	280	304	293	269
Percent	36.7	23.2	26.1	25.9	34.3	36.2	43.1	34.9	35.3	38.3	37.0	33.9
40 to 99.99	371	390	392	384	347	300	219	287	274	227	234	234
Percent	46.8	49.2	49.4	48.4	43.8	37.8	27.6	36.2	34.6	28.6	29.5	29.5
20 to 39.99	40	120	96	118	81	37	19	33	40	35	31	66
Percent	5.0	15.1	12.1	14.9	10.2	4.7	2.4	4.2	5.0	4.4	3.9	8.3
Under 20	6	42	20	20	13	6	2	11	17	11	17	21
Percent	0.8	5.3	2.5	2.5	1.6	0.8	0.3	1.4	2.1	1.4	2.1	2.7

Total farms = 793

TABLE 12
Debt/asset ratio by year, 1973-1984

Debt/Asset Ratio	73	74	75	76	77	78	79	80	81	82	83	84
	(percent of total farms)											
0.0-0.09	19.6	23.3	24.7	20.9	19.6	18.8	19.6	24.7	24.6	24.2	24.2	24.5
0.1-0.19	17.5	16.4	19.2	17.7	14.6	16.0	14.5	16.1	13.9	14.0	13.6	12.6
0.2-0.29	18.3	18.5	17.3	15.3	15.3	13.0	14.8	15.9	14.8	14.4	12.6	12.7
0.3-0.39	14.1	14.4	13.8	15.5	14.8	13.8	14.6	13.5	12.7	10.2	10.5	9.6
0.4-0.49	13.5	11.3	10.8	12.2	11.7	13.1	11.7	10.6	11.5	11.7	11.0	9.6
0.5-0.59	9.7	8.2	7.1	7.3	8.6	9.7	9.3	9.5	7.9	6.6	7.6	7.8
0.6-0.69	3.5	4.3	3.7	4.9	6.9	7.7	7.9	4.8	6.4	7.2	6.6	6.9
0.7-0.79	2.1	1.8	2.1	2.5	3.2	3.0	3.2	2.4	2.9	4.4	4.8	5.2
0.8-0.89	1.1	1.1	0.5	1.8	2.8	2.4	1.9	1.3	2.9	2.7	3.0	4.0
0.9-0.99	0.3	0.1	0.8	1.1	1.1	0.6	0.8	0.5	0.5	1.4	2.3	1.8
1.0-1.09	0.1	0.4	0.0	0.4	0.5	0.9	0.9	0.3	0.8	1.3	1.3	1.4
1.1-1.19	0.0	0.0	0.1	0.3	0.5	0.5	0.3	0.0	0.3	0.5	0.3	1.1
1.2-1.29	0.1	0.0	0.0	0.1	0.1	0.0	0.3	0.1	0.3	0.5	0.8	0.9
1.3-1.39	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.4	0.5	0.5
1.4-1.49	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.3	0.5
1.5-1.59	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.4	0.0
1.6-1.69	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.1	0.0	0.0	0.1
Over 1.7	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.1	0.4	0.6	0.5	0.8

TABLE 13
Average debt/asset ratio by size and by year

Farm Size (\$ thousand)	<u>Year</u>											
	73	74	75	76	77	78	79	80	81	82	83	84
	Average debt/asset ratio											
500 and over...	.40	.62	.57	.62	.65	.60	.55	.55	.56	.49	.57	.55
200-499.99.....	.34	.32	.33	.37	.43	.42	.39	.36	.38	.42	.45	.47
100-199.99.....	.29	.27	.29	.33	.38	.35	.35	.30	.35	.37	.37	.40
40-99.99.....	.29	.27	.26	.29	.31	.30	.28	.24	.27	.27	.31	.34
20-39.99.....	.30	.29	.21	.26	.24	.27	.15	.18	.22	.24	.16	.27
Under 20.....	.36	.30	.24	.24	.22	.32	.47	.23	.27	.15	.16	.16

By farm type, the number of farms in the cash-crop/dryland farm type decreased from 63.1 per cent in 1973 to 44.9 per cent in 1984 (Table 14). The majority of the cash-crop/dryland farms were in the debt to asset range of 0-0.70. Farm numbers decreased from 11.9 per cent in 1973 to 6.8 per cent in 1984 for the cash-crop/irrigated, and like the dryland crop farms, the majority of the farms fell within the 0-0.70 debt/asset ratio.

Dairy farms were 7.8 per cent of total farms in 1973 and 4.0 per cent in 1984. Cash-Crop/Cowherd had only 0.4 per cent of total farms in 1973 and 7.6 per cent in 1984. Because the general farm type classification was not established until 1974, the 1973 farm number was not recorded, but by 1984, there were 8.3 per cent of total farms in the farm type, and the majority of the farms were in the 0-0.70 debt/asset ratio. There were 5.4 per cent of total farms in the cash-crop/backgrounding in 1976 and 8.4 per cent in 1984. Cash-crop/beef was the smallest farm type category, and it became a separate farm type in 1977. There were 13.7 per cent of total farms in this farm type in 1977 and 5.3 per cent in 1984. The unclassified farms designated as 'other farms' had 16.9 per cent of total farms in 1973 and 14.6 per cent in 1984. The majority of these farms were within the 0-0.70 debt/asset ratio. In every farm type classification, the percent of farms with debt/asset ratios greater than 0.70 increased.

TABLE 14

Farms by type, by debt/asset ratio, and by year

Farm Type	Year											
	73	74	75	76	77	78	79	80	81	82	83	84
Cash-Crop/ Dryland	63.1	59.4	55.2	41.0	42.6	39.2	42.5	41.7	43.5	43.3	40.9	44.9
% in 0-.70 D/A Ratio	97.0	97.0	98.0	95.0	93.0	93.0	93.0	97.0	94.0	92.0	90.0	88.0
Cash-Crop/ Irrigated	11.9	11.6	9.5	8.4	8.2	8.3	7.7	7.4	7.9	7.6	7.2	6.8
% in 0-.70 D/A Ratio	94.0	97.0	96.0	94.0	85.0	86.0	89.0	92.0	91.0	82.0	77.0	76.0
Dairy	7.8	7.9	8.8	5.9	5.8	5.3	5.4	4.9	5.0	4.9	5.0	4.0
% in 0-.70 D/A Ratio	97.0	97.0	97.0	94.0	94.0	93.0	93.0	97.0	95.0	95.0	93.0	84.0
Cash-Crop/ Cowherd	0.4	0.3	2.0	7.3	5.9	7.2	8.6	9.1	7.8	8.1	8.3	7.6
% in 0-.70 D/A Ratio	100	100	94.0	98.0	92.0	95.0	97.0	97.0	94.0	86.0	86.0	85.0
General Farm	-	0.1	0.8	17.3	11.3	10.3	8.8	9.1	10.0	9.5	8.7	8.3
% in 0-.70 D/A Ratio	-	100	100	92.0	90.0	94.0	90.0	90.0	87.0	90.0	86.0	83.0
Cash-Crop/ Backgrounding	-	-	-	5.4	-	6.9	6.6	5.8	6.1	5.5	7.7	8.4
% in 0-.70 D/A Ratio	-	-	-	86.0	-	89.0	92.0	85.0	83.0	80.0	82.0	78.0

TABLE 14 --continued

Farm Type	73	74	75	76	77	78	Year		80	81	82	83	84
							79	(percent)					
Cash-Crop/ Beef	-	-	-	-	13.7	5.4	5.3	4.4	4.8	5.3	6.1	5.3	
% in 0-.70 D/A Ratio	-	-	-	-	90.0	98.0	93.0	100	95.0	88.0	88.0	38.0	
Other	16.9	20.7	23.7	14.6	12.4	17.3	15.1	17.5	14.9	15.8	16.1	14.6	
% in 0-.70 D/A Ratio	96.0	93.0	93.0	92.0	91.0	89.0	91.0	95.0	89.0	84.0	80.0	76.0	

Debt/asset ratio

Farm financial problems are generally measured by the debt/asset ratio. A high debt/asset ratio usually indicates financial difficulties. Based on the sample farms, average debt/asset ratios for the farms increased from 1980 to 1984 (Figure 6). Average debt/asset ratio also generally increased from 1973 to 1978, but the ratios were not as high as those for the 1982 to 1984 period.

Based on a USDA classification, 59.39 per cent of the sample farms were generally solvent (Table 15). These farms were below the debt/asset ratio of 0.40. Those that had serious financial problems were 24.34 per cent of the farms and had a debt/asset ratio equal to or greater than 0.40, but less than 0.70. An additional 11 per cent of the sample farms were in the extreme financial problems category. These farms had debt/asset ratio equal to or greater than 0.70, but less than 1.0. The remaining 5.30 per cent of farms were technically insolvent, with a debt/asset ratio of 1.0 or above. These farms owed more than their asset values.¹

Land owned

With the exception of the 1.4-1.49 debt/asset category, farmers with lower debt/asset ratios of 0-0.9 generally had more land owned than those with higher debt/asset ratio (Figure 7). Farmers in the 1.4-1.49 debt/asset ratio had the largest land owned, on average, over time. This category had an average of 1,425 acres. The 0.3-0.39 debt/asset ratio was second with an average of 764 acres, followed by the 0.1-0.19 debt/asset ratio category.

¹The association changes land values of its members every five years. This means that farmland values of members remained constant for five year periods. During the study period, land value changes were made in 1975, and 1980.

AVERAGE DEBT/ASSET RATIO BY YEAR

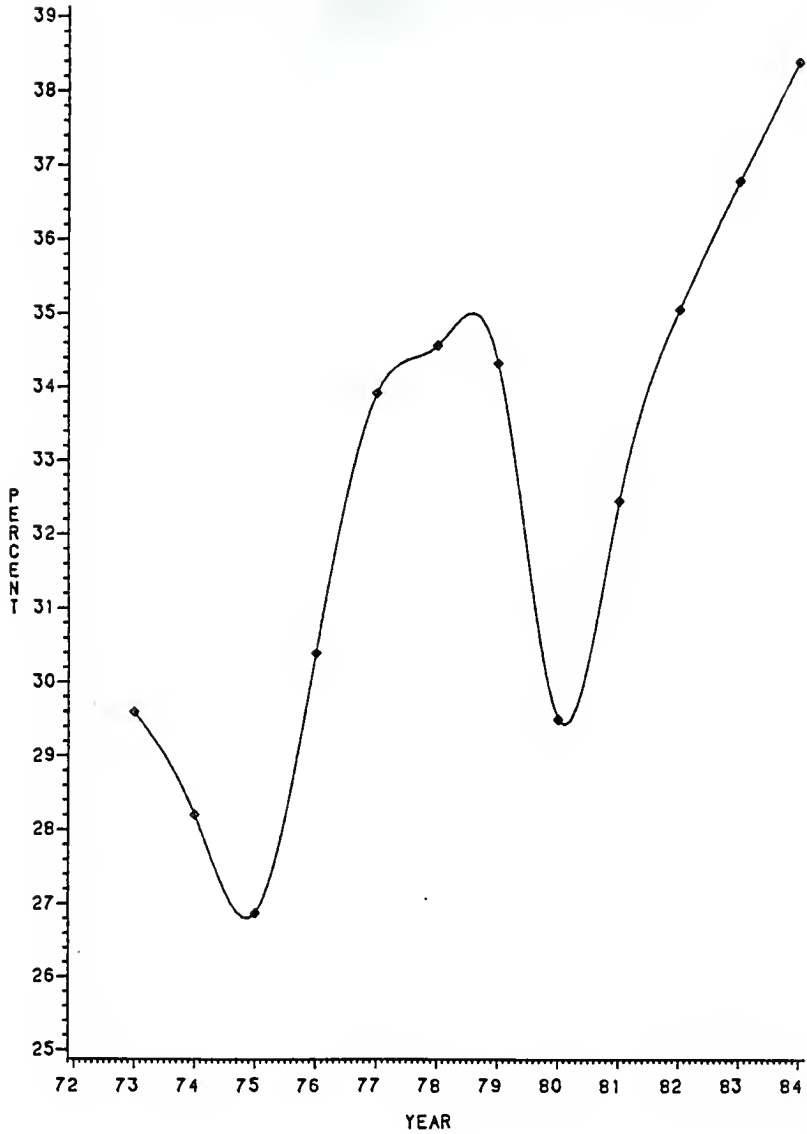
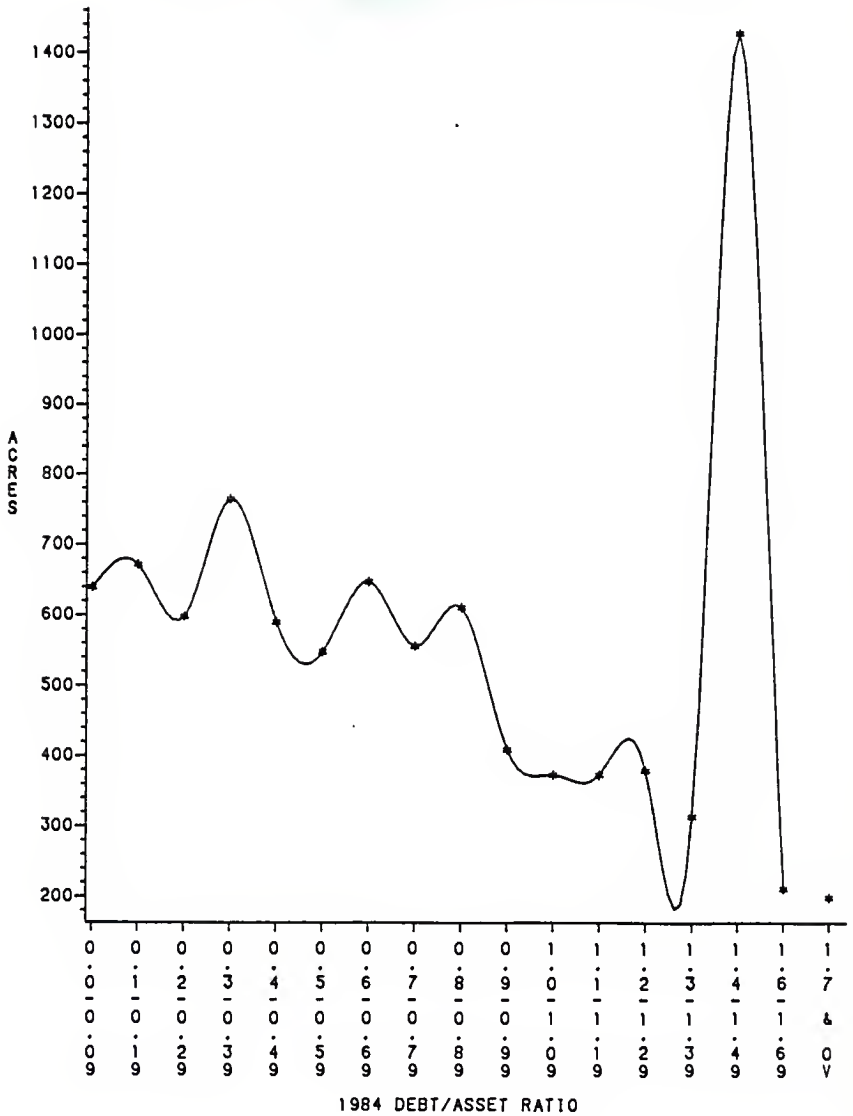


TABLE 15

Estimated financial condition of the sample farms by the 1984 debt/asset ratio.

Category	1984 debt/ asset ratio	Percent of farms
Solvent	0-0.39	59.39
Serious Financial Problem	0.40-0.69	24.34
Extreme Financial Problem	0.70-0.99	11.00
Technically Insolvent	<u>≥</u> 1.0	5.30

AVERAGE LAND OWNED BY 1984 D/A RATIO



Generally, the number of land acres owned decreased as the debt/asset ratio increased. Farmers in the debt/asset ratios of 1.70 and over had the smallest land owned of 199 acres.¹

By type of farm, cash-crop/cowherd had the largest amount of land owned over the twelve-year period (Figure 8). Farmers in this farm type owned an average of 911 acres. This type was followed by cash-crop/beef with 804 acres, and cash-crop/backgrounding with 764 acres of land owned. Dairy farms had the smallest amount of land owned with 427 acres. All the other unclassified farms had an average of 660 acres.

Land owned is positively related to farm size. This means that the larger farms owned the larger number of acres of land (Figure 9). For example, farmers in the \$500,000 and above farm size owned an average of 1,093 acres of land. Those in the \$100,000-\$199,999 farm size owned 656 acres, while those under \$20,000 farm size owned the smallest acreage or an average of 441 acres.

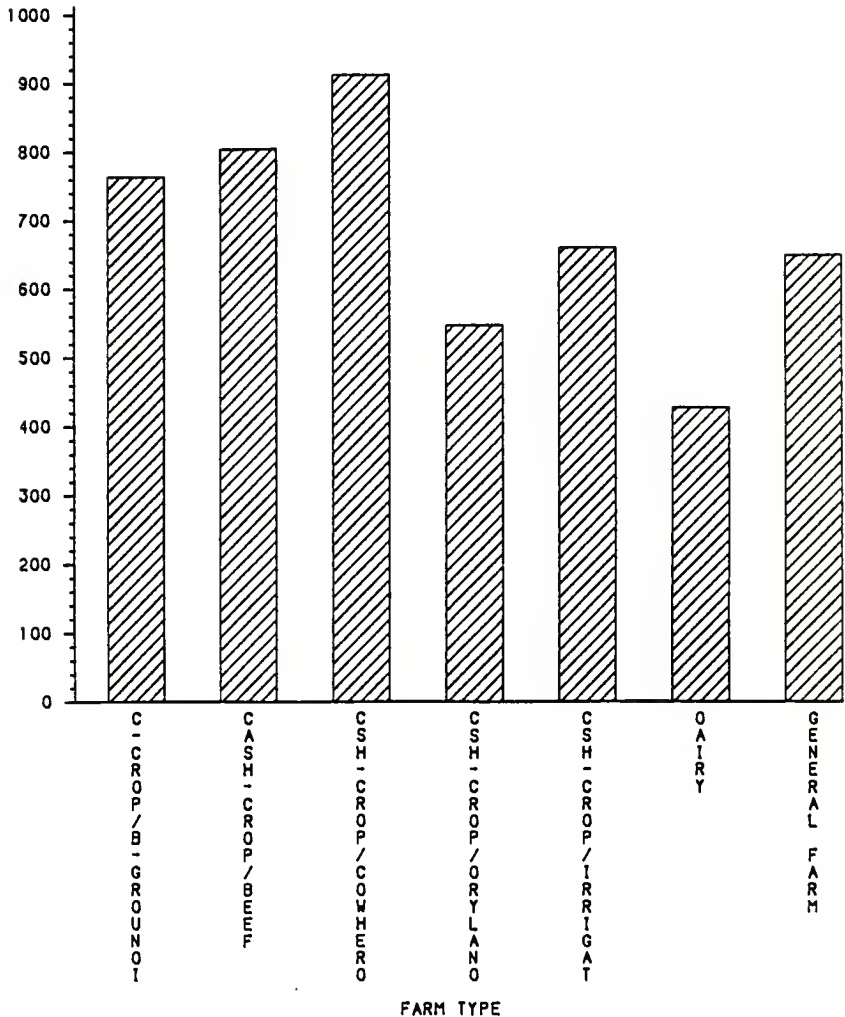
In general, farmland acres owned by farmers increased from 1973 to 1984, but with a noted decline from 1983 to 1985. In 1973, average land owned was 545 acres. This had increased to 629 acres in 1979, 654 acres in 1981, and 676 acres in 1983. Average land owned in 1984 was 669 acres (Figure 10).²

¹Note that as the debt/asset ratio increased, the number of sample farms in each category decreased.

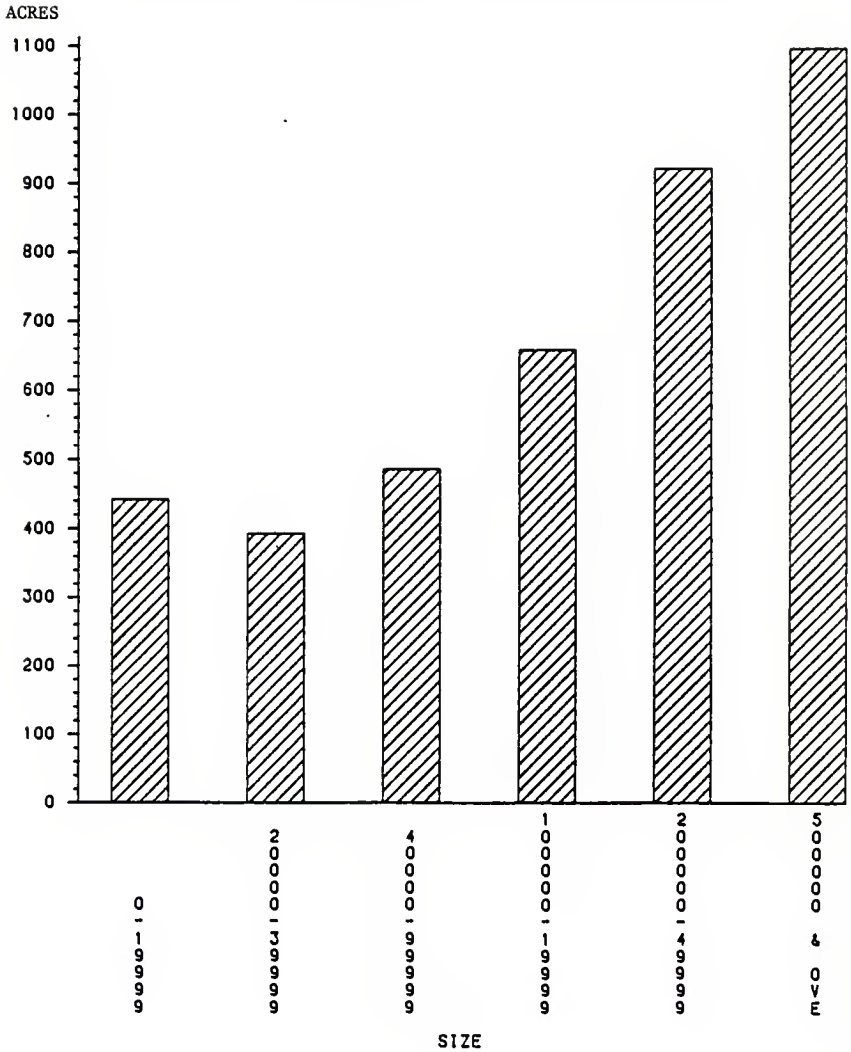
²Comparative figures from the Kansas Farm Management Association yearly state summaries, for some of the variables discussed in this chapter, can be found in Appendix A.

AVERAGE LAND OWNED BY FARM TYPE, 1973/84

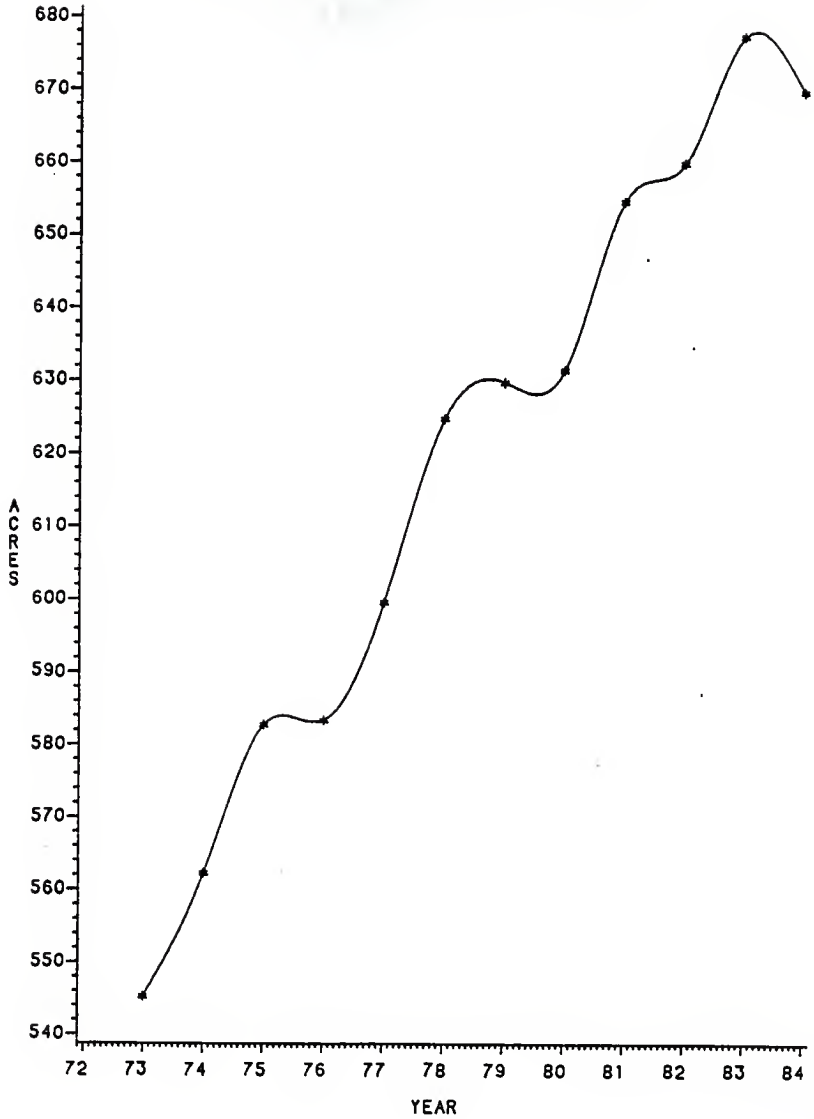
ACRES



AVERAGE LAND OWNED BY FARM SIZE, 1973/84



AVERAGE LAND OWNED BY YEAR



Capital purchased

Unlike land owned, farmers above the 1.0 debt/asset ratio (with the exception of the 1.60-1.69 debt/asset ratio) generally purchased more capital assets¹ annually than those below (Figure 11). However, the 1.4-1.49 debt/asset ratio category that owned the largest land also had the largest average capital purchased of \$28,202.50 over the years. The 1.3-1.39 debt/asset ratio followed with average capital purchased of \$27,982.19. It was \$27,530.27 for the 1.1-1.19 debt/asset ratio category. The lowest debt/asset ratio category (0-0.09) had average capital purchased of only \$15,787.52, over the study time period.

