Financial Structure and Condition of Locally Owned Farm Supply and Marketing Cooperatives in Missouri

C. Brice Ratchford
Gary Devino
Kevin McCutcheon
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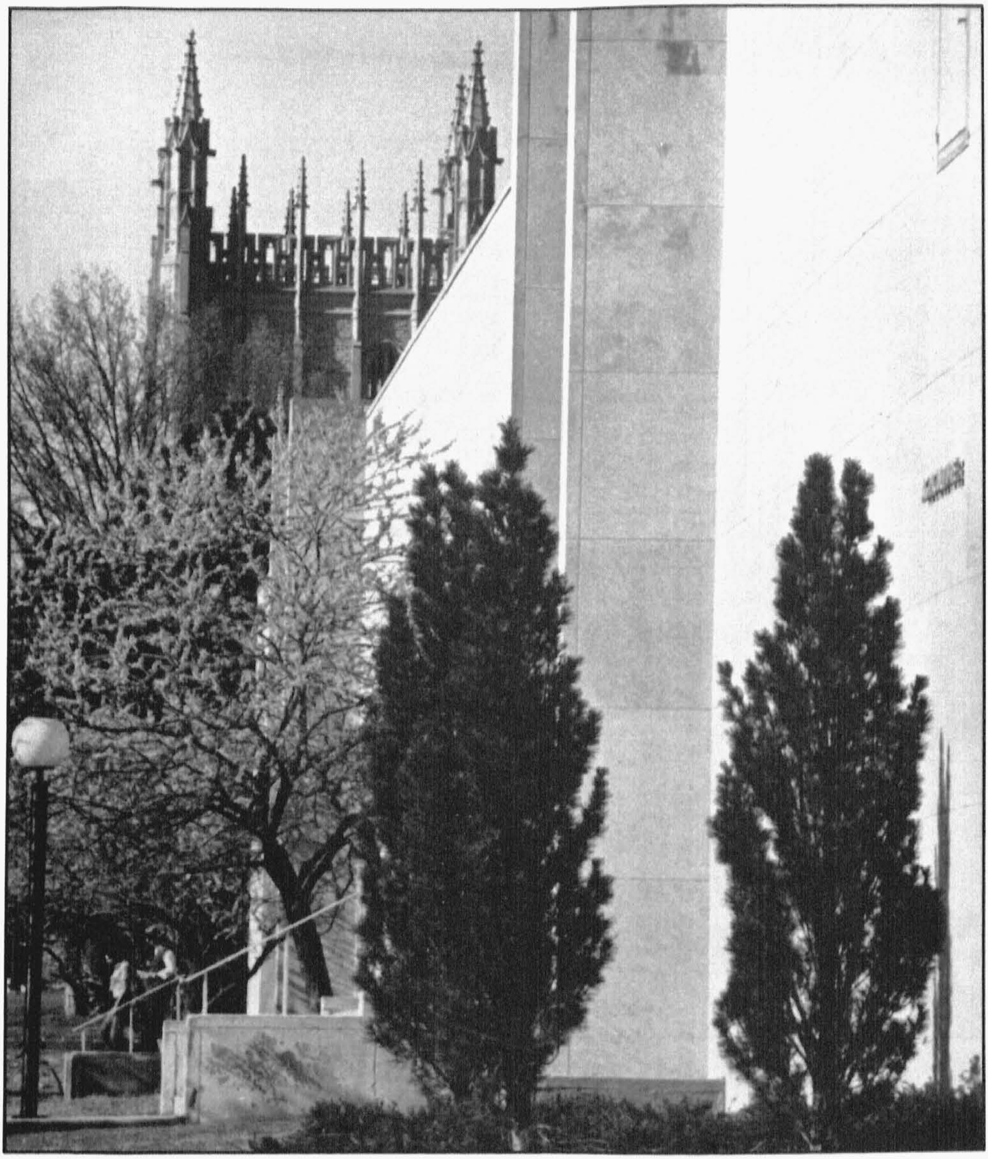

SR272 University of Missouri-Columbia Agricultural Experiment Station 11/81/1M

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C. Brice Ratchford, Professor of Agricultural Economics
Gary Devino, Professor of Agricultural Economics
Kevin McCutcheon, former Graduate Assistant in Agricultural Economics
David W. Thomas, Jr., former Graduate Assistant in Agricultural Economics

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Introduction

Cooperatives are important to farmers, and the Missouri economy. Most farmers are members of more than one cooperative. For many farmers, and for some areas of the state, cooperatives are the principal markets and sources of farm supplies.

Many cooperatives are locally owned and operated.[1] Each cooperative has its articles of incorporation plus an elected board of directors responsible for the operation of the cooperative. These locals serve a limited geographical area ranging from part of one county to all or parts of five counties. All of Missouri's local farm supply-marketing cooperatives are affiliated voluntarily with either MFA, Farmland Industries, or both.

The locals are heterogenous in volume of business and extent of services. In 1978, the volume of business varied from $100,000 to $38 million annual sales, and their services ranged from selling one product to handling a full line of farm supplies with attendant services and grain handling, storage, and marketing. The cooperatives, however, do have much in common. They are incorporated under the same statues, operate by the same rules, and have common management problems.

The overall objective of the research was to provide information to cooperative directors, managers, and members to assist them in appraising the performance of their local cooperatives, and in developing ideas for improving their operations. The specific objectives were:

- to compare financial situations in 1970 and 1978;
- to appraise the effect of inflation on the cooperatives for the 1977-79 period;
- to analyze the effect of volume of business on financial condition in 1978;

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[1] In 1978, there were 119 locally owned cooperatives. MFA also had company owned exchanges in the state. In appearance and function they looked like locals, but management of the company owned exchanges was the responsibility of MFA, Inc. The MFA structure was a combination federated/centralized cooperative.