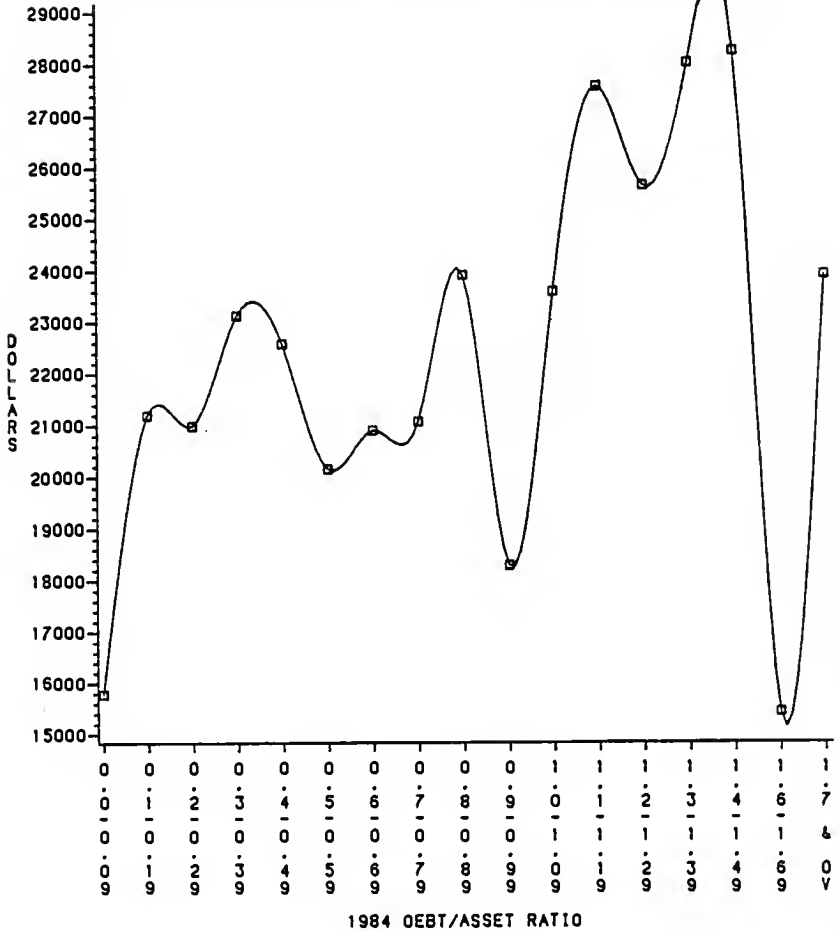
By type of farm, cash-crop/irrigated had the largest annual average of capital purchased of \$32,521.00, followed by cash-crop/backgrounding with an average of \$24,018.00, and cash-crop/beef with \$20,086.00 capital purchased (Figure 12). Farmers in the cash-crop/cowherd farm type had the smallest average capital purchased of \$13,121.00.

Similar to trends in land owned and as might be expected, capital purchased was positively related to farm size (Figure 13). That is, the larger farms purchased the larger amount of capital assets over time. Farmers in the \$500,000 and over farm size purchased an annual average of \$68,333.00, followed by those in the \$200,000-\$499,999 farm size with average capital asset purchased of \$37,256.00. Those in the farm size of \$20,000-\$39,999 had the smallest capital purchased of \$6,740.00.

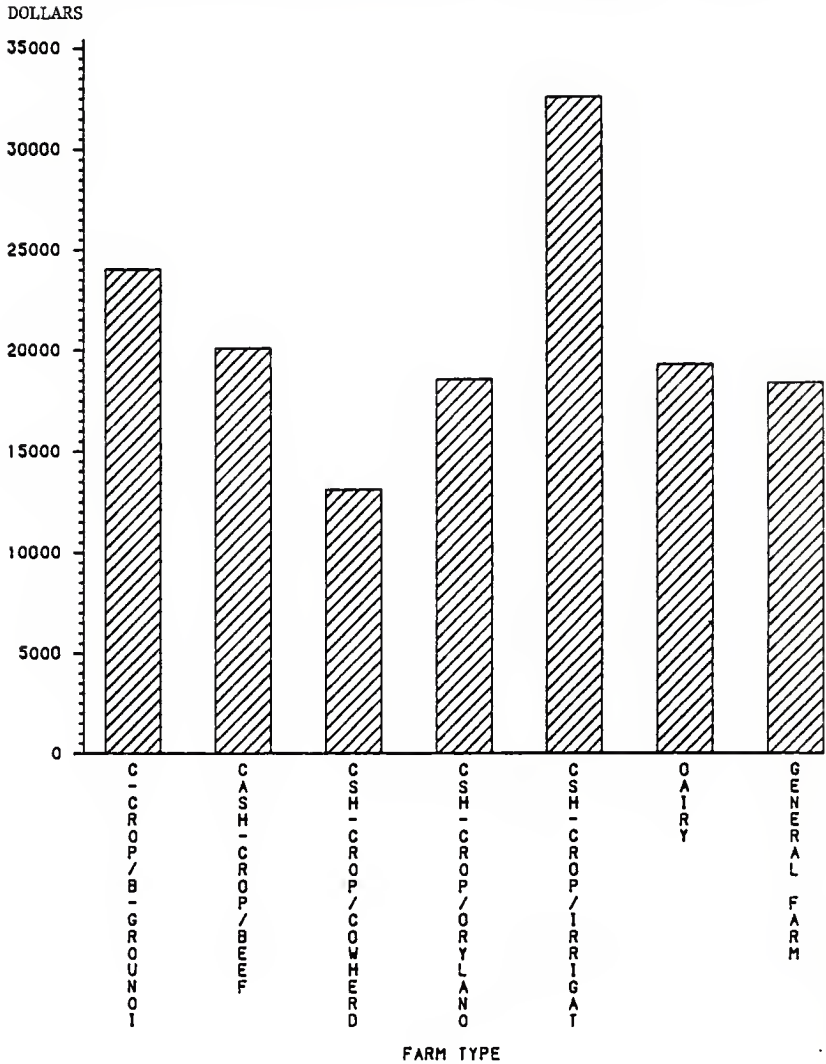
By year, capital purchased trended upward from 1973 to 1979, but decreased from 1979 to 1984 (Figure 14). Farmers purchased an annual average

¹Capital assets (or capital purchased) represents the sum of motor vehicles purchased, machinery purchased, and buildings purchased.

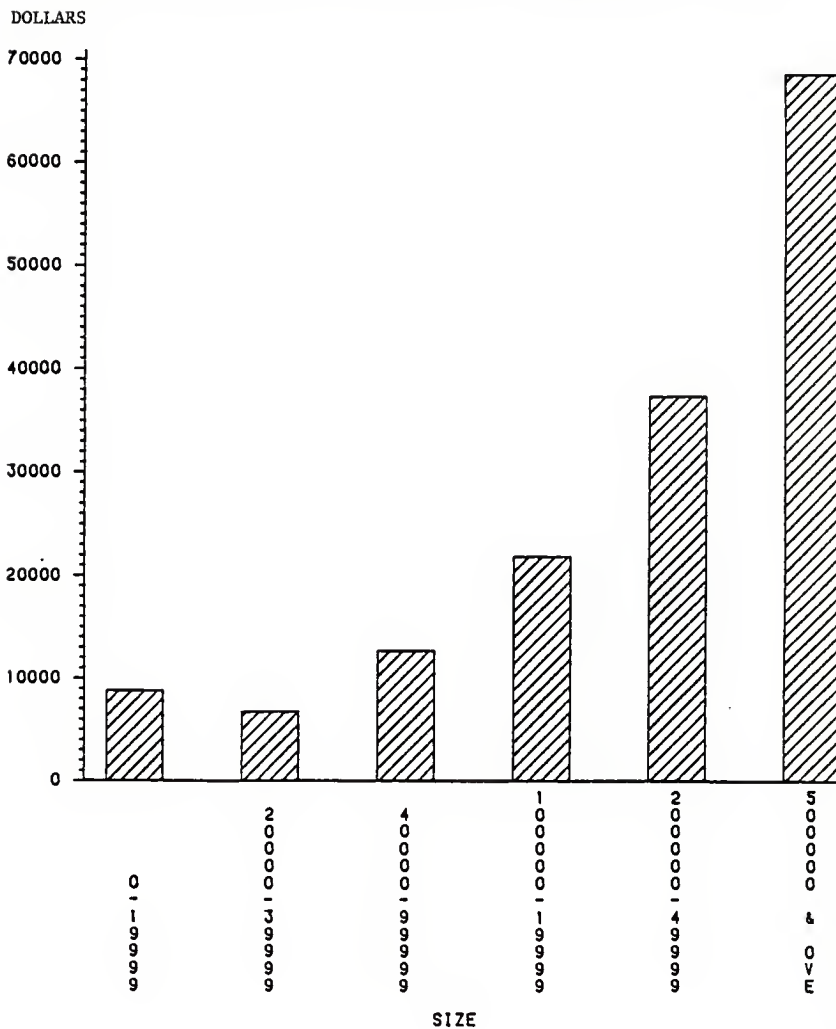
AVERAGE CAPITAL PURCHASED BY 1984 D/A RATIO



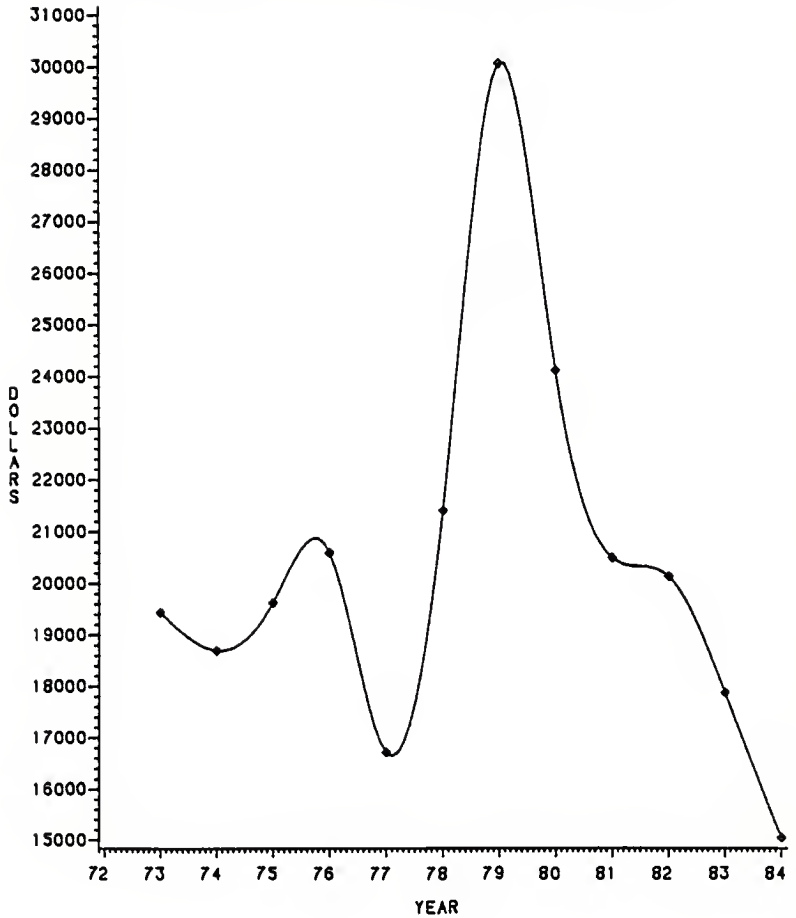
AVERAGE CAPITAL PURCHASED BY FARM TYPE, 1973/84



AVERAGE CAPITAL PURCHASED BY FARM SIZE, 1973/84



AVERAGE CAPITAL PURCHASED BY YEAR



of \$19,434.00 in capital assets in 1973 and \$30,032.00 in 1979. In 1981 capital purchased decreased to \$20,469.00; by 1984, it had decreased to \$15,042.00.

Crop machinery investment and crop expense per crop acre

There was a general increase in the average crop machinery investment per crop acre from 1973 to 1981, but a decline from 1981 to 1984 (Table 16). Also, average crop expense per crop acre increased from 1977 to 1982. Therefore, crop investment per crop acre was highest for 1981, but crop expense was highest for 1982.

Net income per crop acre and return per dollar of investment and labor

1973 was highest for return per dollar of investment and labor (Table 16). Based on the eight years recorded, 1979 was highest for average net income per acre. With the exception of 1973 and 1979, returns per dollar of investment and labor were generally low for all the years. 1981 was the lowest year for return per dollar of investment and labor; 1984 was the lowest for net income per acre.

Age

The highest average age in any debt/asset ratio was 59, and the lowest was 38 (Table 17). Farmers in the debt/asset ratio of 0-0.09 had the highest average age of 59, followed by those in the 0.2-0.39 and the 0.9-0.99 debt/asset ratios with average age of 54. The debt/asset ratios 1.4-1.49 and 1.6-1.69 had the youngest age group of 38.

By farm type in 1984, cash-crop/irrigated farmers had the oldest average age of 56, and was followed by the cash-crop/cowherd farmers with average age of 55 (Table 18).

TABLE 16

Average crop machinery investment and crop expense per crop acre; net income^a per crop acre, and return per dollar of investment and labor by year.

Group	<u>Year</u>							
	73	75	77	79	81	82	83	84
CMIA ^b (\$)	37.24	46.47	51.02	59.00	65.63	64.45	59.45	52.40
CEPA ^c (\$)	-	-	67.76	84.23	99.72	106.92	101.90	104.04
NIPA ^d (\$)	-	-	38.00	72.05	45.93	28.08	24.59	21.42
NITA ^e (%)	0.26	0.09	0.09	0.16	0.04	0.07	0.07	0.05

^aNet income includes income to operator labor.

^bCrop machinery investment per crop acre.

^cCrop expense per crop acre.

^dNet income per crop acre.

^eReturn per dollar of investment and labor.

TABLE 17
Average age by 1984 debt/asset ratio

1984 Debt/Asset Ratio	Average Age (1984)
0.0-0.09	59
0.1-0.19	53
0.2-0.29	54
0.3-0.39	54
0.4-0.49	50
0.5-0.59	51
0.6-0.69	52
0.7-0.79	49
0.8-0.89	47
0.9-0.99	54
1.0-1.09	48
1.1-1.19	49
1.2-1.29	51
1.3-1.39	39
1.4-1.49	38
1.5-1.59	-
1.6-1.69	38
1.70 and over	52

TABLE 18
Average age by type of farm, 1984

Farm Type	Average Age
Cash-Crop/ Dryland	53
Cash-Crop/ Irrigated	56
Dairy	54
Cash-Crop/ Cowherd	55
General farm	51
Cash-Crop/ Backgrounding	54
Cash-Crop/Beef	53
Other ^a	53

^aAll the other unclassified farms.

General farmers had the youngest average age group of 51. The unclassified farms had average age of 53.

Based on farm size, the oldest age group was in the under \$20,000 farm size (Table 19). This group had average age of 62, followed by the \$20,000-\$39,999 farm size with average farmer age of 59. The \$500,000 and over farm size, and the \$40,000-\$99,999 farm size had the youngest farmer average age of 52 and 51 respectively.

TABLE 19
Average age by size of farm, 1984

Farm Size	Average Age
(\$thousand)	
500 and over	52
200-499.9	51
100-199.9	52
40-99.9	55
20-39.9	59
Under 20.0	62

CHAPTER IV

EXPANSION IN LAND AND CAPITAL

Expansion In LandExpansion in land by debt/asset ratio

Based on the 1984 debt/asset ratios, the majority of the farms within the debt/asset ratio categories of 0-1.09 had a positive change in land owned in the 1973/81 period (Table 20). Conversely, in the 1981/84 period, the majority of the farmers appeared to have sold land or made no change in land owned. The net effect, designated by the change in land owned over the 1973/84 period, showed that the majority of the farmers increased land owned. The debt/asset ratio categories above 1.1 showed no consistent change in land owned over the study period.

Within the 0-0.79 debt/asset ratio categories, there appeared to be an inverse relationship between the proportion of farms that purchased 160 acres or less between 1973 and 1984, and the debt/asset ratio of these farms (Table 21). This means that among farmers that made a 1 to 160 acre change, the proportion of farms declined as their debt/asset ratio increased. For example, 30.41 per cent of farmers made a 1 to 160 acre change in land owned in the 0-0.09 debt/asset ratio. The proportion declined to 25.0 per cent in the 0.3-0.39 debt/asset ratio, and 14.63 per cent in the 0.7-0.79 debt/asset ratio. An opposite trend existed among farmers that made changes greater than 320 acres. The proportion of farmers in this category increased as the debt/asset ratio increased.

TABLE 20

Change in land owned by 1984 debt/asset ratio

1984 Debt/ Asset Ratio	Years	No. Farm	Change		1984 Debt/ Asset Ratio	Years	No. Farm	Change	
			<0 (%)	>0 (%)				<0 (%)	>0 (%)
0.0-0.09	73/81	194	50.2	49.5	0.9-0.99	73/81	14	50.0	50.0
	81/84	194	76.8	23.2		81/84	14	78.6	21.4
	73/84	194	51.5	48.4		73/84	14	35.7	64.3
0.1-0.19	73/81	100	32.0	68.0	1.0-1.09	73/81	11	36.4	63.6
	81/84	100	61.0	39.0		81/84	11	72.7	27.3
	73/84	100	32.0	68.0		73/84	11	54.5	45.5
0.2-0.29	73/81	101	36.6	63.4	1.1-1.19	73/81	9	22.2	77.8
	81/84	101	64.5	35.6		81/84	9	100.0	0.0
	73/84	101	33.7	66.3		73/84	9	66.7	33.3
0.3-0.39	73/81	76	31.6	68.4	1.2-1.29	73/81	7	71.4	28.6
	81/84	76	59.2	40.8		81/84	7	85.7	14.3
	73/84	76	34.2	65.2		73/84	7	71.4	28.6
0.4-0.49	73/81	76	27.6	72.4	1.3-1.39	73/81	4	75.0	25.0
	81/84	76	65.8	34.2		81/84	4	50.0	50.0
	73/84	76	31.6	68.4		73/84	4	50.0	50.0
0.5-0.59	73/81	62	41.9	58.1	1.4-1.49	73/81	4	25.0	75.0
	81/84	62	58.1	41.9		81/84	4	100.0	0.0
	73/84	62	37.1	62.9		73/84	4	75.0	25.0
0.6-0.69	73/81	55	32.7	67.3	1.5-1.59	73/81	-	-	-
	81/84	55	50.9	49.1		81/84	-	-	-
	73/84	55	29.1	70.9		73/84	-	-	-
0.7-0.79	73/81	41	24.4	75.6	1.6-1.69	73/81	1	0.0	100.0
	81/84	41	80.5	19.5		81/84	1	100.0	0.0
	73/84	41	26.8	73.2		73/84	1	0.0	100.0
0.8-0.89	73/81	32	40.6	59.4	Over 1.70	73/81	6	67.7	32.3
	81/84	32	84.4	15.6		81/84	6	100.0	0.0
	73/84	32	43.8	56.3		73/84	6	83.3	16.7

TABLE 21

Proportion of farms by amount of land owned change between 1973 and 1984

1984 Debt/Asset Ratio	<0	Absolute land acre change			
		0	1-160 (percent)	161-320	>320
0.0-0.09	20.6	29.9	30.4	10.3	8.8
0.1-0.19	19.0	13.0	25.0	30.0	13.0
0.2-0.29	23.8	12.9	25.7	18.8	18.8
0.3-0.39	15.8	15.8	25.0	21.1	22.4
0.4-0.49	13.2	14.5	18.4	27.6	26.3
0.5-0.59	22.6	19.4	19.4	19.4	19.4
0.6-0.69	23.6	9.1	20.0	12.7	34.6
0.7-0.79	9.8	14.6	14.6	19.5	41.5
0.8-0.89	31.3	9.4	25.0	6.3	28.1
0.9-0.99	21.4	28.6	14.3	21.4	14.3
1.0-1.09	27.3	9.1	18.2	36.4	9.1
1.1-1.19	0.0	22.2	22.2	22.2	33.3
1.2-1.29	57.2	14.3	0.0	14.3	14.3
1.3-1.39	75.0	0.0	25.0	0.0	0.0
1.4-1.49	0.0	25.0	50.0	0.0	0.0
1.5-1.59	-	-	-	-	-
1.6-1.69	0.0	0.0	0.0	100.0	0.0
Over 1.70	16.7	50.0	0.0	0.0	33.3

For example, 8.76 per cent of farmers made a change of over 320 acres in land owned in the 0-0.09 debt/asset ratio. The proportion increased to 22.37 per cent in the 0.3-0.39 debt/asset ratio, and 41.47 per cent in the 0.7-0.79 debt/asset ratio. No clear trends were apparent for farms with debt/asset ratios above 0.8.

Based on the average land owned, farmers within the lower debt/asset ratio categories appeared to have made smaller changes in land owned between the years, while those in the higher ratios showed larger changes between the years of the study period (Table 22). Specifically, farmers within the 0-0.89 debt/asset ratio generally indicated a less than 50 acre change in land owned between the years, and the changes were consistent. However, the majority of the farmers above the 0.89 debt/asset ratio showed inconsistently larger changes in land owned between the years, indicating that they either bought or sold land. The majority of the farmers in all the debt/asset ratio categories showed smaller amount of land owned in 1973, but as the years progressed, the amount of land owned increased. Those with a 0.90 debt/asset ratio and above indicated smaller amounts of land owned in 1973 relative to those within the smaller debt/asset ratio categories.

Expansion in land by type of farm

By farm type, there appeared to be a similar trend in changes in land owned among four farm types: cash-crop/dryland, cash-crop/cowherd, general farm, and cash-crop/beef. The majority of farmers within the 0-0.89 debt/asset ratio showed increases in land owned between 1973 and 1981 (Tables 23, 24, 25, and 26). The 1981/84 period, however, indicated a major decline in land owned for the majority of the farmers. There were an insufficient

TABLE 22

Average land owned by 1984 debt/asset ratio and by year

1984 Debt/ Asset Ratio	Years	No. Fam	Average land owned (acres)	1984 Debt/ Asset Ratio	Years	No. Fam	Average land owned (acres)
0.0-0.09	1973	194	594	0.3-0.39	1973	76	617
	1974	194	634		1974	76	681
	1975	194	660		1975	76	681
	1976	194	626		1976	76	714
	1977	194	630		1977	76	774
	1978	194	636		1978	76	805
	1979	194	626		1979	76	825
	1980	194	637		1980	76	733
	1981	194	648		1981	76	815
	1982	194	651		1982	76	823
	1983	194	656		1983	76	865
	1984	194	664		1984	76	834
0.1-0.19	1973	100	615	0.4-0.49	1973	76	485
	1974	100	621		1974	76	514
	1975	100	617		1975	76	516
	1976	100	651		1976	76	495
	1977	100	679		1977	76	536
	1978	100	683		1978	76	569
	1979	100	704		1979	76	605
	1980	100	679		1980	76	627
	1981	100	679		1981	76	686
	1982	100	685		1982	76	692
	1983	100	717		1983	76	672
	1984	100	713		1984	76	670
0.2-0.29	1973	101	587	0.5-0.59	1973	62	475
	1974	101	522		1974	62	509
	1975	101	571		1975	62	498
	1976	101	547		1976	62	518
	1977	101	550		1977	62	543
	1978	101	600		1978	62	554
	1979	101	570		1979	62	559
	1980	101	615		1980	62	570
	1981	101	604		1981	62	560
	1982	101	625		1982	62	567
	1983	101	700		1983	62	586
	1984	101	669		1984	62	625

TABLE 22--continued.

Average land owned by 1984 debt/asset ratio and by year

1984 Debt/ Asset Ratio	Years	No. Farm	Average land owned (acres)	1984 Debt/ Asset Ratio	Years	No. Farm	Average land owned (acres)
0.6-0.69	1973	55	564	0.9-0.99	1973	14	407
	1974	55	562		1974	14	350
	1975	55	625		1975	14	372
	1976	55	630		1976	14	385
	1977	55	642		1977	14	384
	1978	55	664		1978	14	384
	1979	55	610		1979	14	485
	1980	55	647		1980	14	457
	1981	55	656		1981	14	419
	1982	55	694		1982	14	373
	1983	55	720		1983	14	436
1984	55	745	1984	14	445		
0.7-0.79	1973	41	368	1.0-1.09	1973	11	264
	1974	41	385		1974	11	277
	1975	41	431		1975	11	293
	1976	41	477		1976	11	299
	1977	41	542		1977	11	369
	1978	41	564		1978	11	380
	1979	41	573		1979	11	469
	1980	41	600		1980	11	435
	1981	41	697		1981	11	407
	1982	41	704		1982	11	438
	1983	41	688		1983	11	465
1984	41	627	1984	11	368		
0.8-0.89	1973	32	490	1.1-1.19	1973	9	227
	1974	32	559		1974	9	226
	1975	32	595		1975	9	219
	1976	32	549		1976	9	252
	1977	32	548		1977	9	379
	1978	32	617		1978	9	446
	1979	32	645		1979	9	464
	1980	32	660		1980	9	393
	1981	32	680		1981	9	521
	1982	32	671		1982	9	503
	1983	32	669		1983	9	464
1984	32	629	1984	9	377		

TABLE 22--continued.

Average land owned by 1984 debt/asset ratio and by year

1984 Debt/ Asset Ratio	Years	No. Farm	Average land owned (acres)	1984 Debt/ Asset Ratio	Years	No. Farm	Average land owned (acres)
1.2-1.29	1973	7	489	1.5-1.59	1973	-	-
	1974	7	476		1974	-	-
	1975	7	446		1975	-	-
	1976	7	548		1976	-	-
	1977	7	155		1977	-	-
	1978	7	388		1978	-	-
	1979	7	520		1979	-	-
	1980	7	214		1980	-	-
	1981	7	443		1981	-	-
	1982	7	200		1982	-	-
	1983	7	230		1983	-	-
	1984	7	427		1984	-	-
	1.3-1.39	1973	4		437	1.6-1.69	1973
1974		4	357	1974	1		372
1975		4	144	1975	1		-
1976		4	415	1976	1		200
1977		4	180	1977	1		200
1978		4	460	1978	1		200
1979		4	224	1979	1		200
1980		4	236	1980	1		274
1981		4	245	1981	1		274
1982		4	451	1982	1		274
1983		4	304	1983	1		274
1984		4	304	1984	1		274
1.4-1.49		1973	4	1205	Over 1.70		1973
	1974	4	1275	1974		6	67
	1975	4	1272	1975		6	343
	1976	4	1423	1976		6	396
	1977	4	1424	1977		6	71
	1978	4	1480	1978		6	73
	1979	4	1427	1979		6	305
	1980	4	1794	1980		6	309
	1981	4	1801	1981		6	332
	1982	4	1570	1982		6	271
	1983	4	1354	1983		6	89
	1984	4	1076	1984		6	60

TABLE 23

Change in land owned by 1984 debt/asset ratio for cash-crop/dryland farms

1984 Debt/ Asset Ratio	Years	No. Farm	Change		1984 Debt/ Asset Ratio	Years	No. Farm	Change	
			<0 (%)	>0 (%)				<0 (%)	>0 (%)
0.0-0.09	73/81	101	50.5	49.5	0.9-0.99	73/81	3	66.7	33.3
	81/84	104	76.9	23.1		81/84	4	75.0	25.0
	73/84	104	52.9	47.1		73/84	4	0.0	100.0
0.1-0.19	73/81	48	29.2	70.8	1.0-1.09	73/81	4	25.0	75.0
	81/84	54	57.4	42.6		81/84	3	33.3	66.7
	73/84	54	35.2	64.8		73/84	3	50.0	50.0
0.2-0.29	73/81	43	34.9	65.1	1.1-1.19	73/81	3	0.0	100.0
	81/84	44	56.8	43.2		81/84	2	100.0	0.0
	73/84	44	22.7	77.3		73/84	2	100.0	0.0
0.3-0.39	73/81	32	31.3	68.7	1.2-1.29	73/81	1	100.0	0.0
	81/84	32	53.1	46.9		81/84	2	100.0	0.0
	73/84	32	21.9	78.1		73/84	2	100.0	0.0
0.4-0.49	73/81	34	32.4	67.6	1.3-1.39	73/81	1	100.0	0.0
	81/84	35	65.7	34.3		81/84	2	0.0	100.0
	73/84	35	28.6	71.4		73/84	2	0.0	100.0
0.5-0.59	73/81	27	51.9	48.1	1.4-1.49	73/81	2	0.0	100.0
	81/84	25	68.0	32.0		81/84	2	100.0	0.0
	73/84	25	40.0	60.0		73/84	2	100.0	0.0
0.6-0.69	73/84	18	27.8	72.2	1.5-1.59	73/81	-	-	-
	81/84	19	42.1	57.9		81/84	-	-	-
	73/84	19	10.5	89.5		73/84	-	-	-
0.7-0.79	73/81	13	23.1	76.9	1.6-1.69	73/81	-	-	-
	81/84	16	68.8	31.2		81/84	-	-	-
	73/84	16	25.0	75.0		73/84	-	-	-
0.8-0.89	73/84	12	58.3	41.7	Over 1.70	73/81	3	66.7	33.3
	81/84	10	80.0	20.0		81/84	2	100.0	0.0
	73/84	10	50.0	50.0		73/84	2	100.0	0.0

TABLE 24

Change in land owned by 1984 debt/asset ratio for cash-crop/cowherd farms

1984 Debt/ Asset Ratio	Years	No. Farm	Change		1984 Debt Asset Ratio	Years	No. Farm	Change	
			<0 (%)	>0 (%)				<0 (%)	>0 (%)
0.0-0.09	73/81	20	70.0	30.0	0.9-0.99	73/81	2	0.0	100.0
	81/84	16	75.0	25.0		81/84	3	33.3	66.7
	73/84	16	50.0	50.0		73/84	3	0.0	100.0
0.1-0.19	73/81	6	50.0	50.0	1.0-1.09	73/81	-	-	-
	81/84	8	62.5	37.5		81/84	1	100.0	0.0
	73/84	8	37.5	62.5		73/84	1	0.0	100.0
0.2-0.29	73/81	8	37.5	62.5	1.1-1.19	73/81	2	50.0	50.0
	81/84	10	70.0	30.0		81/84	1	100.0	0.0
	73/84	10	20.0	80.0		73/84	1	100.0	0.0
0.3-0.39	73/81	4	25.0	75.0	1.2-1.29	73/81	-	-	-
	81/84	4	75.0	25.0		81/84	-	-	-
	73/84	4	50.0	50.0		73/84	-	-	-
0.4-0.49	73/81	4	25.0	75.0	1.3-1.39	73/81	-	-	-
	81/84	5	100.0	0.0		81/84	-	-	-
	73/84	5	40.0	60.0		73/84	-	-	-
0.5-0.59	73/81	4	50.0	50.0	1.4-1.49	73/81	-	-	-
	81/84	5	40.0	60.0		81/84	-	-	-
	73/84	5	20.0	80.0		73/84	-	-	-
0.6-0.69	73/81	9	33.3	66.7	1.5-1.59	73/81	-	-	-
	81/84	3	66.7	33.3		81/84	-	-	-
	73/84	3	33.3	66.7		73/84	-	-	-
0.7-0.79	73/81	2	0.0	100.0	1.6-1.69	73/84	-	-	-
	81/84	2	100.0	0.0		81/84	1	100.0	0.0
	73/84	2	0.0	100.0		73/84	1	0.0	100.0
0.8-0.89	73/81	1	0.0	100.0	Over 1.70	73/84	-	-	-
	81/84	1	100.0	0.0		81/84	-	-	-
	73/84	1	0.0	100.0		73/84	-	-	-

TABLE 25

Change in land owned by 1984 debt/asset ratio for general farms

1984 Debt/ Asset Ratio	Years	No. Farm	Change		1984 Debt/ Asset Ratio	Years	No. Farm	Change	
			<0 (%)	>0 (%)				<0 (%)	>0 (%)
0.0-0.09	73/81	15	26.7	73.3	0.9-0.99	73/81	2	0.0	100.0
	81/84	11	72.7	27.3		81/84	-	-	-
	73/84	11	54.5	45.5		73/84	-	-	-
0.1-0.19	73/81	7	28.6	71.4	1.0-1.09	73/81	3	0.0	100.0
	81/84	6	50.0	50.0		81/84	2	50.0	50.0
	73/84	6	33.3	66.7		73/84	2	0.0	100.0
0.2-0.29	73/81	8	37.5	62.5	1.1-1.19	73/81	-	-	-
	81/84	8	50.0	50.0		81/84	1	100.0	0.0
	73/84	8	62.5	37.5		73/84	1	0.0	100.0
0.3-0.39	73/81	7	28.6	71.4	1.2-1.29	73/81	2	100.0	0.0
	81/84	7	42.9	57.1		81/84	1	100.0	0.0
	73/84	7	42.9	57.1		73/84	1	0.0	100.0
0.4-0.49	73/81	10	20.0	80.0	1.3-1.39	73/81	1	100.0	0.0
	81/84	8	25.0	75.0		81/84	-	-	-
	73/84	8	0.0	100.0		73/84	-	-	-
0.5-0.59	73/81	9	22.2	77.8	1.4-1.49	73/81	-	-	-
	81/84	8	87.5	12.5		81/84	-	-	-
	73/84	8	25.0	75.0		73/84	-	-	-
0.6-0.69	73/81	5	60.0	40.0	1.5-1.59	73/81	-	-	-
	81/84	7	71.4	28.6		81/84	-	-	-
	73/84	7	57.1	42.9		73/84	-	-	-
0.7-0.79	73/81	3	0.0	100.0	1.6-1.69	73/81	1	0.0	100.0
	81/84	5	80.0	20.0		81/84	-	-	-
	73/84	5	20.0	80.0		73/84	-	-	-
0.8-0.89	73/81	6	0.0	100.0	Over 1.70	73/81	-	-	-
	81/84	2	100.0	0.0		81/84	-	-	-
	73/84	2	0.0	100.0		73/84	-	-	-

TABLE 26

Change in land owned by 1984 debt/asset ratio for cash-crop/beef farms

1984 Debt/ Asset Ratio	Years	No. Farm	Change		1984 Debt/ Asset Ratio	Years	No. Farm	Change	
			≤0 (%)	>0 (%)				≤0 (%)	>0 (%)
0.0-0.09	73/81	6	50.0	50.0	0.9-0.99	73/81	1	100.0	0.0
	81/84	7	71.4	28.6		81/84	2	100.0	0.0
	73/84	7	57.1	42.9		73/84	2	100.0	0.0
0.1-0.19	73/81	12	25.0	75.0	1.0-1.09	73/81	-	-	-
	81/84	7	57.1	42.9		81/84	-	-	-
	73/84	7	28.6	71.4		73/84	-	-	-
0.2-0.29	73/81	5	20.0	80.0	1.1-1.19	73/81	-	-	-
	81/84	7	100.0	0.0		81/84	-	-	-
	73/84	7	42.9	57.1		73/84	-	-	-
0.3-0.39	73/81	5	20.0	80.0	1.2-1.29	73/81	-	-	-
	81/84	5	60.0	40.0		81/84	-	-	-
	73/84	5	60.0	40.0		73/84	-	-	-
0.4-0.49	73/81	4	50.0	50.0	1.3-1.39	73/81	1	0.0	100.0
	81/84	4	25.0	75.0		81/84	-	-	-
	73/84	4	50.0	50.0		73/84	-	-	-
0.5-0.59	73/81	-	-	-	1.4-1.49	73/81	-	-	-
	81/84	2	100.0	0.0		81/84	-	-	-
	73/84	2	0.0	100.0		73/84	-	-	-
0.6-0.69	73/81	3	33.3	66.7	1.5-1.59	73/81	-	-	-
	81/84	5	60.0	40.0		81/84	-	-	-
	73/84	5	40.0	60.0		73/84	-	-	-
0.7-0.79	73/81	-	-	-	1.6-1.69	73/81	-	-	-
	81/84	-	-	-		81/84	-	-	-
	73/84	-	-	-		73/84	-	-	-
0.8-0.89	73/81	1	100.0	0.0	Over 1.70	73/81	-	-	-
	81/84	3	100.0	0.0		81/84	-	-	-
	73/84	3	33.3	66.7		73/84	-	-	-

number of farms in the debt/asset ratios above 0.89 (usually less than ten farms) to indicate any major trend. However, the net effect still indicated that more land was purchased over the 1973/84 period.

Three other farm types indicated an exact opposite from those obtained above. Cash-crop/irrigated, dairy, and cash-crop/backgrounding indicated a major decline in land owned for most of the debt/asset ratio categories, and for most of the periods under study (Tables 27, 28, and 29). The indication is that the majority of farmers among these farm types, sold more land over the period under study.

Summary of land expansion

There was consistency of results in the changes in land owned over the 1973/81 period when farms were classified by 1984 debt/asset ratio, farm type, and farm size. The change in land as classified by the 1984 debt/asset ratio, farm type, and farm size, showed that the majority of farmers purchased land in the 1973/81 period, then sold or made no change in ownership during the 1981/84 period. But the net effect, depicted by the 1973/84 period, showed that more farmers bought land. Secondly, the results of the average land owned by year indicated a steady increase in land owned from 1973 to 1984, which was what the net effect of the change in land owned was showing. In other words, those that bought land tended to purchase large parcels in the 1981/84 period.

There seemed to be a relationship between farm financial condition and land purchased over the period of study. The general increase in land purchased in the 1973/81 period resulted from expectations of a continued prosperity which did not materialize during the 1981/84 period.

TABLE 27

Change in land owned by 1984 debt/asset ratio for cash-crop/irrigated farms

1984 Debt/ Asset Ratio	Years	No. Farm	Change		1984 Debt/ Asset Ratio	Years	No. Farm	Change	
			<0 (%)	>0 (%)				<0 (%)	>0 (%)
0.0-0.09	73/81	14	64.3	35.7	0.9-0.99	73/81	-	-	-
	81/84	13	92.3	7.7		81/84	-	-	-
	73/84	13	84.6	15.4		73/84	-	-	-
0.1-0.19	73/81	4	50.0	50.0	1.0-1.09	73/81	2	50.0	50.0
	81/84	2	50.0	50.0		81/84	1	100.0	0.0
	73/84	2	100.0	0.0		73/84	1	100.0	0.0
0.2-0.29	73/81	7	42.9	57.1	1.1-1.19	73/81	-	-	-
	81/84	7	71.4	28.6		81/84	-	-	-
	73/84	7	57.1	42.9		73/84	-	-	-
0.3-0.39	73/81	6	16.7	83.3	1.2-1.29	73/81	1	100.0	0.0
	81/84	5	80.0	20.0		81/84	1	100.0	0.0
	73/84	5	40.0	60.0		73/84	1	100.0	0.0
0.4-0.49	73/81	9	33.3	66.7	1.3-1.39	73/81	-	-	-
	81/84	5	80.0	20.0		81/84	-	-	-
	73/84	5	80.0	20.0		73/84	-	-	-
0.5-0.59	73/81	6	50.0	50.0	1.4-1.49	73/81	-	-	-
	81/84	6	50.0	50.0		81/84	1	100.0	0.0
	73/84	6	50.0	50.0		73/84	1	0.0	100.0
0.6-0.69	73/81	2	0.0	100.0	1.5-1.59	73/81	-	-	-
	81/84	3	66.7	33.3		81/84	-	-	-
	73/84	3	33.3	66.7		73/84	-	-	-
0.7-0.79	73/81	6	0.0	100.0	1.6-1.69	73/81	-	-	-
	81/84	4	75.0	25.0		81/84	-	-	-
	73/84	4	25.0	75.0		73/84	-	-	-
0.8-0.89	73/81	3	33.3	66.7	Over 1.70	73/81	3	66.7	33.3
	81/84	2	100.0	0.0		81/84	4	100.0	0.0
	73/84	2	50.0	50.0		73/84	4	75.0	25.0

TABLE 28

Change in land owned by 1984 debt/asset ratio for dairy farms

1984 Debt/ Asset Ratio	Years	No. Farm	Change		1984 Debt/ Asset Ratio	Years	No. Farm	Change	
			<0 (%)	>0 (%)				<0 (%)	>0 (%)
0.0-0.09	73/81	8	50.0	50.0	0.9-0.99	73/81	-	-	-
	81/84	4	100.0	0.0		81/84	-	-	-
	73/84	4	75.0	25.0		73/84	-	-	-
0.1-0.19	73/81	6	0.0	100.0	1.0-1.09	73/81	1	100.0	0.0
	81/84	6	83.3	16.7		81/84	1	100.0	0.0
	73/84	6	0.0	100.0		73/84	1	100.0	0.0
0.2-0.29	73/81	5	60.0	40.0	1.1-1.19	73/81	1	100.0	0.0
	81/84	3	66.7	33.3		81/84	1	100.0	0.0
	73/84	3	33.3	66.7		73/84	1	100.0	0.0
0.3-0.39	73/81	7	14.3	85.7	1.2-1.29	73/81	-	-	-
	81/84	5	40.0	60.0		81/84	-	-	-
	73/84	5	20.0	80.0		73/84	-	-	-
0.4-0.49	73/81	3	0.0	100.0	1.3-1.39	73/81	-	-	-
	81/84	3	100.0	0.0		81/84	-	-	-
	73/84	3	33.3	66.7		73/84	-	-	-
0.5-0.59	73/81	3	33.3	66.7	1.4-1.49	73/81	-	-	-
	81/84	3	0.0	100.0		81/84	-	-	-
	73/84	3	0.0	100.0		73/84	-	-	-
0.6-0.69	73/81	4	25.0	75.0	1.5-1.59	73/81	-	-	-
	81/84	3	100.0	0.0		81/84	-	-	-
	73/84	3	33.3	66.7		73/84	-	-	-
0.7-0.79	73/81	1	0.0	100.0	1.6-1.69	73/81	-	-	-
	81/84	1	100.0	0.0		81/84	-	-	-
	73/84	1	0.0	100.0		73/84	-	-	-
0.8-0.89	73/81	1	0.0	100.0	Over 1.70	73/81	-	-	-
	81/84	2	50.0	50.0		81/84	-	-	-
	73/84	2	50.0	50.0		73/84	-	-	-

TABLE 29

Change in land owned by 1984 debt/asset ratio for cash-crop/backgrounding operations

1984 Debt/ Asset Ratio	Years	No. Farm	Change		1984 Debt/ Asset Ratio	Years	No. Farm	Change	
			<0 (%)	>0 (%)				<0 (%)	>0 (%)
0.0-0.09	73/81	4	50.0	50.0	0.9-0.99	73/81	2	50.0	50.0
	81/84	9	66.7	33.3		81/84	2	100.0	0.0
	73/84	9	33.3	66.7		73/84	2	50.0	50.0
0.1-0.19	73/81	4	75.0	25.0	1.0-1.09	73/81	-	-	-
	81/84	7	71.4	28.6		81/84	-	-	-
	73/84	7	28.6	71.4		73/84	-	-	-
0.2-0.29	73/81	8	12.5	87.5	1.1-1.19	73/81	1	0.0	100.0
	81/84	5	80.0	20.0		81/84	2	100.0	0.0
	73/84	5	20.0	80.0		73/84	2	50.0	50.0
0.3-0.39	73/81	8	62.5	37.5	1.2-1.29	73/81	2	0.0	100.0
	81/84	11	72.7	27.3		81/84	-	-	-
	73/84	11	45.5	54.5		73/84	-	-	-
0.4-0.49	73/81	4	0.0	100.0	1.3-1.39	73/81	-	-	-
	81/84	7	85.7	14.3		81/84	-	-	-
	73/84	7	28.6	71.4		73/84	-	-	-
0.5-0.59	73/81	4	25.0	75.0	1.4-1.49	73/81	-	-	-
	81/84	5	40.0	60.0		81/84	-	-	-
	73/84	5	80.0	20.0		73/84	-	-	-
0.6-0.69	73/81	4	50.0	50.0	1.5-1.59	73/81	-	-	-
	81/84	8	37.5	62.5		81/84	-	-	-
	73/84	8	25.0	75.0		73/84	-	-	-
0.7-0.79	73/81	5	40.0	60.0	1.6-1.69	73/81	-	-	-
	81/84	5	100.0	0.0		81/84	-	-	-
	73/84	5	40.0	60.0		73/84	-	-	-
0.8-0.89	73/81	2	50.0	50.0	Over 1.70	73/81	-	-	-
	81/84	6	50.0	50.0		81/84	-	-	-
	73/84	6	66.7	33.3		73/84	-	-	-

These general land owned increases appeared to be one of the factors for the general farm financial distress.

Expansion in capital purchased

Capital purchased is defined in this study to mean the total value of the sum of motor vehicles purchased, machinery purchased, and buildings purchased.

The periods used to determine changes in land owned above also served as determinants for changes in capital purchased (i.e 1973/81, 1981/84, and 1973/84). However, because of the nature of the lifespan of capital purchased, a different approach was used to determine changes in capital purchased that occurred during the years. Instead of looking at the differences between the 1973 value and the 1981 value to determine the change for the 1973/81 period, the difference between the 1979/81 average purchased and the 1973/78 average purchased represents the change in the 1973/81 period. Similarly, the difference of the 1983/84 average and the 1981/82 average represents the change in the 1981/84 period. Finally, the difference of the 1979/84 average and the 1973/78 average represents the change in the 1973/84 purchases.

Expansion in capital purchased by debt/asset ratio

There was almost a duplication of the trends in land purchased by farmers in the debt/asset ratios of 0-1.09 and changes in capital purchased. The majority of farmers in these debt/asset ratio categories appeared to have made a substantial amount of capital purchases during the 1973/81 period (Table 30). The same group of farmers decreased the amount of capital purchases made during the 1981/84 period.

TABLE 30

Change in capital purchased by 1984 debt/asset ratio

1984 Debt/ Asset Ratio	Years	No. Farm	Change		1984 Debt/ Asset Ratio	Years	No. Farm	Change	
			<0 (%)	>0 (%)				<0 (%)	>0 (%)
0.0-0.09	73/81	194	40.2	59.8	0.9-0.99	73/81	14	28.6	71.4
	81/84	194	57.1	42.9		81/84	14	64.3	35.7
	73/84	194	41.7	58.3		73/84	14	57.1	42.9
0.1-0.19	73/81	100	34.0	68.0	1.0-1.09	73/81	11	36.4	63.6
	81/84	100	52.0	48.0		81/84	11	63.6	36.4
	73/84	100	29.0	71.0		73/84	11	45.5	54.5
0.2-0.29	73/81	101	36.4	68.6	1.1-1.19	73/81	9	33.3	66.7
	81/84	101	59.4	40.6		81/84	9	66.7	33.3
	73/84	101	37.6	62.4		73/84	9	55.5	44.5
0.3-0.39	73/81	76	40.8	59.2	1.2-1.29	73/81	7	71.4	28.6
	81/84	76	57.9	42.1		81/84	7	42.9	57.1
	73/84	76	39.5	60.5		73/84	7	71.4	28.6
0.4-0.49	73/81	76	35.5	64.5	1.3-1.39	73/81	4	50.0	50.0
	81/84	76	60.5	39.5		81/84	4	100.0	0.0
	73/84	76	43.4	56.6		73/84	4	50.0	50.0
0.5-0.59	73/81	62	48.4	51.6	1.4-1.49	73/81	4	75.0	25.0
	81/84	62	56.5	43.5		81/84	4	50.0	50.0
	73/84	62	59.7	40.3		73/84	4	75.0	25.0
0.6-0.69	73/81	55	36.4	63.6	1.5-1.59	73/81	-	-	-
	81/84	55	60.0	40.0		81/84	-	-	-
	73/84	55	50.9	49.1		73/84	-	-	-
0.7-0.79	73/81	41	31.7	68.3	1.6-1.69	73/81	1	0.0	100.0
	81/84	41	61.0	39.0		81/84	1	100.0	0.0
	73/84	41	46.4	53.6		73/84	1	0.0	100.0
0.8-0.89	73/81	32	34.4	65.6	Over 1.70	73/81	6	66.7	33.3
	81/84	32	68.8	31.2		81/84	6	60.0	40.0
	73/84	32	50.0	50.0		73/84	6	83.3	16.7

Over the 1973/84 period however, most of the farmers in the group increased their capital purchases. This result is expected since the larger farms are within these debt/asset ratio categories. There was no specific pattern in behavior in the higher debt/asset ratio categories.

Based on the grouped years (1973/78, 1979/81, 1981/82, 1983/84, and 1979/84), the 1979/81 average appeared to be higher than any other period for the 0-1.19 debt/asset ratio categories (Table 31). This implies that majority of the farmers within the debt/asset ratio categories had higher capital purchased on average than any other group. The indication is to be expected since 1979 was very profitable for farmers. There was also a general indication that average capital purchased increased from the 1973/78 period to the 1979/81 period, but decreased from the 1979/81 period to the 1983/84 period. This correlates with the yearly trend for capital purchased discussed in Chapter III.

Capital purchased by type of farm

The majority of the farmers within the cash-crop/dryland, cash-crop/-cowherd, and general farms appeared to have increased capital purchased during the 1973/81 period, but they reduced capital purchased in the 1981/84 period (Tables 32, 33, and 34). The net effect, designated by the 1973/84 period, indicated a general increase in capital purchased. There were generally fewer farms within the cash-crop/beef and dairy farms. Most of the farms, however, showed similar trends in capital purchased changes as those discussed above (Tables 35 and 36). The other two farm types (cash-crop/-irrigated and cash-crop/backgrounding) showed no consistent pattern in capital purchased changes over the period, however, there appeared to be a tendency to decrease over time (Tables 37 and 38).

TABLE 31

Average capital purchased by 1984 debt/asset ratio for grouped years

1984 Debt/ Asset Ratio	Years	No. Farms	Average (dollars)	1984 Debt/ Asset Ratio	Years	No. Farms	Average (dollars)
0.0-0.09	73/78	194	14819.6	0.7-0.79	73/78	41	21177.9
	79/81	194	18091.5		79/81	41	28011.7
	81/82	194	17312.7		81/82	41	20512.0
	83/84	194	14632.2		83/84	41	10950.0
	79/84	194	16755.3		79/84	41	20936.7
0.1-0.19	73/78	100	18358.4	0.8-0.89	73/78	32	23520.3
	79/81	100	25572.6		79/81	32	32797.6
	81/82	100	24508.1		81/82	32	21697.7
	83/84	100	20586.9		83/84	32	12666.9
	79/84	100	24036.5		79/84	32	24250.5
0.2-0.29	73/78	101	18888.3	0.9-0.99	73/78	14	17842.6
	79/81	101	25103.2		79/81	14	28821.8
	81/82	101	21708.9		81/82	14	10751.0
	83/84	101	20190.5		83/84	14	9298.2
	79/84	101	23097.5		79/84	14	18717.3
0.3-0.39	73/78	76	21515.5	1.0-1.09	73/78	11	24019.5
	79/81	76	28641.9		79/81	11	33821.3
	81/82	76	22595.1		81/82	11	26368.2
	83/84	76	19951.0		83/84	11	11323.4
	79/84	76	24718.9		79/84	11	23106.9
0.4-0.49	73/78	76	22350.3	1.1-1.19	73/78	9	27227.0
	79/81	76	26126.7		79/81	9	40813.9
	81/82	76	22595.1		81/82	9	24849.2
	83/84	76	19020.3		83/84	9	16134.2
	79/84	76	22777.5		79/84	9	27833.6
0.5-0.59	73/78	62	19966.6	1.2-1.29	73/78	7	30533.8
	79/81	62	24980.6		79/81	7	24085.6
	81/82	62	19861.2		81/82	7	14824.7
	83/84	62	13489.2		83/84	7	14987.9
	79/84	62	20330.5		79/84	7	20691.2
0.6-0.69	73/78	55	20695.3	1.3-1.39	73/78	4	33008.8
	79/81	55	26757.5		79/81	4	32865.3
	81/82	55	18158.4		81/82	4	30634.6
	83/84	55	15237.1		83/84	4	6843.8
	79/84	55	21083.0		79/84	4	22955.6

TABLE 31--continued.

1984 Debt/ Asset Ratio	Years	No. Farms	Average (dollars)	1984 Debt/ Asset Ratio	Years	No. Farms	Average (dollars)
1.4-1.49	73/78	4	36677.1	1.6-1.69	73/78	1	13802.8
	79/81	4	27706.2		79/81	1	20086.7
	81/82	4	12115.0		81/82	1	14751.5
	83/84	4	10262.0		83/84	1	6483.0
	79/84	4	19727.9		79/84	1	17038.2
1.5-1.59	73/78	-	-	Over 1.7	73/78	6	28834.8
	79/81	-	-		79/81	6	26419.1
	81/82	-	-		81/82	6	19864.4
	83/84	-	-		83/84	6	6556.0
	79/84	-	-		79/84	6	18928.9

TABLE 32

Change in capital purchased by 1984 debt/asset ratio for cash-crop/dryland farms

1984 Debt/ Asset Ratio	Years	No. Farm	Change		1984 Debt/ Asset Ratio	Years	No. Farm	Change	
			<0 (%)	>0 (%)				<0 (%)	>0 (%)
0.0-0.09	73/81	101	38.6	61.4	0.9-0.99	73/81	3	66.7	33.3
	81/84	102	61.8	38.2		81/84	4	75.0	25.0
	73/84	104	39.4	60.6		73/84	4	50.0	50.0
0.1-0.19	73/81	48	39.6	60.4	1.0-1.09	73/81	4	25.0	75.5
	81/84	54	44.4	55.6		81/84	3	100.0	0.0
	73/84	54	29.6	70.4		73/84	3	33.3	66.7
0.2-0.29	73/81	43	37.2	62.8	1.1-1.19	73/81	3	66.7	33.3
	81/84	44	61.4	38.6		81/84	2	100.0	0.0
	73/84	44	34.1	65.9		73/84	2	100.0	0.0
0.3-0.39	73/81	32	46.9	53.1	1.2-1.29	73/81	1	100.0	0.0
	81/84	32	56.3	43.7		81/84	2	100.0	0.0
	73/84	32	46.9	53.1		73/84	7	100.0	0.0
0.4-0.49	73/81	34	17.6	82.4	1.3-1.39	73/81	1	100.0	0.0
	81/84	35	60.0	40.0		81/84	2	100.0	0.0
	73/84	35	28.6	71.4		73/84	2	100.0	0.0
0.5-0.59	73/81	27	40.7	59.3	1.4-1.49	73/81	2	50.0	50.0
	81/84	25	64.0	36.0		81/84	2	50.0	50.0
	73/84	25	60.0	40.0		73/84	2	100.0	0.0
0.6-0.69	73/81	18	38.9	61.1	1.5-1.59	73/81	-	-	-
	81/84	19	68.4	31.6		81/84	-	-	-
	73/84	19	47.4	52.6		73/84	-	-	-
0.7-0.79	73/81	13	38.5	61.5	1.6-1.69	73/81	-	-	-
	81/84	16	81.3	18.7		81/84	-	-	-
	73/84	16	37.5	62.5		73/84	-	-	-
0.8-0.89	73/81	12	41.7	58.3	Over 1.70	73/81	3	66.7	33.3
	81/84	10	80.0	20.0		81/84	1	100.0	0.0
	73/84	10	30.0	70.0		73/84	2	100.0	0.0

TABLE 33

Change in capital purchased by 1984 debt/asset ratio for cash-crop/cowherd farms

1984 Debt/ Asset Ratio	Years	No. Farm	Change		1984 Debt/ Asset Ratio	Years	No. Farm	Change	
			<0 (%)	>0 (%)				<0 (%)	>0 (%)
0.0-0.09	73/81	20	45.0	55.0	0.9-0.99	73/81	2	0.0	100.0
	81/84	15	53.3	46.7		81/84	3	33.3	66.7
	73/84	16	43.8	56.2		73/84	3	33.3	66.7
0.1-0.19	73/81	6	16.7	83.3	1.0-1.09	73/81	-	-	-
	81/84	8	37.5	62.5		81/84	1	0.0	100.0
	73/84	8	12.5	87.5		73/84	1	0.0	100.0
0.2-0.29	73/81	8	50.0	50.0	1.1-1.19	73/81	2	0.0	100.0
	81/84	10	90.0	10.0		81/84	1	100.0	0.0
	73/84	10	40.0	60.0		73/84	1	100.0	0.0
0.3-0.39	73/81	4	0.0	100.0	1.2-1.29	73/81	-	-	-
	81/84	4	75.0	25.0		81/84	-	-	-
	73/84	4	0.0	100.0		73/84	-	-	-
0.4-0.49	73/81	4	25.0	75.0	1.3-1.39	73/81	-	-	-
	81/84	5	60.0	40.0		81/84	-	-	-
	73/84	5	40.0	60.0		73/84	-	-	-
0.5-0.59	73/81	4	75.0	25.0	1.4-1.49	73/81	-	-	-
	81/84	5	20.0	80.0		81/84	-	-	-
	73/84	5	60.0	40.0		73/84	-	-	-
0.6-0.69	73/81	9	44.4	55.6	1.5-1.59	73/81	-	-	-
	81/84	3	0.0	100.0		81/84	-	-	-
	73/84	3	100.0	0.0		73/84	-	-	-
0.7-0.79	73/81	2	0.0	100.0	1.6-1.69	73/81	-	-	-
	81/84	2	50.0	50.0		81/84	1	100.0	0.0
	73/84	2	100.0	0.0		73/84	1	0.0	100.0
0.8-0.89	73/81	1	100.0	0.0	Over 1.70	73/81	-	-	-
	81/84	1	100.0	0.0		81/84	-	-	-
	73/84	1	100.0	0.0		73/84	-	-	-

TABLE 34

Change in capital purchased by 1984 debt/asset ratio for general farms

1984 Debt/ Asset Ratio	Years	No. Farm	Change		1984 Debt/ Asset Ratio	Years	No. Farm	Change	
			<0 (%)	>0 (%)				<0 (%)	>0 (%)
0.0-0.09	73/81	15	33.3	66.7	0.9-0.99	73/81	2	0.0	100.0
	81/84	11	36.4	63.6		81/84	-	-	-
	73/84	11	27.3	72.7		73/84	-	-	-
0.1-0.19	73/81	7	28.6	71.4	1.0-1.09	73/81	3	33.0	66.7
	81/84	6	50.0	50.0		81/84	2	100.0	0.0
	73/84	6	16.7	83.3		73/84	2	50.0	50.0
0.2-0.29	73/81	8	0.0	100.0	1.1-1.19	73/81	-	-	-
	81/84	8	62.5	37.5		81/84	1	0.0	100.0
	73/84	8	37.5	62.5		73/84	1	0.0	100.0
0.3-0.39	73/81	7	57.2	42.8	1.2-1.29	73/81	2	50.0	50.0
	81/84	7	71.4	28.6		81/84	1	100.0	0.0
	73/84	7	28.6	71.4		73/84	1	0.0	100.0
0.4-0.49	73/81	10	70.0	30.0	1.3-1.39	73/81	1	0.0	100.0
	81/84	8	62.5	37.5		81/84	-	-	-
	73/84	8	37.5	62.5		73/84	-	-	-
0.5-0.59	73/81	9	44.4	55.6	1.4-1.49	73/81	-	-	-
	81/84	8	62.5	37.5		81/84	-	-	-
	73/84	8	50.0	50.0		73/84	-	-	-
0.6-0.69	73/81	5	40.0	60.0	1.5-1.59	73/81	-	-	-
	81/84	7	71.4	28.6		81/84	-	-	-
	73/84	7	42.9	57.1		73/84	-	-	-
0.7-0.79	73/81	3	33.3	66.7	1.6-1.69	73/81	1	0.0	100.0
	81/84	5	80.0	20.0		81/84	-	-	-
	73/84	5	60.0	40.0		73/84	-	-	-
0.8-0.89	73/81	6	33.3	66.7	Over 1.70	73/81	-	-	-
	81/84	2	50.0	50.0		81/84	-	-	-
	73/84	2	50.0	50.0		73/84	-	-	-

TABLE 35

Change in capital purchased by 1984 debt/asset ratio for dairy farms

1984 Debt/ Asset Ratio	Years	No. Farm	Change		1984 Debt/ Asset Ratio	Years	No. Farm	Change	
			<0 (%)	>0 (%)				<0 (%)	>0 (%)
0.0-0.09	73/81	8	12.5	87.5	0.9-0.99	73/81	-	-	-
	81/84	4	100.0	0.0		81/84	-	-	-
	73/84	4	25.0	75.0		73/84	-	-	-
0.1-0.19	73/81	6	0.0	100.0	1.0-1.09	73/81	1	100.0	0.0
	81/84	6	83.3	16.7		81/84	1	100.0	0.0
	73/84	6	16.7	83.3		73/84	1	100.0	0.0
0.2-0.29	73/81	5	20.0	80.0	1.1-1.19	73/81	1	100.0	0.0
	81/84	3	66.7	33.3		81/84	1	100.0	0.0
	73/84	3	0.0	100.0		73/84	1	100.0	0.0
0.3-0.39	73/81	7	66.7	33.3	1.2-1.29	73/81	-	-	-
	81/84	5	80.0	20.0		81/84	-	-	-
	73/84	5	40.0	60.0		73/84	-	-	-
0.4-0.49	73/81	3	66.7	33.3	1.3-1.39	73/81	-	-	-
	81/84	3	33.3	66.7		81/84	-	-	-
	73/84	3	66.7	33.3		73/84	-	-	-
0.5-0.59	73/81	3	33.3	66.7	1.4-1.49	73/81	-	-	-
	81/84	3	66.7	33.3		81/84	-	-	-
	73/84	3	66.7	33.3		73/84	-	-	-
0.6-0.69	73/81	4	0.0	100.0	1.5-1.59	73/81	-	-	-
	81/84	3	100.0	0.0		81/84	-	-	-
	73/84	3	0.0	100.0		73/84	-	-	-
0.7-0.79	73/81	1	0.0	100.0	1.6-1.69	73/81	-	-	-
	81/84	1	100.0	0.0		81/84	-	-	-
	73/84	1	100.0	0.0		73/84	-	-	-
0.8-0.89	73/81	1	0.0	100.0	Over 1.70	73/81	-	-	-
	81/84	2	50.0	50.0		81/84	-	-	-
	73/84	2	50.0	50.0		73/84	-	-	-

TABLE 36

Change in capital purchased by 1984 debt/asset ratio for cash-crop/beef farms

1984 Debt/ Asset Ratio	Years	No. Farm	Change		1984 Debt/ Asset Ratio	Years	No. Farm	Change	
			<0 (%)	>0 (%)				<0 (%)	>0 (%)
0.0-0.09	73/81	6	33.3	66.7	0.9-0.99	73/81	1	0.0	100.0
	81/84	7	57.2	42.8		81/84	2	50.0	50.0
	73/84	7	42.9	57.1		73/84	2	50.0	50.0
0.1-0.19	73/81	12	33.3	66.7	1.0-1.09	73/81	-	-	-
	81/84	7	57.1	42.9		81/84	-	-	-
	73/84	7	57.2	42.8		73/84	-	-	-
0.2-0.29	73/81	5	40.0	60.0	1.1-1.19	73/81	-	-	-
	81/84	7	28.6	71.4		81/84	-	-	-
	73/84	7	28.6	71.4		73/84	-	-	-
0.3-0.39	73/81	5	0.0	100.0	1.2-1.29	73/81	-	-	-
	81/84	5	60.0	40.0		81/84	-	-	-
	73/84	5	40.0	60.0		73/84	-	-	-
0.4-0.49	73/81	4	25.0	75.0	1.3-1.39	73/81	1	100.0	0.0
	81/84	4	25.0	75.0		81/84	-	-	-
	73/84	4	75.0	25.0		73/84	-	-	-
0.5-0.59	73/81	-	-	-	1.4-1.49	73/81	-	-	-
	81/84	2	50.0	50.0		81/84	-	-	-
	73/84	2	50.0	50.0		73/84	-	-	-
0.6-0.69	73/81	3	0.0	100.0	1.5-1.59	73/81	-	-	-
	81/84	5	60.0	40.0		81/84	-	-	-
	73/84	5	60.0	40.0		73/84	-	-	-
0.7-0.79	73/81	-	-	-	1.6-1.69	73/81	-	-	-
	81/84	-	-	-		81/84	-	-	-
	73/84	-	-	-		73/84	-	-	-
0.8-0.89	73/81	1	0.0	100.0	Over 1.70	73/81	-	-	-
	81/84	3	100.0	0.0		81/84	-	-	-
	73/84	3	66.7	33.3		73/84	-	-	-

TABLE 37

Change in capital purchased by 1984 debt/asset ratio for cash-crop/irrigated farms

1984 Debt/ Asset Ratio	Years	No. Farm	Change		1984 Debt/ Asset Ratio	Years	No. Farm	Change	
			<0 (%)	>0 (%)				<0 (%)	>0 (%)
0.0-0.09	73/81	14	71.4	28.6	0.9-0.99	73/81	-	-	-
	81/84	13	53.8	46.2		81/84	-	-	-
	73/84	13	69.2	30.8		73/84	-	-	-
0.1-0.19	73/81	4	25.0	75.0	1.0-1.09	73/81	2	50.0	50.0
	81/84	2	50.0	50.0		81/84	1	100.0	0.0
	73/84	2	0.0	100.0		73/84	1	0.0	100.0
0.2-0.29	73/81	7	71.4	28.6	1.1-1.19	73/81	-	-	-
	81/84	7	42.9	57.1		81/84	-	-	-
	73/84	3	71.4	28.6		73/84	-	-	-
0.3-0.39	73/81	6	50.0	50.0	1.2-1.29	73/81	1	100.0	0.0
	81/84	5	60.0	40.0		81/84	1	0.0	100.0
	73/84	5	40.0	60.0		73/84	1	100.0	0.0
0.4-0.49	73/81	9	66.7	33.3	1.3-1.39	73/81	-	-	-
	81/84	5	60.0	40.0		81/84	-	-	-
	73/84	5	60.0	40.0		73/84	-	-	-
0.5-0.59	73/81	6	83.3	16.7	1.4-1.49	73/81	-	-	-
	81/84	6	33.3	66.7		81/84	1	0.0	100.0
	73/84	6	83.3	16.7		73/84	1	100.0	0.0
0.6-0.69	73/81	2	100.0	0.0	1.5-1.59	73/81	-	-	-
	81/84	3	66.7	33.3		81/84	-	-	-
	73/84	3	100.0	0.0		73/84	-	-	-
0.7-0.79	73/81	6	66.7	33.3	1.6-1.69	73/81	-	-	-
	81/84	4	50.0	50.0		81/84	-	-	-
	73/84	4	100.0	0.0		73/84	-	-	-
0.8-0.89	73/81	3	33.3	66.7	Over 1.70	73/81	3	66.7	33.3
	81/84	2	100.0	0.0		81/84	4	50.0	50.0
	73/84	2	50.0	50.0		73/84	4	75.0	25.0

TABLE 38

Change in capital purchased by 1984 debt/asset ratio for cash-crop/back-grounding operation

1984 Debt/ Asset Ratio	Years	No. Farm	Change		1984 Debt/ Asset Ratio	Years	No. Farm	Change	
			<0 (%)	>0 (%)				<0 (%)	>0 (%)
0.0-0.09	73/81	4	50.0	50.0	0.9-0.99	73/81	2	50.0	50.0
	81/84	9	44.4	55.6		81/84	2	100.0	0.0
	73/84	9	33.3	66.7		73/84	2	50.0	50.0
0.1-0.19	73/81	4	75.0	25.0	1.0-1.09	73/81	-	-	-
	81/84	7	57.2	42.8		81/84	-	-	-
	73/84	7	28.6	71.4		73/84	-	-	-
0.2-0.29	73/81	8	37.5	62.5	1.1-1.19	73/81	1	0.0	100.0
	81/84	5	40.0	60.0		81/84	2	50.0	50.0
	73/84	5	40.0	60.0		73/84	2	50.0	50.0
0.3-0.39	73/81	8	62.5	37.5	1.2-1.29	73/81	-	-	-
	81/84	11	45.5	54.5		81/84	-	-	-
	73/84	11	63.6	36.4		73/84	-	-	-
0.4-0.49	73/81	4	50.0	50.0	1.3-1.39	73/81	-	-	-
	81/84	7	57.2	42.8		81/84	-	-	-
	73/84	7	28.6	71.4		73/84	-	-	-
0.5-0.59	73/81	4	75.0	25.0	1.4-1.49	73/81	-	-	-
	81/84	5	40.0	60.0		81/84	-	-	-
	73/84	5	80.0	20.0		73/84	-	-	-
0.6-0.69	73/81	4	50.0	50.0	1.5-1.59	73/81	-	-	-
	81/84	8	50.0	50.0		81/84	-	-	-
	73/84	8	37.5	62.5		73/84	-	-	-
0.7-0.79	73/81	5	0.0	100.0	1.6-1.69	73/81	-	-	-
	81/84	5	20.0	80.0		81/84	-	-	-
	73/84	5	0.0	100.0		73/84	-	-	-
0.8-0.89	73/81	2	0.0	100.0	Over 1.70	73/81	-	-	-
	81/84	6	50.0	50.0		81/84	-	-	-
	73/84	6	83.3	16.7		73/84	-	-	-

In general, the capital purchased changes for the different farm types showed no consistency with the average total values by year. On average by year, the cash-crop/irrigated farm type had the highest dollar value of capital purchased, while cash-crop/cowherd purchased the least amount of capital. It can be inferred that cash-crop/irrigated, cash-crop/backgrounding, and cash-crop/beef farm types engaged in more capital intensive operations than the other farm types. As a result, these farm types showed higher debt/asset ratios over the 1973/84 period than the rest of the farm types (Figure 15). Therefore capital purchased had a direct relation to the financial condition of these farm types.

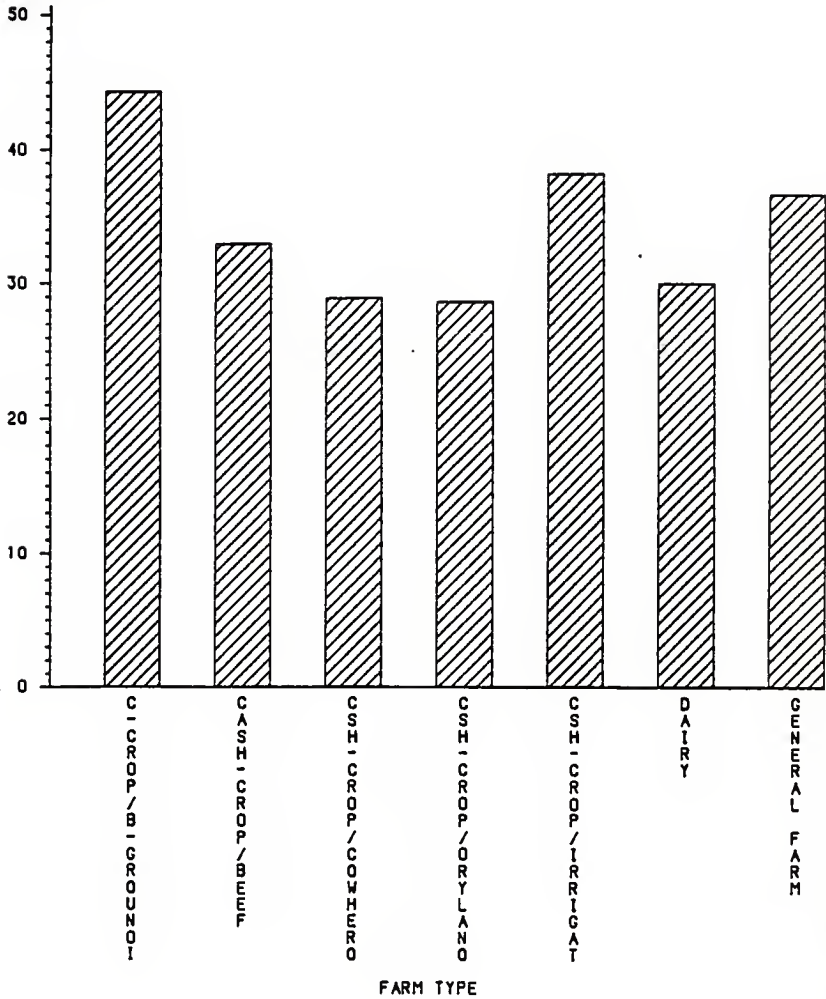
Capital purchased by farm size

As would be expected, there was a positive relationship between capital purchased and farm size. This means that the largest farms had the largest amount of capital purchased over the 12-year period (Figure 13). For example, farmers in the \$500,000 gross income and over category had average capital purchased of \$68,333.20, while those under the \$20,000 farm size made capital purchases worth \$8,793.30.

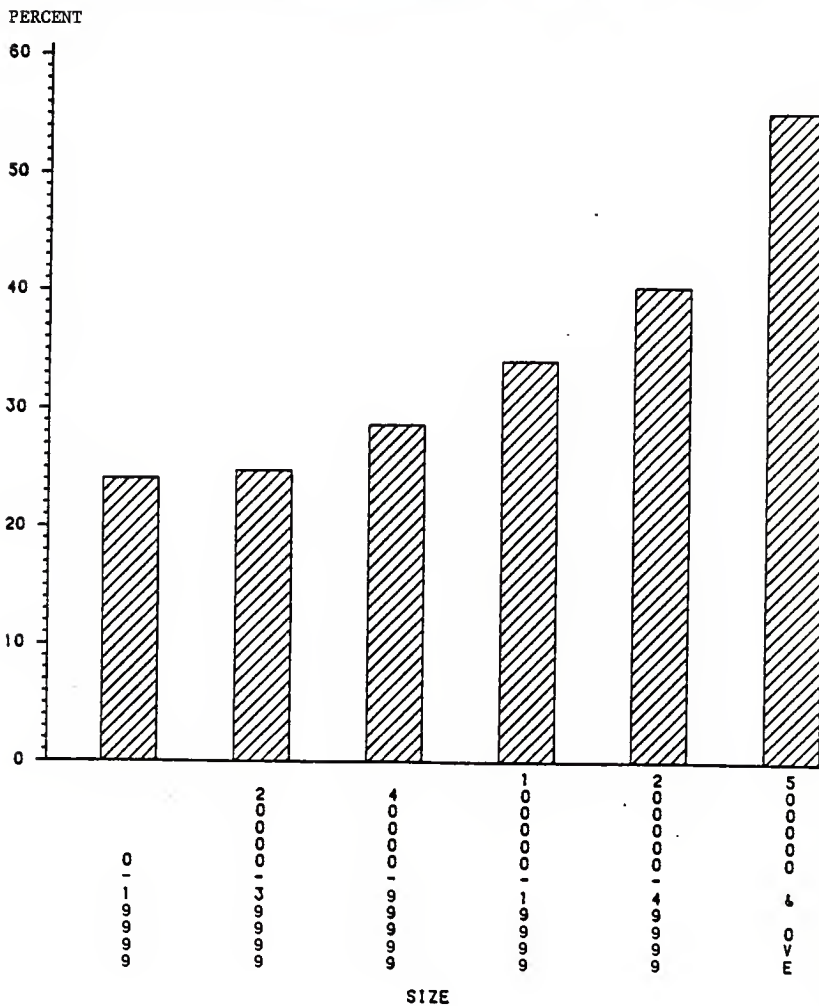
There appeared to be a relationship between capital purchased by farm type and their financial position. The larger farms with large capital purchased tended to have higher debt/asset ratios (Figure 16). The \$500,000 gross income and over category which had the largest capital purchased also had the highest debt/asset ratio. Those under the \$20,000 farm size had the least debt/asset ratio on average. The results correlate with those obtained in land owned.

AVERAGE DEBT/ASSET RATIO BY FARM TYPE, 1973/84

PERCENT



AVERAGE DEBT/ASSET RATIO BY FARM SIZE, 1973/84



Capital purchased summary

Based on the changes in capital purchased, averages of the grouped periods, and yearly averages, the majority of the farmers within each of the debt/asset ratio categories, types of farms, and farm sizes, made positive capital purchased changes during the 1973/81 period; but they reduced purchases during the 1981/84 period.

In general, capital purchased, by yearly average, showed a steady increase from 1973 to 1979. From 1979 to 1984, there was a decline in capital purchased. Capital purchased also indicated a strong relationship with farmers' financial position in that the larger the capital purchased over time, the higher the debt/asset ratio.

CHAPTER V

EFFICIENCY IN OPERATION

Asset and debt position

Farmers within the debt/asset ratio category of 0.3-0.39 had the highest average level of assets over the study period (Table 39). The value ranged from \$297,300 in 1973 to \$701,800 in 1984. Generally, most of the farmers within the 0-0.89 debt/asset ratio categories substantially increased asset values from 1973 to 1984. Debt was positively related to debt/asset ratio. As might be expected, farmers in the higher debt/asset categories tended to hold larger amounts of debt. Those within the 1.4-1.49 categories held the largest debt over the study period. The debt value ranged from \$239,300 in 1973 to \$754,100 in 1984. The smallest debt value was held by farmers within the 0-0.09 debt/asset ratio.

Cash-crop/irrigated farms increased average asset value from \$309,600 in 1973 to \$715,300 in 1984 with a peak average of \$836,500 in 1981 (Table 40). On the other hand, average debt increased from \$93,300 in 1973 to \$294,300 in 1984 with the highest value of \$321,300 in 1983. Cash-crop/dryland farms had the smallest average asset and debt values, on average, over the period. Average assets amounted to \$236,500 in 1973, and \$539,100 in 1984, while debt increased from \$62,400 in 1973 to \$167,900 in 1984. Dairy farms fell between the highest and lowest debt and asset values. Average assets for the group in 1973 was \$237,100, and \$541,300 in 1984, while average debt was \$52,800 in 1973, and \$179,000 in 1984.

TABLE 39

Average farm gross income, net income^a, debt, and assets by 1984 debt/asset ratio and by year

1984 Debt/ Asset Ratio		73	75	Year				83	84
				77	79	81	82		
(\$ thousand)									
0.0-0.09 (194)*	Gross	100.3	80.2	82.7	125.4	104.9	110.1	106.6	
	Net	56.8	24.7	24.6	54.2	18.9	23.6	14.9	
	Debt	33.4	33.3	34.2	33.7	28.1	21.9	17.9	
	Asset	265.4	356.3	368.2	415.2	565.5	570.0	570.7	
0.1-0.19 (100)*	Gross	109.7	89.8	100.7	150.5	138.6	158.8	146.2	
	Net	56.5	23.4	26.8	56.7	19.3	26.2	12.6	
	Debt	53.9	57.2	75.5	95.4	101.0	108.2	102.3	
	Asset	274.8	374.6	403.6	476.9	632.8	675.8	666.9	
0.2-0.29 (102)*	Gross	113.5	95.8	108.5	167.5	147.6	168.3	151.5	
	Net	56.1	23.9	24.3	58.7	11.2	23.3	0.8	
	Debt	68.1	78.5	102.8	131.8	144.8	159.8	163.4	
	Asset	260.8	356.1	366.4	452.5	595.3	652.0	648.3	
0.3-0.39 (76)*	Gross	128.8	110.3	124.8	181.0	162.2	185.6	184.8	
	Net	63.8	24.5	27.4	54.6	1.9	10.3	-0.9	
	Debt	85.6	95.8	136.4	173.3	206.0	232.3	245.0	
	Asset	297.3	405.1	441.7	540.5	691.2	699.7	701.8	
0.4-0.49 (76)*	Gross	120.9	112.2	114.6	184.6	164.8	193.6	188.0	
	Net	56.7	25.7	14.4	53.8	-6.4	8.6	0.4	
	Debt	73.8	106.8	149.8	206.4	254.7	286.1	293.7	
	Asset	239.1	352.3	364.6	486.6	646.6	670.0	656.4	
0.5-0.59 (62)*	Gross	111.2	105.1	112.5	181.1	186.0	208.5	204.3	
	Net	47.7	19.4	10.4	46.5	-4.2	4.7	-13.3	
	Debt	99.6	125.0	176.1	232.9	282.5	319.4	338.4	
	Asset	242.7	340.4	371.9	475.4	600.0	632.5	616.6	
0.6-0.69 (55)*	Gross	125.8	128.5	133.8	212.1	173.6	202.1	212.8	
	Net	51.6	27.8	11.8	45.0	-24.9	-13.1	-1.2	
	Debt	124.6	169.9	231.2	309.1	349.1	403.4	416.0	
	Asset	269.8	372.9	441.5	552.7	659.5	657.0	635.4	

^aNet income includes income to operator labor.

TABLE 39--continued.

1984 Debt/ Asset Ratio		73	75	Year 77	79	81	83	84
		(\$ thousand)						
0.7-0.79 (41)*	Gross	127.4	137.7	146.2	244.0	192.9	202.6	217.9
	Net	53.5	21.9	12.6	50.6	-42.1	-15.1	8.4
	Debt	108.1	145.5	225.9	325.9	405.5	455.1	446.6
	Asset	244.0	351.3	405.3	537.2	679.6	655.1	591.5
0.8-0.89 (32)*	Gross	126.9	123.0	119.4	205.0	184.0	220.4	235.2
	Net	51.9	23.9	6.1	43.6	-34.4	-28.8	-26.2
	Debt	136.0	176.0	238.9	321.3	451.7	489.8	511.4
	Asset	286.1	417.3	445.9	557.0	691.8	630.8	604.8
0.9-0.99 (14)*	Gross	89.6	90.7	91.4	173.4	135.2	138.8	130.5
	Net	34.8	11.5	2.0	27.4	-37.9	-34.7	-35.6
	Debt	89.1	126.1	186.5	262.7	346.8	406.2	415.8
	Asset	219.7	286.5	305.2	391.8	509.2	479.4	442.4
1.0-1.09 (11)*	Gross	82.3	82.0	116.9	185.4	195.4	203.0	181.3
	Net	8.7	-18.2	-1.8	34.4	-29.3	-32.1	-32.8
	Debt	109.8	163.8	268.2	336.0	456.0	533.5	554.2
	Asset	189.8	320.3	384.1	466.2	602.2	566.0	524.1
1.1-1.19 (9)*	Gross	127.0	175.6	174.9	259.0	220.9	257.7	244.6
	Net	37.7	27.9	12.3	35.9	-59.4	-14.4	-40.5
	Debt	107.3	167.1	253.1	409.5	489.4	482.1	564.0
	Asset	219.3	310.5	344.2	560.3	585.4	530.2	491.4
1.2-1.29 (7)*	Gross	214.8	266.3	229.6	335.0	289.7	403.3	409.0
	Net	79.1	20.8	-5.6	5.8	-93.1	-44.7	-36.0
	Debt	192.4	371.4	427.4	515.2	548.5	654.8	672.0
	Asset	382.9	531.9	516.7	672.7	579.7	538.0	533.8
1.3-1.39 (4)*	Gross	127.5	115.6	144.7	211.4	185.1	258.9	144.4
	Net	57.9	17.8	17.2	38.8	-39.5	29.5	-38.3
	Debt	117.3	130.0	233.3	293.2	374.1	436.8	538.7
	Asset	237.2	219.6	252.1	372.1	444.6	430.4	397.0
1.4-1.49 (4)*	Gross	207.0	208.4	222.1	288.6	328.2	253.2	148.6
	Net	99.2	35.2	-16.1	21.3	13.7	-39.8	-73.1
	Debt	239.3	335.3	531.9	650.3	769.1	840.7	754.1
	Asset	506.4	604.1	709.1	890.7	899.7	743.0	529.0

TABLE 39--continued.

1984 Debt/ Asset Ratio		73	75	Year				84
				77	79	81	83	
		(\$ thousand)						
1.5-1.59	Gross	-	-	-	-	-	-	-
	Net	-	-	-	-	-	-	-
	Debt	-	-	-	-	-	-	-
	Asset	-	-	-	-	-	-	-
1.6-1.69 (1)*	Gross	84.8	85.7	123.1	119.8	103.1	75.4	49.5
	Net	43.7	7.4	-43.0	12.6	-44.9	-46.2	-8.1
	Debt	30.8	84.0	228.1	262.1	362.7	441.1	409.9
	Asset	80.0	125.8	215.2	228.0	366.6	337.1	251.8
Over 1.70 (6)*	Gross	120.8	121.4	117.7	194.1	166.1	259.3	196.9
	Net	59.0	20.8	-13.2	28.2	-30.8	76.9	12.3
	Debt	62.6	129.3	221.7	241.2	309.8	427.5	278.3
	Asset	131.9	236.6	189.5	299.5	387.6	215.0	142.5

*Number of farms.

TABLE 40

Average farm gross income, net income^a, debt, and assets by 1984 type and by year

1984 Type		Year						
		73	75	77	79	81	83	84
		(\$ thousand)						
Cash- Crop/ Dryland	Gross	99.3	76.4	86.5	138.8	119.9	134.9	122.2
	Net	52.6	17.7	19.5	51.9	8.6	20.4	2.3
	Debt	62.4	74.3	94.7	120.1	149.4	162.5	167.9
	Asset	236.5	323.5	344.5	405.1	539.2	543.8	539.1
Cash- Crop/ Irrigated	Gross	154.3	156.8	154.5	240.4	207.5	266.8	227.6
	Net	77.8	36.7	1.3	66.2	-24.5	25.9	-0.4
	Debt	93.3	132.0	216.2	233.5	306.0	321.3	294.3
	Asset	309.6	555.9	570.2	672.7	836.5	753.6	715.3
Dairy	Gross	106.4	116.4	139.5	192.1	213.7	224.9	226.7
	Net	40.5	21.0	31.1	57.4	32.4	14.4	12.2
	Debt	52.8	83.4	100.4	122.2	137.5	165.0	179.0
	Asset	237.1	310.1	309.2	361.3	541.7	548.6	541.3
Cash- Crop/ Cowherd	Gross	97.5	65.6	72.7	135.8	92.3	105.0	90.0
	Net	42.7	-2.0	11.9	47.8	-6.7	-3.4	-9.8
	Debt	93.6	141.6	115.0	153.8	173.7	205.8	214.0
	Asset	398.7	467.7	335.1	471.3	625.2	674.7	615.9
General Farm	Gross	-	92.1	109.3	161.6	146.8	142.7	198.3
	Net	-	14.1	23.9	37.9	-7.8	-18.0	-5.0
	Debt	-	88.0	122.5	171.3	240.6	260.8	279.7
	Asset	-	405.1	375.2	461.8	598.0	609.7	658.3
Cash- Crop/ Back- grounding	Gross	-	-	-	200.0	157.2	198.3	240.5
	Net	-	-	-	48.0	-23.2	14.5	6.0
	Debt	-	-	-	266.0	275.0	285.3	342.0
	Asset	-	-	-	611.5	703.1	745.1	784.8
Cash- Crop/ Beef	Gross	-	-	119.2	191.0	151.8	148.3	137.5
	Net	-	-	20.4	63.2	0.7	10.3	-1.6
	Debt	-	-	143.6	208.6	195.5	191.8	188.6
	Asset	-	-	447.9	551.8	738.7	680.9	551.8

^aNet income includes income to operator labor.

As also would be expected, asset and debt values were positively related to size of farm (Table 41). That is, the largest farms had the largest asset and debt values. For example, the \$500,000 gross income and over farm size had an average asset increase from \$700,400 in 1973 to \$1,476,600 in 1984, while average debt rose from \$328,300 in 1973 to \$793,500 in 1984. On the other hand, those under the \$20,000 size group had only \$146,900 average assets in 1973, and \$447,400 in 1984. The debt value for the same group rose from \$59,300 in 1973 to \$68,700 in 1984.

All the farm types and farm sizes that apparently increased their assets and debt also increased their debt/asset ratios. Cash-crop/irrigated, cash-crop/beef, and cash-crop/backgrounding farms had the highest debt/asset ratios. The larger farms also had the highest debt/asset ratios. Therefore, all things remaining equal, these farms will most likely experience financial problems.

However, asset and debt positions may be influenced by the five-year constant periods for farmland values as discussed in Chapter III. The implication is that with constant farmland values, asset values may be overstated since farmland values have been on the decrease since 1980. Hence, farm problems, as depicted by the debt/asset ratio, may actually be worse than currently indicated. That is, the debt/asset ratios may, in fact, be higher than currently indicated.

On average over the study years, assets values exhibited an almost S-shaped curve, while the average debt showed a linear trend (Figure 17).

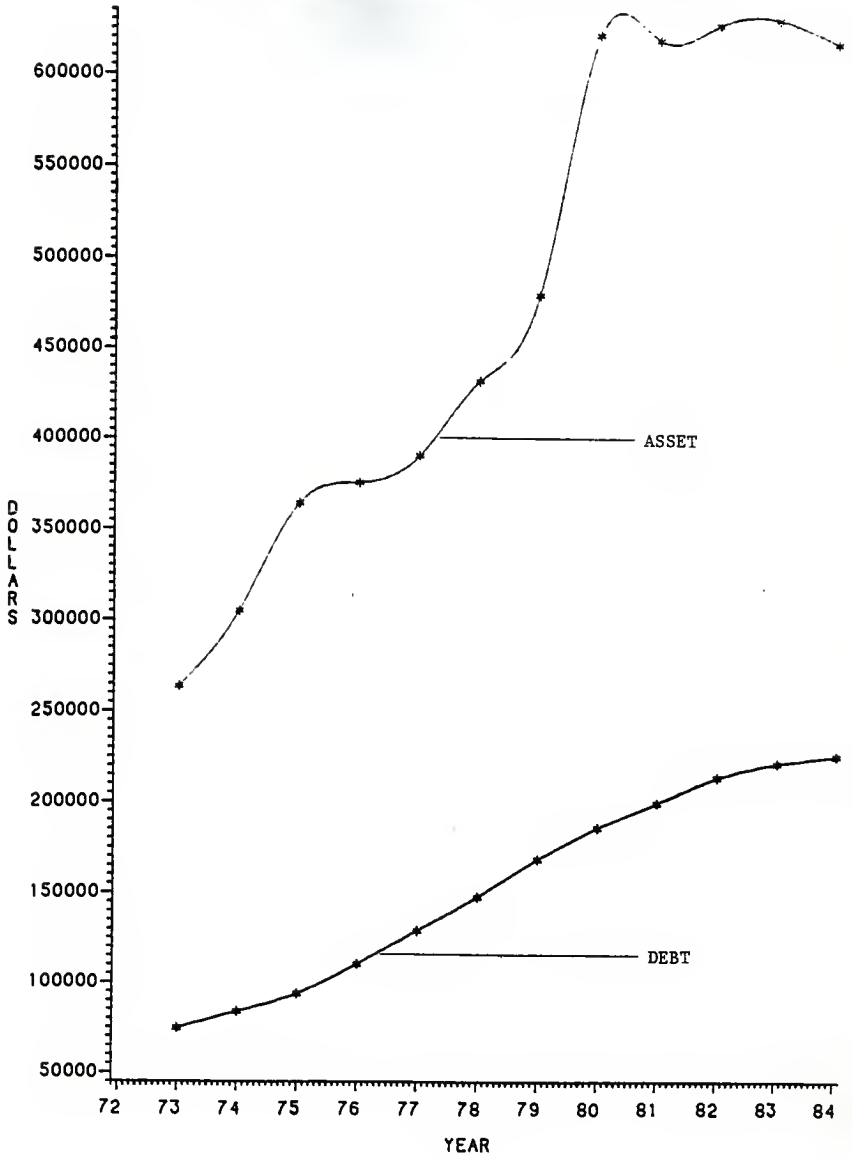
TABLE 41

Average farm gross income, net income^a, debt, and assets by 1984 size classification and by year

1984		Year						
Gross income (\$thousand)		73	75	77	79	81	83	84
		(\$ thousand)						
500 & Over	Gross	677.3	708.2	659.6	676.2	671.1	740.8	765.2
	Net	217.1	137.9	35.7	143.9	18.7	62.9	36.5
	Debt	328.3	618.6	856.5	774.6	787.9	757.3	793.5
	Asset	700.4	1023.2	1315.1	1399.3	1467.4	1489.6	1476.6
200-499.9	Gross	276.5	275.3	269.7	292.1	284.5	293.3	295.4
	Net	127.5	79.8	44.4	86.1	6.5	18.3	17.5
	Debt	188.2	218.4	297.8	296.1	326.7	381.3	375.8
	Asset	577.2	741.8	739.7	769.7	907.5	907.8	907.1
100-199.9	Gross	136.5	138.1	138.6	143.6	140.1	139.7	143.5
	Net	69.7	35.5	27.4	48.0	3.7	12.5	1.7
	Debt	82.0	115.2	158.9	128.8	192.2	183.2	210.8
	Asset	300.2	427.0	468.2	406.6	620.5	579.1	600.0
40-99.9	Gross	69.3	67.7	68.6	73.8	70.1	70.2	70.4
	Net	32.9	12.6	12.3	22.1	-6.0	1.4	-4.3
	Debt	47.6	68.7	83.1	72.9	114.6	105.4	112.3
	Asset	181.1	298.7	287.7	274.8	440.6	405.7	404.9
20-39.9	Gross	31.8	31.4	32.6	31.8	31.7	32.3	31.6
	Net	12.7	1.1	0.7	3.2	-11.7	-24.4	-13.9
	Debt	28.0	38.3	45.4	21.6	47.0	70.0	74.9
	Asset	101.1	199.2	213.0	185.3	286.5	429.2	310.1
Under 20	Gross	-13.9	11.4	15.1	10.8	4.2	10.5	-30.3
	Net	-57.7	-24.1	-14.0	-10.2	-50.0	-24.1	-82.2
	Debt	59.3	54.7	41.0	32.8	70.7	58.5	68.7
	Asset	146.9	224.7	217.4	82.7	351.1	331.3	447.4

^aNet income includes income to operator labor.

AVERAGE DEBT AND ASSET BY YEAR



Gross and net farm income

Gross income showed a general increase from 1973 to 1979, and then slightly declined to 1984. A few farms showed an increase from 1979 to 1984. However, only the farmers within the 0-0.29 debt/asset ratio categories showed no negative net farm income in any of the years (Table 39). There was a general decline in net farm income from 1979 to 1984 for all farms, but the 0-0.29 debt/asset ratio category did relatively better than the rest. The 0.3-0.49 debt/asset ratio category had only one negative net income in all the years. All the other categories had two or more negative values for net farm income over the study period. For the group, 1981 to 1984 were the bad years for net farm income, and most of the farms within the groups had negative values for net income. The 1.0-1.09 debt/asset ratio appeared to have suffered most.

Gross farm income showed a positive relationship with the debt/asset ratio categories of 0-0.89. That is, as debt/asset ratio increased, average gross income increased. The result is expected since the larger farms were found to also be in the 0-0.89 debt/asset ratios.

By type, cash-crop/irrigated farms appeared to have done well in terms of gross farm income over the 12-year period (Table 40). The group had average gross income of \$154,300 in 1973, and \$227,600 in 1984. In terms of net farm income, dairy farms did substantially better. The dairy group increased net income from an average of \$40,500 in 1973 to \$57,400 in 1979, but fell to \$12,200 by 1984. Even then, the group's value of \$12,200 in 1984 was still substantial compared to the negative values of many other farm types.

By size, farms in the \$100,000 gross income and above sizes appeared to have done very well in terms of gross and net farm income (Table 41). The problem, however, was that even though gross income increased substantially from 1973 to 1984, net farm income declined for the same period. For example, those in the \$500,000 and over size increased average gross income from \$677,300 in 1973 to \$765,200 in 1984, but average net income declined from \$217,100 in 1973 to a low \$36,500 in 1984. However, the gross and net farm income exhibited by the \$100,000 and over sizes was excellent relative to the group under \$40,000. The groups below the \$40,000 size had negative values for net income from 1981 to 1984.

On average, the peak periods for gross farm income by year for all farms include: 1973, 1979, and 1982 (Figure 18). Trough periods include: 1974, 1976, 1981, and 1984. For net farm income, the peaks were 1973 and 1979, while the troughs were the same as for gross farm income figures, and will likely include 1985. Gross farm incomes generally increased, but production expenses increased more rapidly during the study period, so that net farm incomes were generally low (Figure 18). In general however, 1973 and 1979 appeared to be the best years for gross and net farm income for all categories of farms by debt/asset ratio, farm size, and farm type.

Margin

There was a reduction in margin¹ for all farms in every debt/asset ratio classification during the period of analysis (Table 42). All debt/asset ratio categories of 0.30 and above had a negative margin in both 1981 and 1984.

¹Net income divided by gross income.

AVERAGE GROSS AND NET FARM INCOME BY YEAR

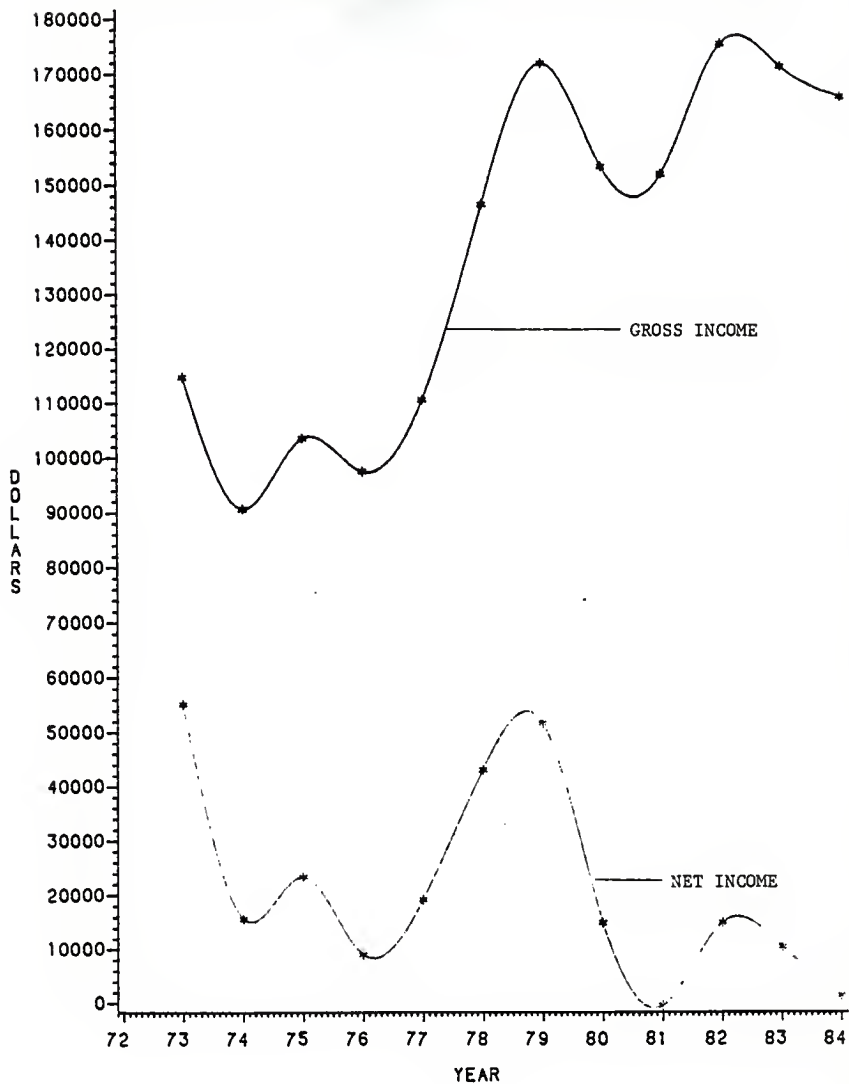


TABLE 42

Average margin, turnover, and debt/asset ratio by 1984 debt/asset ratio and by year

1984 Debt/ Asset Ratio		73	75	Year 77	79	81	83	84
0.0-0.09 (194)*	Margin	0.54	0.18	0.25	0.40	0.00	-1.13	-0.03
	Turnover	0.26	0.16	0.15	0.20	0.12	0.12	0.12
	D/A Ratio	0.13	0.09	0.09	0.08	0.05	0.04	0.03
0.1-0.19 (100)*	Margin	0.50	0.28	0.23	0.36	0.07	0.05	0.03
	Turnover	0.28	0.16	0.19	0.23	0.16	0.16	0.16
	D/A Ratio	0.23	0.19	0.23	0.24	0.18	0.17	0.15
0.2-0.29 (102)*	Margin	0.49	0.18	-0.02	0.32	0.08	0.07	2.61
	Turnover	0.28	0.17	0.18	0.22	0.16	0.16	0.14
	D/A Ratio	0.28	0.24	0.29	0.28	0.25	0.24	0.25
0.3-0.39 (76)*	Margin	0.48	0.19	0.19	0.28	-0.08	-0.09	-1.10
	Turnover	0.31	0.19	0.19	0.22	0.15	0.16	0.16
	D/A Ratio	0.31	0.25	0.32	0.31	0.31	0.34	0.35
0.4-0.49 (76)*	Margin	0.48	0.16	0.09	0.28	-0.09	0.01	-0.09
	Turnover	0.28	0.18	0.17	0.23	0.15	0.16	0.16
	D/A Ratio	0.32	0.30	0.41	0.43	0.38	0.43	0.45
0.5-0.59 (62)*	Margin	0.42	0.10	0.08	0.24	-0.08	-0.03	-0.10
	Turnover	0.28	0.18	0.16	0.21	0.16	0.19	0.17
	D/A Ratio	0.40	0.37	0.47	0.48	0.47	0.53	0.55
0.6-0.69 (55)*	Margin	0.43	0.16	0.12	0.24	-0.19	-0.19	-0.07
	Turnover	0.28	0.18	0.17	0.22	0.14	0.17	0.18
	D/A Ratio	0.45	0.45	0.52	0.54	0.51	0.60	0.65
0.7-0.79 (41)*	Margin	0.37	0.11	0.08	0.22	-0.47	0.05	-0.16
	Turnover	0.28	0.22	0.22	0.27	0.18	0.20	0.21
	D/A Ratio	0.45	0.44	0.56	0.61	0.62	0.70	0.75
0.8-0.89 (32)*	Margin	0.41	0.12	0.03	0.20	-0.30	-0.20	-0.23
	Turnover	0.30	0.19	0.16	0.21	0.21	0.21	0.18
	D/A Ratio	0.48	0.45	0.57	0.57	0.67	0.79	0.84

TABLE 42--continued.

1984 Debt/ Asset Ratio		73	75	Year 77	79	81	83	84
0.9-0.99 (14)	Margin	0.32	0.00	-0.02	0.18	-0.44	-0.26	-0.03
	Turnover	0.24	0.15	0.15	0.20	0.13	0.18	0.13
	D/A Ratio	0.42	0.45	0.61	0.64	0.72	0.87	0.94
1.0-1.09 (11)*	Margin	0.58	0.87	-0.22	0.16	-0.27	-0.19	-0.21
	Turnover	0.35	0.16	0.15	0.19	0.14	0.24	0.20
	D/A Ratio	0.59	0.50	0.69	0.70	0.77	0.97	1.05
1.1-1.19 (9)*	Margin	0.31	0.17	0.06	0.14	-0.44	-0.15	-0.60
	Turnover	0.28	0.26	0.21	0.30	0.15	0.25	0.17
	D/A Ratio	0.47	0.52	0.73	0.74	0.84	0.97	1.15
1.2-1.29 (7)*	Margin	0.42	-0.26	0.03	0.03	-0.40	-0.39	-0.25
	Turnover	0.29	0.23	0.21	0.22	0.18	0.21	0.23
	D/A Ratio	0.51	0.57	0.71	0.72	0.87	1.23	1.26
1.3-1.39 (4)*	Margin	0.34	0.14	0.11	0.15	-0.24	0.06	-0.30
	Turnover	0.30	0.19	0.19	0.22	0.16	0.37	0.17
	D/A Ratio	0.50	0.61	0.91	0.80	0.84	1.08	1.36
1.4-1.49 (4)*	Margin	0.42	0.19	-0.13	-0.04	0.04	-0.15	-0.73
	Turnover	0.28	0.23	0.18	0.17	0.21	0.19	0.11
	D/A Ratio	0.61	0.58	0.82	0.94	1.03	1.30	1.45
1.5-1.59 (0)*	Margin	-	-	-	-	-	-	-
	Turnover	-	-	-	-	-	-	-
	D/A Ratio	-	-	-	-	-	-	-
1.6-1.69 (1)*	Margin	0.51	0.09	0.00	0.11	-0.44	-0.61	-0.16
	Turnover	0.31	0.23	0.20	0.19	0.12	0.09	0.16
	D/A Ratio	0.38	0.67	1.06	1.15	0.99	1.31	1.63
Over 1.70 (6)*	Margin	0.43	0.16	-0.15	0.10	-0.33	0.15	-0.08
	Turnover	0.39	0.15	0.14	0.18	0.10	0.15	0.13
	D/A Ratio	0.46	0.53	1.46	1.48	1.37	2.28	2.19

*Number of farms.

Those farms in the debt/asset ratio category of 0.1-0.19 seemed to be doing well relative to other groups prior to 1981. However, the margin for this group declined from 0.50 in 1973 to 0.03 in 1984.

Other than the general increase over the study period, margin showed no correlation with debt/asset ratio categories. Based on margin, only the farmers within the 0.1-0.29 debt/asset ratio categories showed any appreciable financial health.

Based on margin, the majority of farmers within the different farm types did fairly well prior to 1981 (Table 43). From 1981 to 1984, all farm types generally performed poorly. Dairy farms were the only farm type with a negative margin in only one year, and that was in 1984. For this farm type, margin decreased from 0.38 in 1973 to -0.01 in 1984. Other farm types had at least two years with negative margins.

Over the full 12-year period, two farm types had a negative average margin. These types were the general farm which had the most negative value, and cash-crop/cowherd. On the positive side, dairy and cash-crop/irrigated farms had the highest average margin, on average, over the period of the analysis (Figure 19).

The \$100,000 gross income and over farm sizes had no negative average margins during the period (Table 44). Those in the \$100,000-\$199,999 size category, however, had a decline in margin from 0.51 in 1973 to 0.01 in 1984. The margin for the \$500,000 and over size declined from 0.33 in 1973 to 0.06 in 1984. Those under the \$20,000 farm size seemed to have suffered the most over the period.

TABLE 43

Average margin, turnover, and debt/asset ratio by 1984 type and by year

1984		Year						
Type		73	75	77	79	81	83	84
Cash-Crop/ Dryland	Margin	0.51	0.16	0.12	0.35	-0.02	0.06	-0.11
	Turnover	0.26	0.14	0.14	0.19	0.12	0.13	0.12
	D/A Ratio	0.28	0.24	0.29	0.31	0.29	0.32	0.33
Cash-Crop/ Irrigated	Margin	0.48	0.15	-0.03	0.27	-0.18	0.08	-0.02
	Turnover	0.31	0.17	0.15	0.21	0.13	0.17	0.16
	D/A Ratio	0.32	0.26	0.43	0.36	0.37	0.53	0.51
Dairy	Margin	0.38	0.17	0.23	0.27	0.14	0.06	-0.01
	Turnover	0.33	0.26	0.32	0.39	0.28	0.33	0.29
	D/A Ratio	0.23	0.29	0.32	0.33	0.28	0.36	0.41
Cash-Crop/ Cowherd	Margin	0.41	-0.03	0.13	0.35	-0.15	-0.19	-1.41
	Turnover	0.19	0.12	0.12	0.18	0.09	0.10	0.09
	D/A Ratio	0.34	0.30	0.31	0.29	0.27	0.31	0.36
General Farm	Margin	-	2.00	0.20	0.23	-0.01	-3.79	-0.09
	Turnover	-	0.14	0.19	0.22	0.14	0.14	0.19
	D/A Ratio	-	0.15	0.37	0.35	0.38	0.40	0.43
Cash-Crop/ Back- grounding	Margin	-	-	-	0.26	-0.38	0.08	0.01
	Turnover	-	-	-	0.21	0.14	0.16	0.18
	D/A Ratio	-	-	-	0.44	0.43	0.41	0.46
Cash-Crop/ Beef	Margin	-	-	0.15	0.32	-0.26	0.04	-0.04
	Turnover	-	-	0.16	0.20	0.12	0.14	0.13
	D/A Ratio	-	-	0.36	0.36	0.28	0.32	0.37

AVERAGE MARGIN BY FARM TYPE, 1973/84

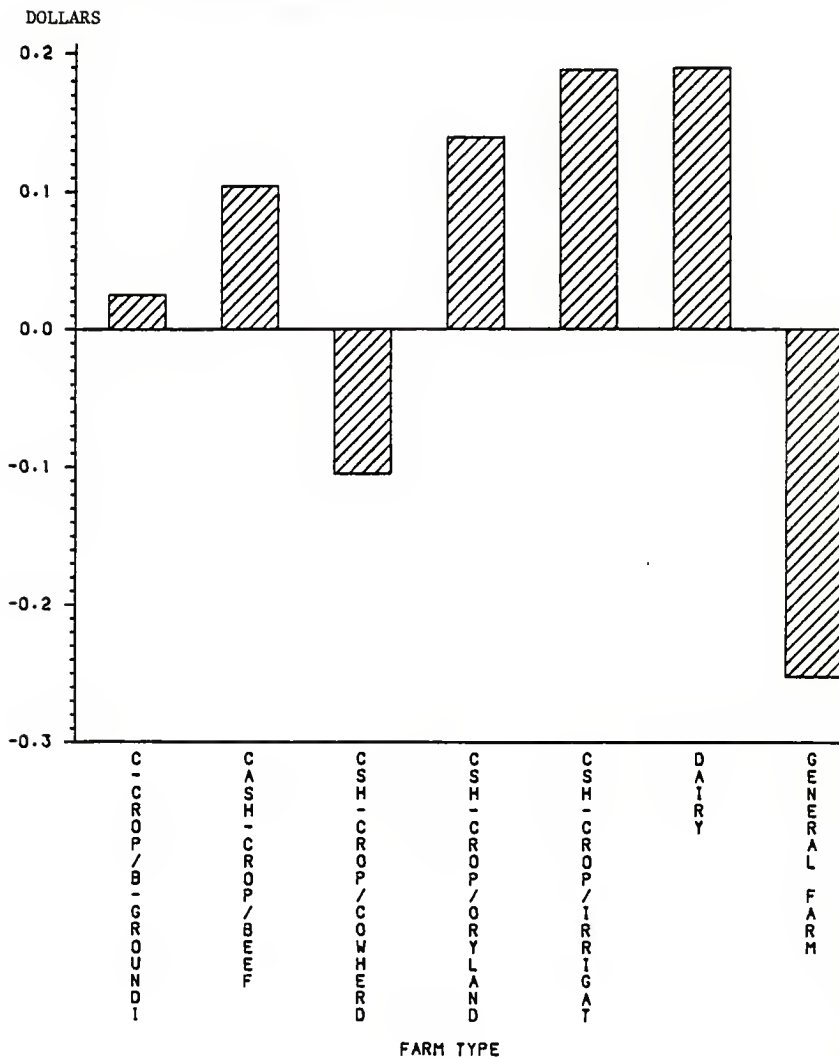


TABLE 44

Average margin, turnover, and debt/asset ratio by 1984 size and by year

1984 Size (\$thousand)		Year						
		73	75	77	79	81	83	84
500 & Over	Margin	0.33	0.21	0.06	0.23	0.04	0.10	0.06
	Turnover	0.58	0.40	0.34	0.35	0.39	0.31	0.32
	D/A Ratio	0.40	0.57	0.65	0.55	0.56	0.57	0.55
200-499.9	Margin	0.46	0.29	0.17	0.30	0.03	0.06	0.06
	Turnover	0.35	0.29	0.26	0.26	0.20	0.22	0.21
	D/A Ratio	0.34	0.33	0.43	0.39	0.38	0.45	0.47
100-199.9	Margin	0.51	0.26	0.20	0.33	0.02	0.08	0.01
	Turnover	0.32	0.22	0.21	0.22	0.16	0.16	0.15
	D/A Ratio	0.29	0.29	0.38	0.35	0.35	0.37	0.40
40-99.9	Margin	0.47	0.18	0.18	0.30	-0.10	0.02	-0.08
	Turnover	0.24	0.15	0.14	0.18	0.11	0.12	0.12
	D/A Ratio	0.29	0.26	0.31	0.28	0.27	0.31	0.34
20-39.9	Margin	0.39	0.02	0.01	0.10	-0.38	-0.78	-0.44
	Turnover	0.19	0.11	0.10	0.12	0.06	0.07	0.08
	D/A Ratio	0.30	0.21	0.24	0.15	0.22	0.16	0.27
Under 20	Margin	0.33	-0.31	-2.00	-1.37	-1.89	-15.22	0.88
	Turnover	-0.01	0.04	0.07	0.10	0.02	0.03	-0.01
	D/A Ratio	0.36	0.24	0.22	0.47	0.27	0.16	0.16

Over the 12-year period, the \$100,000-\$199,999 gross income category seemed to have performed better than any other size group, and was followed by the \$200,000-\$499,999, and \$40,000-\$99,999 farm size groups. Those farmers in the under \$20,000 farm size had the largest negative margin on average, followed by the \$20,000-\$39,999 farm size group (Figure 20).

By year, 1973 remained the peak year for margin. Average margin remained at 0.50, followed by 1979 with average margin of 0.30. The most depressed year was 1983 with an average margin of -0.30. There was a dramatic improvement for 1984 over the 1983 value. Margin rose to an average of 0.15 from -0.30 in 1983 (Figure 21).

In general, 1973 to 1979 were the profitable years for farmers, based on margin, in both the debt/asset ratio categories, farm type, and farm size.

Turnover

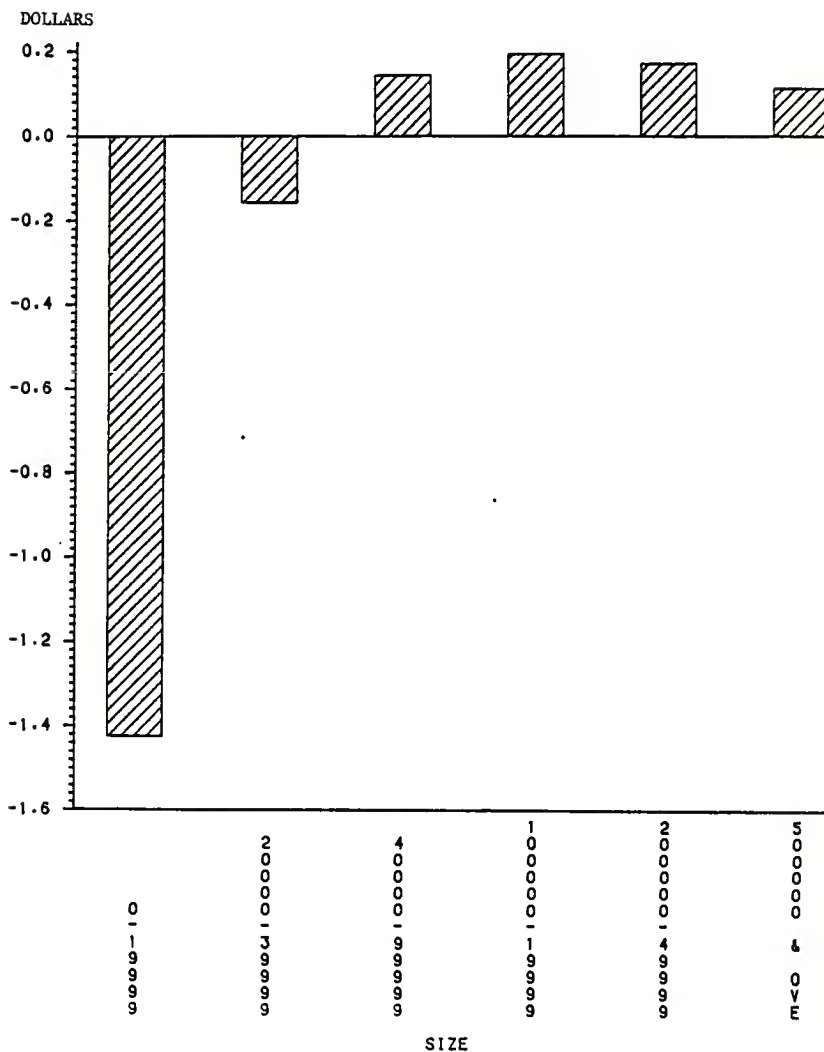
Similar to margins, there was a general increase in average turnover¹ from 1973 to 1979 within the debt/asset ratio categories, but a decline from 1979 to 1984 (Table 42). The farms within the 1.2-1.49 debt/asset ratio categories appeared to have had the largest average turnover over the period of the analysis. Average turnover changes from year to year for farms within the 0-0.99 remained relatively stable.

On average over the 12-year period, the same category of farms (1.2-1.49 debt/asset ratio) had the largest average turnover, while those in the 0-0.09 ratio had the smallest turnover (Figure 22).

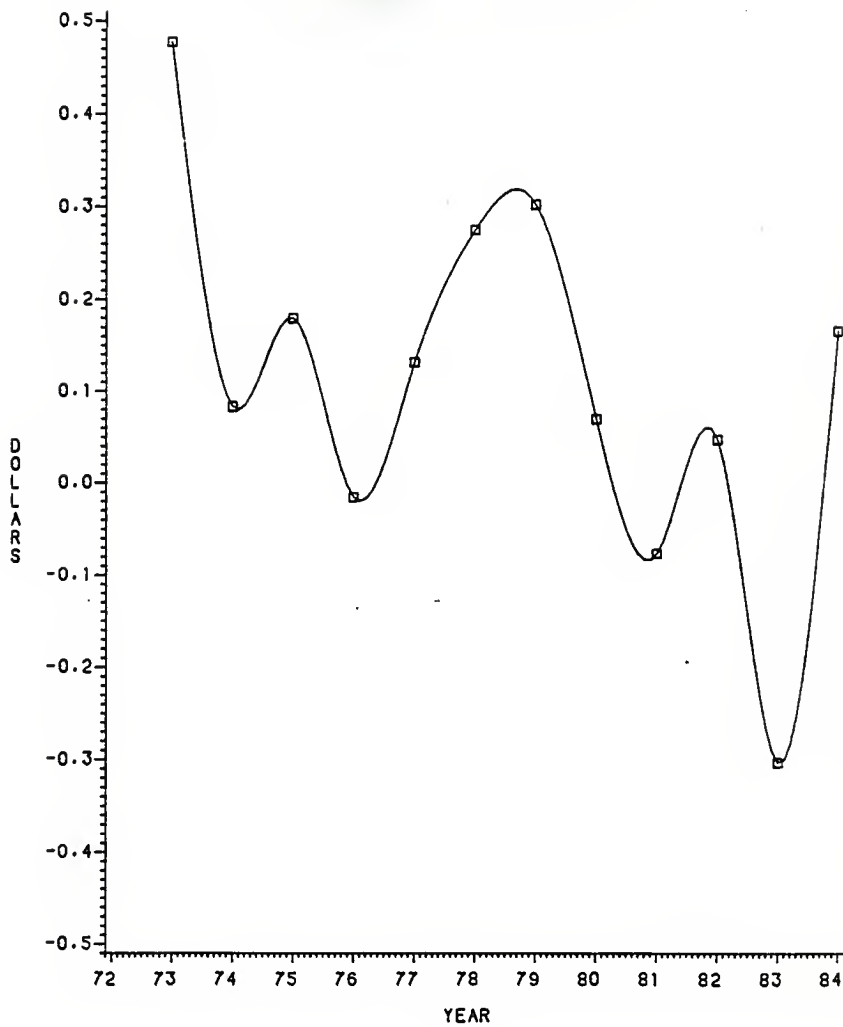
By type, dairy farms generated the largest turnover during the years (Table 43). Turnover increased from 0.33 in 1973 to 0.39 in 1979, then declined to 0.29 in 1984. Cash-crop/irrigated followed the same trend with a

¹Gross farm income per total dollar of capital managed.

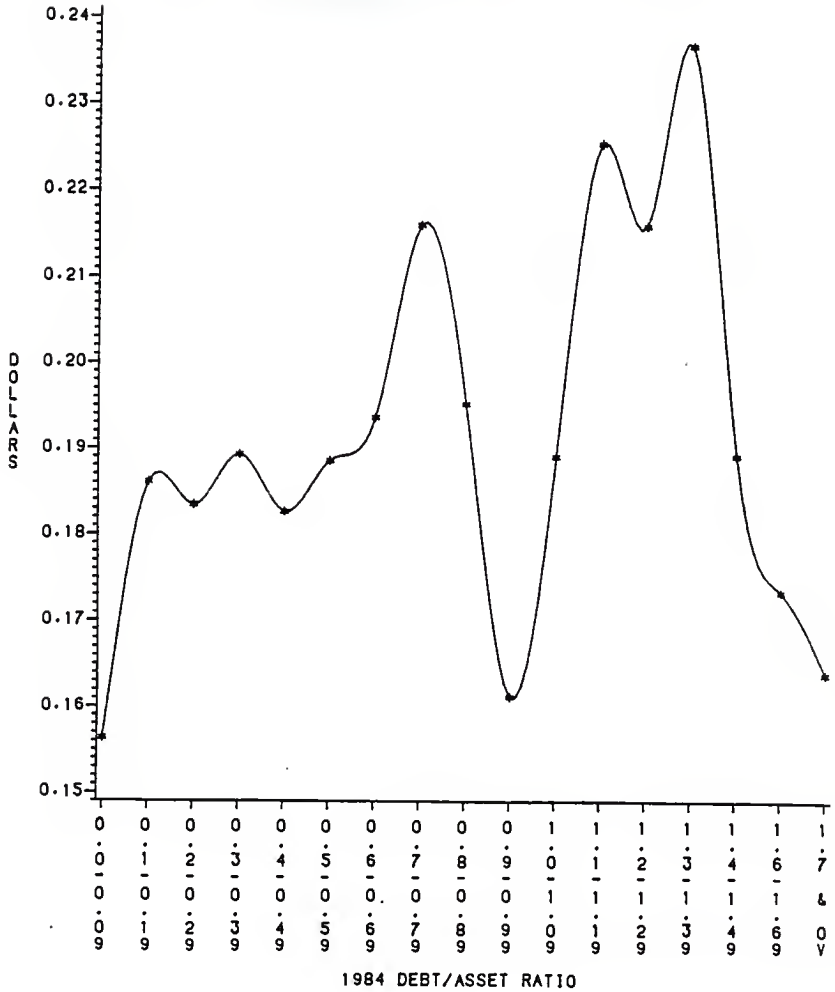
AVERAGE MARGIN BY FARM SIZE, 1973/84



AVERAGE MARGIN BY YEAR



AVERAGE TURNOVER BY 1984 D/A RATIO



0.31 turnover in 1973 and 0.16 turnover ratio in 1984. Over the study period, all farms within each type, had a positive average turnover. Dairy farms had the largest turnover as indicated by yearly average. Cash-crop/-cowherd had the lowest turnover among the farm types (Figure 23).

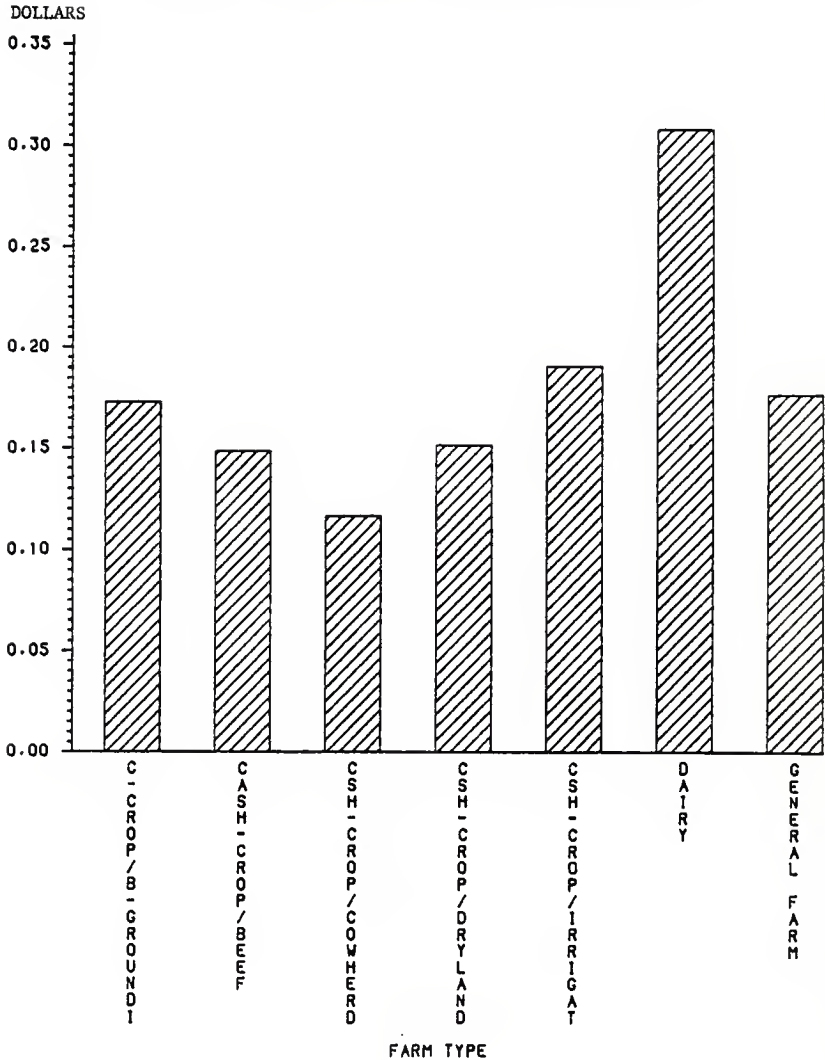
There was also a positive relationship between size of farm and turnover (Table 44). The larger farm groups appeared to have more turnover than the smaller ones. For example, the \$500,000 and over size exhibited a 0.58 turnover in 1973, 0.39 in 1979, and 0.32 in 1984; while the \$100,000-\$199,999 farm size category had a 0.32 turnover ratio in 1973, 0.22 in 1979, and 0.15 in 1984. Those under the \$20,000 size category had turnover ratios of -0.01 in 1973, 0.10 in 1979, and -0.01 in 1984. The same pattern was shown by the average of all the years by size. The \$500,000 and over farm size exhibited the highest average turnover of 0.35, while those under the \$20,000 size had the lowest value of about 0.025 (Figure 24). By year, 1973 remained the peak year for turnover with an average of 0.28, followed by 0.22 in 1979. The lowest value was shown in 1981 with a value of 0.15 (Figure 25).

In general, there does not seem to be any correlation between debt/asset ratio and either margin or turnover.

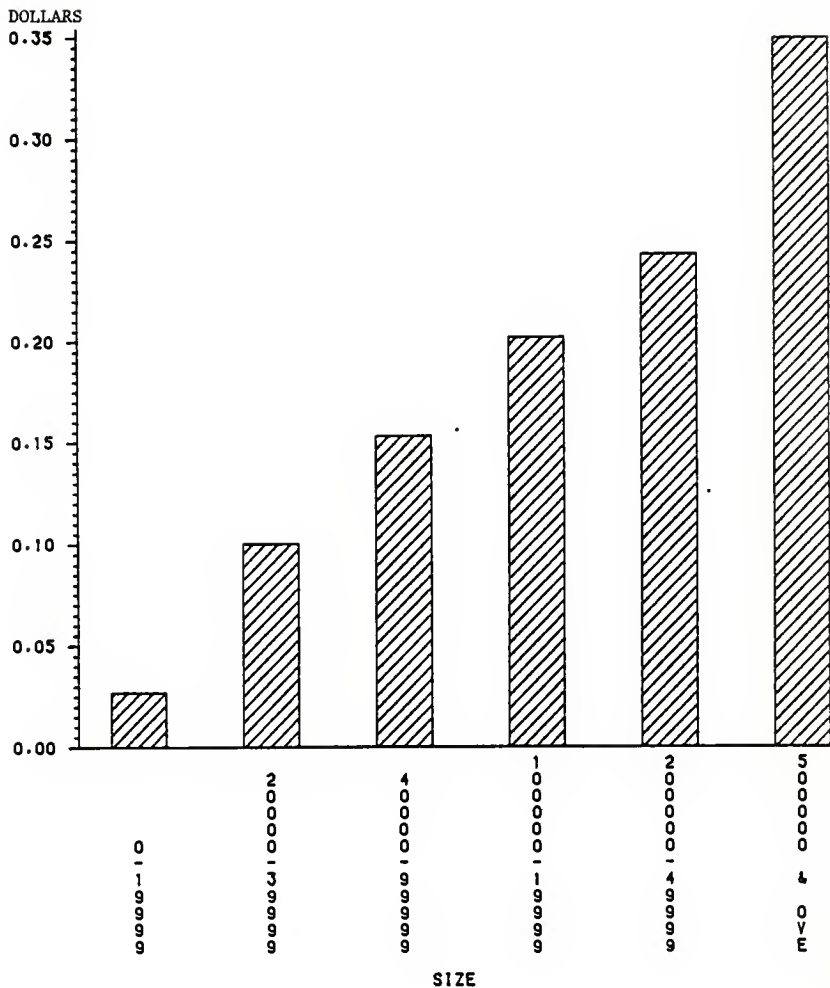
Gross per man, net per man, and capital managed per man

There was a general increase in the gross income per man for the majority of the farmers from 1973 to 1979, but a decline from 1979 to 1984 (Table 45). Farmers within the 0.7-0.89 categories exhibited the highest gross income per man over the study period. In the 0-0.79 debt/asset ratio range with 706 farms, there appeared to be a general increase in gross per man the higher

AVERAGE TURNOVER BY FARM TYPE, 1973/84



AVERAGE TURNOVER BY FARM SIZE, 1973/84



AVERAGE TURNOVER BY YEAR

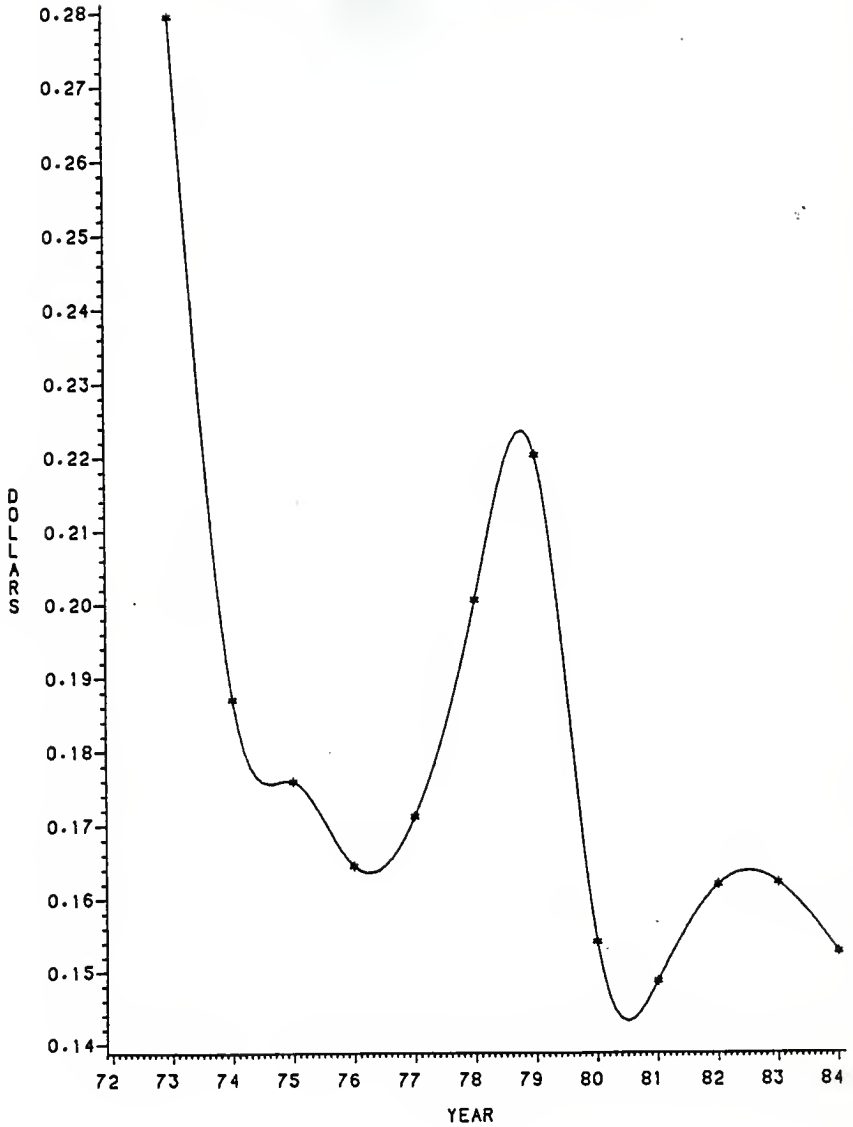


TABLE 45

Average farm gross income per man, net farm income per man, and capital managed per man by 1984 debt/asset ratio and by year

1984 Debt/ Asset Ratio		73	75	Year				
				77	79	81	83	84
		(\$ thousand)						
0.0-0.09 (194) ^a	Gross	63.9	50.8	52.8	85.6	65.2	72.2	67.1
	Net	38.8	15.5	15.7	36.6	11.6	15.2	8.3
	C. Mgd. ^b	262.0	362.0	403.0	487.6	620.3	641.9	632.3
0.1-0.19 (100)*	Gross	66.7	53.8	62.8	98.5	84.6	99.9	88.5
	Net	35.5	13.5	16.3	37.2	10.6	18.6	7.9
	C. Mgd.	252.7	378.7	426.9	520.9	714.7	758.6	730.3
0.2-0.29 (102)*	Gross	65.2	54.6	61.7	94.8	76.1	94.0	81.1
	Net	34.2	14.4	13.8	32.5	4.5	14.5	2.1
	C. Mgd.	248.8	363.6	407.1	481.1	646.7	673.9	678.2
0.3-0.39 (76)*	Gross	77.2	63.5	68.2	107.9	85.2	104.6	97.1
	Net	38.4	13.9	14.0	30.2	-0.1	5.6	-2.3
	C. Mgd.	270.6	378.5	418.2	530.7	683.2	718.6	705.0
0.4-0.49 (76)*	Gross	103.3	65.4	64.6	100.1	93.6	106.8	99.8
	Net	47.8	14.7	8.1	30.2	-3.0	5.9	-0.9
	C. Mgd.	320.6	381.3	419.5	485.5	716.6	716.2	693.0
0.5-0.59 (62)*	Gross	65.9	57.5	65.1	98.7	90.1	107.1	99.3
	Net	28.6	10.2	7.1	24.4	-4.4	2.1	-6.5
	C. Mgd.	247.4	354.1	419.5	487.8	634.9	653.1	640.8
0.6-0.69 (55)*	Gross	67.8	65.8	71.1	115.0	92.2	103.7	107.2
	Net	28.8	14.6	7.6	25.8	-11.6	-6.8	-3.5
	C. Mgd.	264.0	387.9	474.6	558.0	749.5	761.5	752.8
0.7-0.79 (41)*	Gross	74.3	82.4	74.5	135.1	112.6	109.6	119.9
	Net	29.4	14.8	8.4	32.1	-26.1	-8.0	6.4
	C. Mgd.	280.2	386.8	413.4	542.0	748.2	644.6	617.4

^aNumber of farms.

^bCapital managed per man.

TABLE 45--continued.

1984 Debt/ Asset Ratio		73	75	Year				83	84
				77	79	81	82		
(\$ thousand)									
0.8-0.89 (32)* ^a	Gross	88.2	74.2	65.8	103.6	95.3	113.7	110.0	
	Net	35.6	13.8	3.8	22.2	-19.0	-17.0	-16.3	
	C. Mgd. ^b	353.7	416.1	454.1	504.9	687.8	673.0	637.2	
0.9-0.99 (14)*	Gross	58.1	48.7	60.7	100.2	69.3	86.1	77.3	
	Net	17.6	6.8	1.6	18.2	-25.8	-22.8	-16.0	
	C. Mgd.	319.6	377.9	506.6	554.4	662.5	680.3	628.0	
1.0-1.09 (11)*	Gross	56.7	43.6	55.2	73.0	77.8	97.6	81.8	
	Net	15.2	-10.3	-3.4	14.3	-14.9	-13.9	-13.1	
	C. Mgd.	211.8	412.1	443.6	432.1	587.6	611.4	584.5	
1.1-1.19 (9)*	Gross	74.3	76.1	70.3	109.6	69.6	86.6	114.5	
	Net	23.6	15.7	4.5	19.5	-26.7	-8.5	-28.4	
	C. Mgd.	298.7	345.5	437.7	406.1	623.3	595.3	753.3	
1.2-1.29 (7)*	Gross	64.0	81.7	69.3	102.2	93.2	106.5	118.2	
	Net	26.4	3.3	0.8	3.7	-31.5	-25.6	-13.0	
	C. Mgd.	229.0	363.8	396.3	437.9	529.1	510.8	495.3	
1.3-1.39 (4)*	Gross	79.6	59.7	63.2	91.8	88.1	106.1	73.7	
	Net	35.6	11.1	7.4	16.9	-19.8	17.7	-14.5	
	C. Mgd.	256.9	365.8	364.5	433.4	630.5	457.0	509.2	
1.4-1.49 (4)*	Gross	63.8	59.6	49.2	82.4	71.6	80.0	56.2	
	Net	29.5	11.9	-6.6	-5.3	5.1	-6.3	-34.2	
	C. Mgd.	255.2	291.4	324.5	510.0	406.9	465.1	529.8	
1.6-1.69 (1)*	Gross	47.1	40.8	82.1	99.8	85.9	75.4	49.5	
	Net	24.3	3.5	0.0	10.5	-37.4	-46.2	-8.1	
	C. Mgd.	151.3	174.2	403.0	524.3	732.7	796.0	314.4	
Over 1.70 (6)*	Gross	63.8	70.0	58.6	90.1	91.9	135.4	93.4	
	Net	31.8	13.8	-11.0	9.6	-20.6	34.1	-2.1	
	C. Mgd.	256.4	503.5	490.3	597.7	854.2	914.1	742.0	

^aNumber of farms.^bCapital managed per man.

the debt/asset ratio. 1973 and 1979 were the peak years for net income per man for the majority of farmers within the debt/asset ratio categories.

Based on net income per man, farmers within the 0-0.29 debt/asset ratio categories appeared to have fared better. However, there was a significant decline in the net per man from 1973 to 1984 for all the debt/asset ratio categories. The results indicated that within the debt/asset ratio categories of 0-1.1, net income per man seemed to decline the higher the debt/asset ratio. Farmers in the 1.1-1.19 exhibited the lowest net income per man in most of the years.

Farmers in the debt/asset ratio of 1.70 and over had the highest capital managed per man in most of the years, followed by those within the 0.6-0.69 debt/asset ratio.

By farm type, the largest gross income per man and capital managed per man occurred with cash-crop/backgrounding farms, followed by cash-crop/irrigated farms, and cash-crop/cowherd farms (Table 46). These types, however, had a lower net income per man. Cash-crop/dryland and dairy farms had a lower gross income per man and capital managed per man, but higher net income per man relative to other farm types. These two were the only farm types without a negative net income per man over the years.

The \$100,000 gross income and over size categories generated the highest gross income per man and capital managed per man, but they also produced the largest net income per man (Table 47). There were no negative net income per man in any of the above size groups. The farms within the \$99,999 and below category produced the lowest gross income per man and capital managed per man. They also generated the lowest net income per man.

TABLE 46

Average gross farm income per man, net farm income per man, and capital managed per man by 1984 type and by year

1984 Type		73	75	Year				
				77	79	81	83	84
		(\$ thousand)						
Cash- Crop/ Dryland	Gross	67.0	49.9	55.9	89.5	74.8	87.0	77.2
	Net	35.7	11.9	12.5	33.2	5.3	12.7	2.4
	C. Mgd. ^a	273.8	390.0	447.1	509.9	712.1	730.1	703.9
Cash- Crop/ Irrigated	Gross	81.8	79.5	67.8	128.7	89.9	117.0	102.7
	Net	40.7	17.5	1.4	35.4	-9.9	14.8	-2.1
	C. Mgd.	289.0	503.8	489.4	631.3	724.7	727.6	725.6
Dairy	Gross	50.7	51.9	61.0	94.0	90.1	114.6	91.4
	Net	20.2	9.9	14.7	27.9	13.0	7.8	3.4
	C. Mgd.	161.4	219.4	210.7	263.8	342.1	381.2	359.3
Cash- Crop/ Cowherd	Gross	48.6	40.1	48.4	91.5	64.6	71.7	67.3
	Net	20.4	0.3	7.5	32.8	-4.8	0.3	-6.8
	C. Mgd.	259.3	356.9	436.7	561.2	818.1	762.6	746.5
General Farm	Gross	-	47.0	66.5	90.0	80.4	82.7	86.6
	Net	-	5.4	14.7	22.1	-5.2	-8.6	-3.4
	C. Mgd.	-	316.8	388.2	436.8	616.9	638.0	532.6
Cash- Crop/ Back- grounding	Gross	-	-	-	125.4	89.4	116.8	127.4
	Net	-	-	-	31.7	-16.8	9.7	3.6
	C. Mgd.	-	-	-	615.5	732.7	758.5	773.2
Cash- Crop/ Beef	Gross	-	-	68.2	113.5	83.0	84.9	83.7
	Net	-	-	11.6	38.1	1.6	5.0	-0.9
	C. Mgd.	-	-	449.9	603.0	705.8	662.6	656.8

^aCapital managed per man.

TABLE 47

Average gross farm income per man, net farm income per man, and capital managed per man by 1984 size and by year

1984 Size (\$thousand)		73	75	Year				83	84
				77	79	81	83		
		(\$ thousand)							
500 & Over	Gross	1031.6	191.1	128.8	251.9	161.2	195.9	200.3	
	Net	381.7	39.6	8.1	54.2	5.6	21.2	16.7	
	C. Mgd. ^a	1570.9	509.0	402.8	696.1	574.5	733.7	676.2	
200-499.9	Gross	118.4	118.5	100.9	129.6	121.5	137.9	129.9	
	Net	56.9	36.0	18.7	39.5	4.3	11.9	10.3	
	C. Mgd.	357.9	451.7	446.1	568.4	726.7	774.5	746.2	
100-199.9	Gross	81.4	74.7	76.3	98.1	90.0	97.4	96.9	
	Net	42.4	20.6	15.9	33.4	3.5	9.8	3.1	
	C. Mgd.	280.3	399.8	450.5	512.2	711.2	740.6	744.7	
40-99.9	Gross	53.2	48.3	51.3	62.4	57.0	59.8	60.6	
	Net	25.7	9.9	9.5	19.3	-3.8	2.1	-3.2	
	C. Mgd.	242.5	368.9	416.8	410.3	630.1	575.9	605.6	
20-39.9	Gross	30.4	27.1	30.1	53.3	29.7	26.9	30.0	
	Net	12.3	1.1	1.0	4.8	-9.7	-12.0	-11.5	
	C. Mgd.	183.6	284.9	342.2	554.2	573.2	496.2	446.9	
Under 20	Gross	11.0	12.0	16.2	22.2	6.7	14.5	-13.8	
	Net	-30.5	-14.5	-8.4	-13.8	-35.4	-22.3	-48.7	
	C. Mgd.	325.5	305.1	281.7	192.6	487.6	463.7	515.9	

^aCapital managed per man.

For example, in the \$500,000 and over group, \$1,031,600 gross income per man was generated in 1973, and \$200,300 in 1984 with capital managed of \$1,570,900 per man in 1973, and \$676,200 per man in 1984. The net income per man for the group in 1973 was \$381,700, and \$16,700 in 1984. Conversely, those within the under \$20,000 farm size category generated an average of \$11,000 gross income per man in 1973, and \$-13,800 in 1984. Capital managed per man was \$325,500 in 1973, and \$515,900 in 1984. Net income per man was \$-30,500 in 1973, and \$-48,700 in 1984.

Summary

The majority of the farms (89 percent) were within the 0-0.79 debt/asset ratio categories. Gross income per man increased the higher the debt/asset ratio. But net income per man decreased the higher the debt/asset ratio. The indication was that the farmers in the higher debt/asset ratios generated more gross income per man, but they also incurred much higher expenses. The result was a much lower net income per man.

Similar to the trends in the debt/asset ratio categories, cash-crop/-irrigated and dairy farm types generated lower gross incomes per man relative to the other farm types, but they generated the largest net income per man. This is also a case of larger expenses for the other farm types, which indicated a less efficient operation.

As would be expected the larger farm size categories generated the larger gross income per man, capital managed per man, and net income per man. Specifically, farmers within the \$100,000 gross income and over farm size groups generally fared better than the rest of the farm size categories. Therefore, they seemed to be more efficient.

Crop machinery investment per acre

There was a general increase in the crop machinery investment per acre from 1973 to 1981 for the majority of farmers within the debt/asset ratio categories, but a decline from 1981 to 1984 (Table 48). For most of the debt/asset ratio categories, the value for 1981 was the highest.

There appeared to be a relationship between crop machinery investment and the debt/asset ratio. With the exception of the debt/asset ratio 1.70 and above, farmers in the higher debt/asset ratio categories indicated higher average crop machinery investment per acre. Farmers in the 1.1-1.19 debt/-asset ratio had the largest value, on average, over the study period. It can be inferred that crop machinery investment was a factor, especially for the crop farms, contributing to farmers' financial problems.

By farm type, similar yearly trends were indicated as those obtained for the debt/asset ratio categories (Table 49). As might be expected, dairy farms had the largest value for the average crop machinery investment per acre. This is primarily because dairy farms have large investments, but fewer crop acres. However, cash-crop/irrigated farms, general farms, and cash-crop/dryland farms were the farm types most applicable to the study of crop machinery investment per acre. Based on farm type, average crop machinery investment per acre did not provide any deducible result.

Based on farm size, 1981 was still the peak year for the average crop machinery investment per acre (Table 50). Farmers within the \$100,000 gross income and over farm size groups exhibited higher average crop machinery investment per acre. No inference could be made from the result.

TABLE 48

Average crop machinery investment per acre, crop expense per crop acre, net income per crop acre, and return per dollar of investment and labor by 1984 debt/asset ratio and by year.

1984 Debt/ Asset Ratio		73	75	Year				
				77	79	81	83	84
		(dollars)						
0.0-0.09 (194)* ^b	CMIA ^a	35.72	42.83	49.90	59.58	65.39	64.02	58.31
	CEPA ^c	-	-	68.07	84.86	100.04	109.72	115.39
	NIPA ^d	-	-	37.98	72.92	49.31	13.79	7.01
	NITA ^e	0.25	0.08	0.08	0.15	0.05	0.05	0.04
0.1-0.19 (100)*	CMIA	35.99	46.05	47.56	60.76	69.78	68.93	58.45
	CEPA	-	-	62.96	84.48	103.19	104.43	100.77
	NIPA	-	-	39.87	69.10	44.60	24.69	18.82
	NITA	0.26	0.08	0.10	0.15	0.05	0.06	0.03
0.2-0.29 (102)*	CMIA	36.83	47.88	53.69	59.43	62.17	59.23	55.76
	CEPA	-	-	67.07	81.82	94.79	98.23	103.08
	NIPA	-	-	40.06	71.48	41.07	37.15	22.41
	NITA	0.26	0.08	0.12	0.17	0.06	0.07	0.04
0.3-0.39 (76)*	CMIA	36.35	49.54	51.66	60.54	64.62	57.31	52.66
	CEPA	-	-	68.12	84.83	101.21	102.13	107.39
	NIPA	-	-	39.80	64.20	34.74	23.32	12.54
	NITA	0.26	0.09	0.09	0.13	0.04	0.06	0.03
0.4-0.49 (76)*	CMIA	37.81	45.06	45.42	55.67	58.54	52.65	45.43
	CEPA	-	-	64.05	79.61	94.28	94.12	97.51
	NIPA	-	-	37.69	71.60	45.73	28.01	40.85
	NITA	0.32	0.11	0.10	0.17	0.05	0.07	0.05

^aCrop machinery investment per crop acre.

^bNumber of farms.

^cCrop expense per crop acre.

^dNet income per crop acre.

^eReturn per dollar of investment and labor (net income plus interest paid divided by total assets).

TABLE 48--continued.

1984 Debt/ Asset Ratio		73	75	Year				84
				77	79	81	83	
		(dollars)						
0.5-0.59 (62)* ^b	CMIA ^a	38.06	46.18	50.00	52.39	62.22	50.63	42.69
	CEPA ^c	-	-	66.36	81.75	94.55	93.34	90.98
	NIPA ^d	-	-	35.15	73.52	61.01	22.03	27.98
	NITA ^e	0.25	0.09	0.09	0.16	0.04	0.07	0.05
0.6-0.69 (55)*	CMIA	42.84	41.85	52.25	60.69	72.43	59.62	49.79
	CEPA	-	-	73.25	92.20	105.88	103.81	104.21
	NIPA	-	-	37.49	72.26	42.75	29.82	35.15
	NITA	0.25	0.13	0.08	0.17	0.04	0.07	0.07
0.7-0.79 (41)*	CMIA	35.86	47.55	53.81	54.76	63.14	56.38	45.14
	CEPA	-	-	80.03	87.06	109.99	101.15	107.48
	NIPA	-	-	37.14	66.60	40.44	25.87	23.49
	NITA	0.27	0.12	0.10	0.18	0.03	0.09	0.10
0.8-0.89 (32)*	CMIA	39.62	47.36	52.99	57.16	64.17	46.90	42.19
	CEPA	-	-	64.59	83.09	101.86	100.68	98.92
	NIPA	-	-	39.44	71.86	54.27	28.58	39.04
	NITA	0.28	0.12	0.07	0.14	0.06	0.05	0.05
0.9-0.99 (14)*	CMIA	33.71	49.57	57.10	67.10	84.14	67.89	51.91
	CEPA	-	-	64.13	79.46	87.81	96.30	89.56
	NIPA	-	-	36.02	108.78	55.42	19.78	23.57
	NITA	0.20	0.10	0.08	0.22	0.02	0.09	0.04
1.0-1.09 (11)*	CMIA	40.09	68.79	81.28	75.94	76.99	65.85	53.56
	CEPA	-	-	86.09	92.66	106.86	102.43	91.32
	NIPA	-	-	12.24	77.00	65.25	38.05	52.59
	NITA	0.27	0.03	0.05	0.17	0.02	0.09	0.09

^aCrop machinery investment per crop acre.

^bNumber of farms.

^cCrop expense per crop acre.

^dNet income per crop acre.

^eReturn per dollar of investment and labor (net income plus interest paid divided by total assets).

TABLE 48--continued.

1984 Debt/ Asset Ratio		73	75	Year 77		79	81	83	84
(dollars)									
1.1-1.19 (9) ^b	CMIA ^a	62.51	79.65	63.38	75.03	100.38	57.12	62.74	
	CEPA ^c	-	-	68.21	96.45	108.71	96.70	109.07	
	NIPA ^d	-	-	42.29	86.39	32.69	37.19	3.47	
	NITA ^e	0.24	0.14	0.09	0.13	0.01	0.07	-0.02	
1.2-1.29 (7) [*]	CMIA	34.24	58.97	44.04	61.97	70.78	47.22	31.41	
	CEPA	-	-	62.54	85.95	102.02	91.97	81.41	
	NIPA	-	-	38.25	95.06	53.26	8.98	11.92	
	NITA	0.24	0.06	0.08	0.09	-0.05	0.00	0.05	
1.3-1.39 (4) [*]	CMIA	44.53	50.59	71.85	75.45	85.04	69.43	59.12	
	CEPA	-	-	66.99	85.73	116.73	101.25	80.81	
	NIPA	-	-	49.67	83.22	45.47	33.77	42.44	
	NITA	0.26	0.12	0.13	0.12	-0.01	0.11	0.02	
1.4-1.49 (4) [*]	CMIA	26.32	38.54	46.27	48.04	42.21	38.37	33.28	
	CEPA	-	-	57.57	68.56	79.56	101.70	97.75	
	NIPA	-	-	45.03	71.48	15.95	39.65	23.12	
	NITA	0.32	0.14	0.00	0.03	0.12	0.14	-0.09	
1.6-1.69 (1) [*]	CMIA	41.69	48.02	68.72	83.44	67.70	80.80	110.94	
	CEPA	-	-	61.16	90.40	128.50	82.40	131.84	
	NIPA	-	-	6.13	67.45	42.66	8.61	-46.18	
	NITA	0.58	0.10	0.07	0.07	0.00	-0.10	-0.01	
Over 1.70 (6) [*]	CMIA	25.60	49.19	37.50	33.40	42.45	40.30	26.57	
	CEPA	-	-	76.84	75.93	74.96	85.42	78.22	
	NIPA	-	-	24.61	79.00	25.09	49.59	50.58	
	NITA	0.51	0.20	0.09	0.40	-0.03	0.60	0.26	

^aCrop machinery investment per crop acre.

^bNumber of farms.

^cCrop expense per crop acre.

^dNet income per crop acre.

^eReturn per dollar of investment and labor (net income plus interest paid divided by total assets).

TABLE 49

Average crop machinery investment per acre, crop expense per acre, net income per acre, and return per dollar of investment and labor by 1984 farm type and by year.

1984 Type		73	75	Year				
				77	79	81	83	84
		(dollars)						
Cash- Crop/ Dryland	CMIA ^a	32.16	39.53	43.39	50.22	55.64	52.06	46.27
	CEPA ^b	-	-	58.73	71.93	84.89	86.88	89.01
	NIPA ^c	-	-	44.02	81.43	52.41	33.36	24.34
	NITA ^d	0.27	0.09	0.09	0.18	0.05	0.08	0.05
Cash- Crop/ Irrigated	CMIA	37.27	53.52	55.78	61.75	66.27	66.82	55.29
	CEPA	-	-	86.67	97.16	126.23	126.36	138.12
	NIPA	-	-	37.94	73.24	37.21	33.04	69.86
	NITA	0.31	0.09	0.05	0.16	0.01	0.13	0.06
Dairy	CMIA	65.43	64.84	79.67	82.98	100.43	99.64	82.67
	CEPA	-	-	97.11	109.79	141.10	144.08	140.94
	NIPA	-	-	19.99	63.64	22.13	-6.43	3.20
	NITA	0.20	0.09	0.14	0.20	0.10	0.07	0.07
Cash- Crop/ Cowherd	CMIA	49.19	47.43	42.49	54.67	67.33	54.20	58.35
	CEPA	-	-	57.89	81.15	95.23	93.64	105.80
	NIPA	-	-	33.78	58.21	31.11	29.70	5.00
	NITA	0.14	0.04	0.07	0.15	0.03	0.03	0.01
General Farm	CMIA	-	67.05	53.49	71.58	74.64	60.77	54.25
	CEPA	-	-	69.18	94.52	99.31	108.56	104.72
	NIPA	-	-	37.32	70.20	54.79	17.23	24.27
	NITA	-	0.03	0.10	0.12	0.03	0.03	0.04

^a Crop machinery investment per crop acre.

^b Crop expense per crop acre.

^c Net income per crop acre.

^d Return per dollar of investment and labor (net income plus interest paid divided by total assets).

TABLE 49--continued.

1984 Type		73	75	Year				
				77	79	81	83	84
				(dollars)				
Cash- Crop/ Back- grounding	OMIA ^a	-	-	-	54.67	62.45	54.09	50.29
	CEPA ^b	-	-	-	83.64	92.39	95.13	98.38
	NIPA ^c	-	-	-	66.06	44.04	28.27	33.12
	NITA ^d	-	-	-	0.13	0.01	0.07	0.06
Cash- Crop/ Beef	OMIA	-	-	47.11	53.26	63.41	50.73	40.98
	CEPA	-	-	64.86	79.30	102.83	89.66	93.83
	NIPA	-	-	38.19	61.58	46.81	36.20	20.11
	NITA	-	-	0.08	0.15	0.03	0.06	0.06
Other Farm Types	OMIA	42.96	52.36	67.44	73.36	78.14	70.52	63.87
	CEPA	-	-	79.63	101.55	119.85	125.22	132.32
	NIPA	-	-	27.83	62.93	42.16	2.70	-6.71
	NITA	0.22	0.12	0.10	0.13	0.06	0.04	0.04

^aCrop machinery investment per crop acre.

^bCrop expense per crop acre.

^cNet income per crop acre.

^dReturn per dollar of investment and labor (net income plus interest paid divided by total assets).

TABLE 50

Average crop machinery investment per acre, crop expense per acre, net income per acre, and return per dollar of investment and labor by farm size and by year.

1984 Size (\$thousand)		73	75	Year				83	84
				77	79	81	83		
		(\$ thousand)							
500 & Over	CMIA ^a	35.20	47.93	59.15	58.48	79.99	67.55	61.96	
	CEPA ^b	-	-	80.09	99.86	138.42	128.82	144.75	
	NIPA ^c	-	-	36.50	64.10	49.59	26.24	37.42	
	NITA ^d	0.40	0.21	0.09	0.18	0.12	0.15	0.10	
200-499.9	CMIA	38.88	56.71	59.35	65.53	76.92	66.01	54.68	
	CEPA	-	-	83.67	97.45	123.20	112.65	111.40	
	NIPA	-	-	44.34	79.93	55.54	30.71	35.93	
	NITA	0.28	0.15	0.11	0.17	0.06	0.09	0.09	
100-199.9	CMIA	36.54	50.51	56.75	59.90	67.16	59.30	50.65	
	CEPA	-	-	74.63	81.19	97.61	96.88	98.59	
	NIPA	-	-	40.40	75.01	55.60	27.67	23.38	
	NITA	0.29	0.13	0.11	0.18	0.06	0.08	0.06	
40-99.9	CMIA	37.95	45.07	47.56	53.11	59.90	54.44	49.42	
	CEPA	-	-	60.98	75.82	89.38	95.70	98.07	
	NIPA	-	-	37.96	64.57	36.59	21.88	13.23	
	NITA	0.25	0.08	0.09	0.13	0.03	0.04	0.03	
20-39.9	CMIA	33.38	37.80	41.16	46.42	46.16	56.65	55.27	
	CEPA	-	-	58.62	83.40	75.54	103.02	105.36	
	NIPA	-	-	26.15	42.53	14.95	-6.63	3.37	
	NITA	0.19	0.03	0.04	0.04	-0.02	-0.03	-0.02	
Under 20	CMIA	29.56	35.29	33.70	48.69	52.76	47.10	69.02	
	CEPA	-	-	65.67	103.97	87.07	107.49	117.36	
	NIPA	-	-	26.03	-6.66	12.05	-13.11	-5.49	
	NITA	-0.11	-0.07	-0.02	-0.12	-0.11	-0.06	-0.13	

^aCrop machinery investment per crop acre.

^bCrop expense per crop acre.

^cNet income per crop acre.

^dReturn per dollar of investment and labor (net income plus interest paid divided by total assets).

In general, farmers within the higher debt/asset ratio categories seemed to have made larger crop machinery investments per acre, on average, over the study period. The positive relationship therefore, indicated that crop machinery investment was a factor for farmers financial changes over the study period.

Crop expense per crop acre

The majority of the farmers within each of the debt/asset ratio categories incurred increasing average crop expenses per acre from 1973 to 1984 (Table 48). Values were similar between the debt/asset ratio categories so that nothing could be inferred from the results.

Dairy farms incurred the largest average crop expense per acre (Table 49). For the same reason advanced for crop machinery investment per acre, the result was expected. Cash-crop/irrigated farms, other farms, and general farms had relatively high average crop expense per acre over the period.

For the \$40,000 gross income and over farm size categories, there was a general increase in average crop expense per acre the larger the farm size (Table 50). That is, as the farm gross income increased, the average crop expense incurred per acre increased.

Net income per crop acre

1979 remained the peak year for the average net income per crop acre for the majority of the debt/asset ratio categories (Table 48). Net income refers to the difference between the gross crop value per acre and the crop expense per acre. Higher net income per acre appeared to be found among the higher debt/asset ratio categories. This trend may result from interest charges not being included in the crop expenses.

Cash-crop/irrigated farms, cash-crop/dryland farms, and general farms had the larger net income per acre, on average, over the period (Table 49). With the exception of the dairy farms and the other farms, farm types generally had positive average net income per acre. Average net income per acre was generally low for 1984. Based on the average net income per acre, cash-crop/irrigated farms appeared to be the most efficient among the crop farms.

Based on the average net income per crop acre, farmers within the \$40,000 gross income and above farm size groups were better financially than those in the under the \$20,000 gross income farm size group (Table 50). The latter group had negative average income per acre for at least three years.

Return per dollar of investment and labor

Average return per dollar of investment and labor was highest in 1973 (Table 48). Farmers below the 1.0 debt/asset ratio showed higher average return of investment than those above. Those above the 1.0 debt/asset ratio showed a negative return per dollar of investment and labor in at least one year. In general, the average rate of return was low in all the years after 1973. Based on the average return per dollar of investment and labor, dairy farms, cash-crop/irrigated farms, and cash-crop/beef farms appeared to be the most efficient among the farm types.

Dairy farms had the best return per dollar of investment and labor among the farm types during the study period (Table 49). There were no negative average return among the farm types. However, the average return values were generally low with the exception of 1973.

Similar to the trends with average net income, farmers within the \$40,000 gross income and above farm size groups generally exhibited higher

average return per dollar of investment and labor (Table 49). However, with the exception of 1973, the average return values were generally low. The farmers under the \$40,000 gross income farm size groups were especially low. Those in the under \$20,000 gross income farm size had substantial negative average return per dollar of investment and labor.

CHAPTER VI

REGRESSION ANALYSIS

Stepwise regression analysis was performed to ascertain if the changes in the debt/asset ratio between farms over time could be explained by the changes in land owned, changes in capital purchased, average crop machinery investment per acre, average margin, average turnover, average land owned, average capital purchased or the annual values for these variables.

Two models were used:

- A. The first model regressed the 1984 debt/asset ratio (dependent variable) against eight independent variables: 1973/81 change in land owned, 1981/84 change in land owned, 1973/81 change in capital purchased, 1981/84 change in capital purchased, average gross income, average crop machinery investment per acre, average margin, and average turnover.
- B. The second model regressed the debt/asset ratio (dependent variable) for each year against six independent variables: land owned, capital purchased, gross income, crop machinery investment per acre, margin, and turnover.

In the stepwise regression using backward elimination procedure, only variables significant at the 0.05 level were permitted to remain in the equation.

Model A

The regression results indicated that 1981/84 change in land owned, average gross income, and average margin were significant at the 0.05 significant level (Table 51). All the other variables were not significant at the 0.05 level. The R-square, however, was significantly low for the model at 0.069.

The last step regression equation for the model was:

$$\text{DAR} = 28.31954 - 0.00714 \text{ DIFFLAN2} + 0.00008 \text{ GI} - 3.89974 \text{ MARGIN} + e.$$

(-2.27)¹
(6.66)
(-2.73)

$$\text{R-square} = 0.06949$$

where:

DAR = Debt/asset ratio in 1984.

DIFFLAN2 = 1981/84 change in land owned.

GI = Average gross farm income.

MARGIN = Net farm income divided by gross farm income.

Only average gross farm income was positively related to debt/asset ratio. The negative sign on change in land owned was not rational.

¹Calculated t-value.

TABLE 51

Last step regression results for model A: Dependent variable = Debt/asset ratio

Intercept = 28.31954

R-square = 0.06949

Independent Variable	Slope Coefficient	T-Ratio
Change in land owned (1981/84)	-0.00714	-2.27246
Average gross income	0.00008	6.65673
Average margin	-3.89974	-2.72775

Model B

Model B regression results indicated that gross income, land owned, capital purchased, crop machinery investment per acre, and margin were significant at the 0.05 level (Table 52). The R-square for the model was 0.07068. Only the results obtained for gross farm income, land owned, and margin appeared to be realistic. The results for the other two variables (capital purchased and crop machinery investment per acre) were not rational. The last step regression equation for model B was:

$$\begin{aligned} \text{DAR} = & 31.12051 + 0.00006 \text{ GI} - 0.00536 \text{ LANDO} - 0.00009 \text{ CPOCH} \\ & (25.45)^1 \quad (-12.22) \quad (-7.52) \\ & - 0.04210 \text{ CMIA} - 0.32993 \text{ MARGIN} + e. \\ & (-5.85) \quad (-3.54) \end{aligned}$$

$$\text{R-square} = 0.07068$$

where:

DAR = Debt/asset ratio.

GI = Gross farm income.

LANDO = Land owned.

CPOCH = Capital purchased.

CMIA = Crop machinery investment per crop acre.

MARGIN = Net farm income divided by gross farm income.

¹Calculated t-value.

TABLE 52

Last step regression results for model B: Dependent variable = Debt/asset ratio.

Intercept = 31.12051.

R-square = 0.07068.

Independent Variable	Slope Coefficient	T-Ratio
Gross income	0.00006	25.44922
Land owned	-0.00536	-12.22347
Capital purchased	-0.00009	-7.51914
Crop machinery investment per acre	-0.04210	-5.85025
Margin	-0.32993	-3.53851

Summary

The stepwise regression results showed that the 1981/84 change in land owned, average gross income, and average margin were significant at the 0.05 significant level for model A. The sign on the changes in land owned variable, however, was not rational. Gross income, land owned, capital purchased, and margin were significant for model B. However, results for capital purchased and crop machinery investment per crop acre were unrealistic. Other variables had no impact on the models. The two models were also regressed by individual 1984 debt/asset ratio categories and by farm types. Similar results were obtained.

Based on the regression results, one can infer that though the independent variables might have been a factor in the overall debt/asset ratio over time, their influence were not significant in explaining differences in debt/asset ratio between farms over the study period. Hence, the changes in the debt/asset ratio between farms over time resulted from other factors not present in the model. Such factors may include: management factors, soil characteristics, prices, interest rates, inflation, real estate values, excess production capacity, and diversification.

CHAPTER VII

SUMMARY AND CONCLUSIONS

The central focus of this study was to ascertain whether changes in financial conditions of Kansas farmers over the 1973/84 period resulted from over-expansion in land and capital, or inefficiency. Based on the 793 farms selected from the Kansas Farm Management Association, the study indicated that 59.39 per cent of the farmers had a 1984 debt/asset ratio of less than 0.40. Based on USDA classifications, this group was apparently solvent. Those that were in a serious financial problem with a debt/asset ratio equal to or greater than 0.40 but less than 0.70 amounted to 24.34 per cent of the study group. Another 11 per cent of farmers were in the extreme financial problem category with a debt/asset ratio equal to or greater than 0.70 but less than 1.0. The remaining 5.30 per cent of farmers were technically insolvent, with a debt/asset ratio of 1.0 or greater. These latter two groups, or 16.30 per cent of the sample farms, will likely go out of business.

The majority of the farmers appeared to have bought land during the 1973/81 period, but then sold land between 1981 and 1984. Over the 1973/84 period however, they appeared to have a net purchase of land. This trend was noted when farms were classified by debt/asset ratio, size of farms, and farm types. One may infer that land purchases over the study period contributed to a general farmer financial distress.

On capital purchased, the study showed that farmers had higher capital purchased between 1973 and 1981 than during the 1981/84 period. On average, farmers reduced annual capital purchased over the 1973/84 period. The larger

the capital purchased, the higher was the debt/asset ratio. Therefore, farmers that made larger capital purchases tend to have higher debt/asset ratios.

On efficiency, all the different categories of debt/asset ratios, farm sizes, dairy farms, cash-crop/dryland farms, cash-crop/backgrounding farms, and cash-crop/beef farms showed high profitability, based on gross and net farm income.

Farmers within the 0.1-0.19 and 0.2-0.29 debt/asset ratio categories showed strong financial health based on margin¹. By farm type, dairy farms, cash-crop/irrigated, and cash-crop/dryland farms were very profitable, based on margin, but general farms and cash-crop/cowherd were least profitable. The \$100,000 gross income and over farm size groups, by far, enjoyed higher profitability than those below \$100,000 gross income. The farm types and farm sizes that showed high profitability based on margin, also generally indicated high turnover².

Based on the average gross income per man, and the net income per man, farmers within the 0-0.79 debt/asset ratio categories exhibited higher gross income per man, on average, as the debt/asset ratio increased, but lower net income per man with the same debt/asset ratio. This implies that farmers within the higher debt/asset ratios generated larger average gross income per man, but they incurred a much larger expenses per man. The result was a lower average net income per man. By type of farm and farm size, cash-crop/-dryland and dairy farms produced lower average gross income per man, but a

¹Net farm income divided by gross farm income.

²Gross farm income per total dollar of capital managed.

higher net income per man. Farmers within the \$100,000 and over farm sizes also enjoyed higher average net income per man.

There was a positive relationship between average crop machinery investment per acre and the debt/asset ratios. Generally, farmers with a 0.90 debt/asset ratio and over had more crop investment per acre, than those below. Average crop expense per crop acre was generally uniform among the debt/asset ratio categories, hence, no indication of any relationship to the debt/asset ratio.

Return per dollar of investment and labor was highest for farmers below the 1.0 debt/asset ratio categories. These groups had positive returns on their investment, hence, were more efficient than those above the 1.0 debt/asset ratio. Farmers with a 1.0 debt/asset ratio and over showed negative returns in at least two years. Dairy farms, cash-crop/irrigated farms, and cash-crop/beef farms showed better average return per dollar of investment and labor among the farm types. The \$40,000 gross income and over farm size groups fared better among the farm size groups.

The regression analysis was to show the significance of the variables on the changes in the debt/asset ratio between farms over time; that is, how much of the general farmer financial problem (debt/asset ratio) could be explained by the proposed model. The results showed that the 1981/84 change in land owned, average gross income, average margin, gross farm income, land owned, capital purchased, crop machinery investment per crop acre, and margin were the variables that contributed to the explanation of the general farmer financial problem over time. However, their influence was minimal.

Changes in the debt/asset ratio between farms over the study period must be explained by other resource factors not present in the model. These

factors could include: management factors, soil characteristics, inflation, interest rates, prices, excess production capacity, and diversification.

Limitations of study

One of the limitations of this study was the fact that farmland values were held constant for five-year periods in the Association's data. With changing land values occurring in reality, the debt/asset ratio is either over or understated. The second limitation was the presence of misreported data. For example, a farmer that operates 500 acres of land in one year but operates zero acres the following year. Finally, omissions in the data base resulted in some variables not recorded for some years. The incidence of these latter two problems was limited and was considered not to have a significant impact on results obtained.

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APPENDIX A

TABLE 53

Per farm income and expense summary by year (state average).

Item	Year						
	73	75	77	79	81	83	84
	(\$ thousand)						
Gross income	122.4	102.6	106.9	154.1	130.2	149.7	149.2
Net income	56.7	21.5	17.2	43.6	-1.8	11.8	6.3
Debt	82.6	93.9	127.2	170.8	188.4	198.2	192.8
Asset	285.7	365.8	381.4	467.1	527.3	524.4	504.1
Cap.Mgd./man	254.3	354.0	406.3	458.2	605.6	606.0	604.0
Gross Inc./man	69.3	56.5	61.8	87.3	77.3	90.8	91.7
	(acres)						
Land owned	694.0	667.0	660.0	630.0	619.0	616.0	601.0
	(dollars)						
CMIA ^a	27.66	38.70	43.40	48.50	53.70	50.30	43.70
CEPA ^b	41.50	55.60	69.50	67.60	79.30	86.20	82.30

^a Crop machinery investment per crop acre.^b Crop expense per crop acre.

TABLE 54

Per farm income and expense summary for cash-crop/dryland by year (state average).

Item	<u>Year</u>						
	73	75	77	79	81	83	84
	(\$ thousand)						
Gross income	95.5	73.5	80.3	121.4	104.7	119.0	114.3
Net income	49.2	15.2	15.5	41.4	3.5	14.2	-
Cap.Mgd./man	260.1	376.9	431.9	486.0	635.8	668.7	-
Gross Inc./man	62.8	48.2	54.2	80.0	69.1	82.3	-
	(acres)						
Land owned	673.0	640.0	562.0	530.0	508.0	504.0	-
	(dollars)						
CMIA ^a	23.90	33.20	39.10	42.90	49.50	45.70	-
CEPA ^b	35.30	45.50	49.10	58.50	70.40	75.70	-

^a Crop machinery investment per crop acre.

^b Crop expense per crop acre.

TABLE 55

Per farm income and expense summary for cash-crop/irrigated by year (state average).

Item	<u>Year</u>						
	73	75	77	79	81	83	84
	(\$ thousand)						
Gross income	181.5	161.5	152.3	216.5	194.4	261.1	247.6
Net income	88.4	34.5	12.9	61.0	-12.3	40.6	-
Cap.Mgd./man	293.0	476.8	500.9	581.5	696.5	690.9	-
Gross Inc./man	83.4	75.5	73.4	111.3	93.0	123.4	-
	(acres)						
Land owned	804.0	727.0	691.0	739.0	714.0	689.0	-
	(dollars)						
CMIA ^a	30.00	49.80	54.20	56.90	58.40	60.70	-
CEPA ^b	48.70	78.90	83.10	94.00	110.30	119.90	-

^aCrop machinery investment per crop acre.

^bCrop expense per crop acre.

TABLE 56

Per farm income and expense summary for dairy farms by year (state average).

Item	<u>Year</u>						
	73	75	77	79	81	83	84
	(\$ thousand)						
Gross income	101.5	103.0	124.2	181.9	203.2	185.4	191.0
Net income	35.3	15.3	27.0	52.8	27.8	11.2	-
Cap.Mgd./man	135.6	195.0	203.7	234.3	310.4	311.7	-
Gross Inc./man	43.6	46.0	57.8	75.5	84.9	82.2	-
	(acres)						
Land owned	395.0	441.0	393.0	428.0	423.0	434.0	-
	(dollars)						
CMIA ^a	52.50	53.80	65.20	82.10	91.40	82.60	-
CEPA ^b	60.40	70.60	79.00	101.10	125.00	124.40	-

^a Crop machinery investment per crop acre.^b Crop expense per crop acre.

TABLE 57

Per farm income and expense summary for cash-crop/cowherd by year (state average).

Item	<u>Year</u>						
	73	75	77	79	81	83	84
	(\$ thousand)						
Gross income	122.2	56.6	67.8	121.1	80.8	97.4	83.2
Net income	60.9	2.1	11.7	44.0	-11.2	1.0	-
Cap.Mgd./man	353.9	378.5	448.5	554.8	728.2	696.7	-
Gross Inc./man	81.5	35.3	47.9	82.6	54.6	71.6	-
	(acres)						
Land owned	1263.0	1227.0	1013.0	958.0	908.0	914.0	-
	(dollars)						
CMIA ^a	32.60	36.90	31.40	38.60	43.30	45.50	-
CEPA ^b	46.90	47.20	39.10	51.10	56.50	75.40	-

^aCrop machinery investment per crop acre.

^bCrop expense per crop acre.

TABLE 58

Per farm income and expense summary for general farms by year (state average).

Item	<u>Year</u>						
	73	75	77	79	81	83	84
	(\$ thousand)						
Gross income	-	62.9	108.1	152.6	133.5	132.8	162.9
Net income	-	4.8	19.0	34.1	-8.8	4.6	-
Cap.Mgd./man	-	309.3	361.7	-	602.8	535.3	-
Gross Inc./man	-	44.5	61.9	-	80.1	78.9	-
	(acres)						
Land owned	-	682.0	689.0	1169.0	701.0	623.0	-
	(dollars)						
CMIA ^a	-	58.80	45.20	66.20	60.10	54.60	-
CEPA ^b	-	80.20	61.60	90.80	81.60	89.30	-

^a Crop machinery investment per crop acre.^b Crop expense per crop acre.

TABLE 59

Per farm income and expense summary for cash-crop/backgrounding by year
(state average).

Item	<u>Year</u>						
	73	75	77	79	81	83	84
	(\$ thousand)						
Gross income	-	-	-	179.6	141.3	176.5	-
Net income	-	-	-	44.7	-26.0	9.7	-
Cap.Mgd./man	-	-	-	-	671.4	678.5	-
Gross Inc./man	-	-	-	-	85.9	109.0	-
	(acres)						
Land owned	-	-	-	-	738.0	692.0	-
	(dollars)						
CMIA ^a	-	-	-	58.70	54.00	52.00	-
CEPA ^b	-	-	-	88.40	76.30	87.90	-

^a Crop machinery investment per crop acre.

^b Crop expense per crop acre.

TABLE 60

Per farm income and expense summary for cash-crop/beef by year (state - average).

Item	73	75	<u>Year</u>				84
			77	79	81	83	
			(\$ thousand)				
Gross income	-	-	109.7	145.3	124.4	141.3	-
Net income	-	-	16.8	50.2	-20.2	14.8	-
Cap.Mgd./man	-	-	438.6	456.6	687.0	706.6	-
Gross Inc./man	-	-	64.3	79.9	73.1	84.6	-
			(acres)				
Land owned	-	-	792.0	727.0	761.0	815.0	-
			(dollars)				
CMIA ^a	-	-	41.30	42.00	51.50	42.60	-
CEPA ^b	-	-	55.40	59.40	73.00	75.80	-

^a Crop machinery investment per crop acre.

^b Crop expense per crop acre.

APPENDIX B

Definition of farm types and labor standards based on Kansas Farm Management Association.

Type defined

Each of the seven types of farm used in this study represents labor utilization of 70 per cent or more in type. This means that at least 70 per cent of total labor on the farm is devoted to such intype. For example, cash-crop/dryland farm type must utilize a minimum of 70 per cent of total labor for such enterprises to qualify as cash-crop/dryland.

Cash-crop/dryland

An enterprise is defined as cash-crop/dryland if:

1. The ratio of total crop production per man work unit and total farm production per man work unit is greater or equal to 0.35.

Cash-crop/irrigated

An enterprise is regarded as cash-crop/irrigated if:

1. The ratio of total crop production per man work unit and total farm production per man work unit is greater or equal to 0.65.
2. The ratio of dryland crop production per man work unit and total crop production per man work unit is less than 0.40.

Dairy

An enterprise is defined as dairy farm if:

1. The ratio of dairy production per man work unit and total farm production per man work unit is greater or equal to 0.65.
2. The number of dairy cows is greater than 20.

Cash-crop/cowherd

This represents:

1. The ratio of total crop production per man work unit and total farm production per man work unit greater or equal to 0.35.
2. The ratio of beef cow production per man work unit and total farm production per man work unit greater or equal to 0.35.
3. The number of beef cows greater than 10.

Cash-crop/backgrounding

A cash-crop/backgrounding farm must meet the ratio of beef backgrounding production per man work unit plus beef grazing production per man work unit and total farm production per man work unit greater or equal to 0.65.

Cash-crop/beef

An enterprise is defined as cash-crop/beef if:

1. The ratio of crop production per man work unit and total farm production per man work unit is greater or equal to 0.65.
2. The ratio of dryland crop production per man work unit and total crop production per man work unit is greater or equal to 0.40.

General farm

Any farm which neither meets the minimum 70 per cent labor utilization nor belong to any of the above specifications falls within the general farm category.

ANALYSIS OF CHANGES IN THE FINANCIAL CONDITIONS
OF KANSAS FARMERS, 1973-1984

by

OLUSOLA A. ADELEKE
B.S., Friends University, 1983

AN ABSTRACT OF A MASTER'S THESIS

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The study examined changes in the financial conditions of Kansas farmers that occurred during the 1973/84 period, with an objective of ascertaining whether the changes resulted from expansion in land and capital purchased, or inefficiency in operation over the 12-year period.

Sample farms were those 793 farms that had been members of the Kansas Farm Management Association since 1973. Based on USDA classifications and the 1984 debt/asset ratio, 59.39 per cent of the sample farms had a debt/asset ratio of less than 0.40 and were apparently solvent. Those that were considered to be in serious financial condition with a debt/asset ratio between 0.40 and less than or equal to 0.70 amounted to 24.34 per cent of the study group. Another 11 per cent were in the extreme financial problem category with a debt/asset ratio greater or equal to 0.70, but less than 1.0. The remaining 5.30 per cent of farms were technically insolvent, with a debt/asset ratio equal to or greater than 1.0. These latter two groups, or 16.30 per cent of the sample farms, will likely go out of business in the future.

The majority of the farmers made land purchases between 1973 and 1981, but sold land in the 1981/84 period. Over the entire period however (1973/84), farmers had a net increase in land purchased. On capital purchases, a similar pattern emerged. Farmers increased capital purchases during the 1973/81 period, but reduced capital purchases over the 1981/84 period. Purchases by the end of the 1981/84 were less than at the beginning of the 1973/81 period. For both land and capital purchases, there was no apparent relationship to debt/asset ratio.

Farms within the 0.1-0.29 debt/asset ratio appeared to be more efficient based on margin (net income/gross income), turnover (gross income/capital managed), net income per man, and capital managed per man. Farms with

debt/asset ratios of 0.8 or greater tended to be less efficient. By farm type, dairy farms were most efficient relative to other farm types. Other farms that indicated sound financial health included: Cash-crop/irrigated, and cash-crop/dryland. Farms in the \$100,000 gross income and over size categories showed stronger financial health than those below. Crop machinery investment per acre appeared to increase the higher the debt/asset ratio and the larger the farm size. The majority of the farmers below the 1.0 debt/-asset ratio categories, dairy farms, cash-crop/irrigated farms, cash-crop/-beef farms, and farmers in the \$40,000 gross income and over farm size groups made a positive return on investment over the study period.

Stepwise regression analysis, using debt/asset ratio as the dependent variable with land purchased, capital purchased, and efficiency measures as independent variables, showed no significant findings to explain the current financial conditions of Kansas farmers.