- to determine for 1978 the impact of non-cash patronage refunds and investments in regional cooperation on earnings and financial status; and
- to develop financial ratio guidelines for 1978.

Procedure

Data were collected for fiscal years ending in 1977, 1978, and 1979 from audit reports of 119 locally owned farm supply/marketing cooperatives. Similar data were available for 1970 on 126 locals from a study conducted by Gries and Torgerson.[2] For practical purposes, both studies included the total population. The lower number in 1978 resulted from mergers and closings in the 1970 population.

The first objective was accomplished by comparing balance sheets, income statements, and financial ratios for 1970 and 1978. Two points in time were selected to simplify the comparison. Representatives of MFA, Farmland Industries, and the St. Louis Bank for Cooperatives indicated that both 1970 and 1978 were *normal* years.

The second objective was accomplished by restating financial statements for 1977-79 in constant dollars and comparing reported results with *real* results.

To accomplish the third objective, the cooperatives were divided into five groups based upon total sales. The groups were: I - sales of less than $1 million; II - sales of $1.7 million to $1.9 million; III - sales of $2 million to $3.9 million; VI - sales of $4 million to $7.9 million; and V - sales over $8 million. Income statements, balance sheets, and financial ratios for the five groups were compared.

Objective four was accomplished by relating non-cash patronage refunds and intercooperative investments to earnings and financial strength.

Objective five was accomplished by developing a range around the median values of ratios for 32 of the more profitable locals.

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[2] Gries and Torgerson: "Financial Structure of Local Missouri Farm Supply Cooperatives", Special Report 157, University of Missouri-Columbia, Agricultural Experiment Station, August 1973.

TABLE 1

Consolidated and Common Size Balance Sheets of Missouri Locally Owned Farm Supply and Marketing Groups

1970 - 1978

	1970 126 Locals		1978 119 Locals		1970-1978 Change
	$ Amount (000)	% Total Assets	$ Amount (000)	% Total Assets	% Total Assets
Current Assets					
Cash	2,839	6.00	5,622	3.69	(2.31)
Accounts and Notes Receivable	8,394	17.73	31,560	20.69	2.96
Merchandise Inventory	11,778	24.88	36,415	23.87	(1.01)
Other	772	1.63	4,847	3.18	1.55
Total Current Assets	23,783	50.25	78,444	51.43	1.18
Other Assets					
Intercooperative Investments	7,587	16.03	35,120	23.03	7.00
Other Investments	183	.39	204	.13	(.26)
Other	203	.43	409	.27	(.16)
Total Other Investments	7,973	16.85	35,733	23.43	6.85
Fixed Assets					
Total Cost	30,231	63.87	72,316	47.41	(16.46)
Less Allowance for Depreciation	14,655	30.96	33,962	22.27	(8.69)
Net Fixed Assets	15,576	32.91	38,354	25.15	(7.76
TOTAL ASSETS	47,332	100.00	152,531	100.00	0.00
Current Liabilities					
Accounts Payable	5,339	11.28	15,720	10.31	(.79)
Notes Payable	7,838	16.56	27,953	18.33	1.77
Certificates of Indebtedness	449	.95	3,361	2.20	1.25
Equities Payable	--	--	1,515	.99	--
Accrued Liabilities	934	1.97	3,099	2.03	.06
Other	1,271	2.68	5,972	3.92	1.24
Total Current Liabilities	15,831	33.43	57,620	37.78	4.35

TABLE 1 (Continued)

	1970 126 Locals		1978 119 Locals		1970-1978 Change
	$ Amount (000)	% Total Assets	$ Amount (000)	% Total Assets	% Total Assets
Term Liabilities					
Notes Payable	4,450	9.40	14,342	9.40	.00
Certificates of Indebtedness	4,049	8.55	5,264	3.45	(5.10)
Bonds	1,120	2.37	2,278	1.49	(.89)
Other	37	.08	891	.58	.50
Total Term Liabilities	9,656	20.40	22,775	14.93	(5.47)
TOTAL LIABILITIES	25,487	53.63	80,395	52.71	0.00
Net Worth					
Permanent Capital					
Capital Stock	1,702	3.60	4,285	2.81	(.79)
Preferred Stock	888	1.88	1,534	1.01	(.87)
Membership	82	.17	186	.12	(.05)
Unallocated Savings	3,253	6.87	14,380	9.43	2.56
Allocated Savings	13,994	29.57	48,279	31.65	2.08
Current Savings	1,926	4.07	3,472	2.28	(1.79)
Total Net Worth	21,846	46.15	72,136	47.29	1.14
TOTAL LIABILITIES AND NET WORTH	47,332		152,531	100.00	0.00

Comparisons of Financial Statements and Ratios for 1970 and 1978

Balance Sheets. The consolidated and common size[3] balance sheets for 1970 and 1978 were analyzed (See Table 1).

The dollar value of assets increased between 1970 and 1978 from $47.3 million to $152.5 million, a change of 222%. The accounts contributing most significantly to the increase were accounts receivable, inventory, and

[3] Common size balance sheets are constructed by converting each balance sheet account to a percentage of total assets.

intercooperative investments. The common size statements showed the major shifts in assets were the relative increase in intercooperative investments (7%) and the decrease in importance of net fixed investments (7.8%).

Total liabilities increased from $25.5 million to $80.4 million. This was a change of 215.5% or 6.5% less than the increase in assets. (The major structural changes are shown in the common size statement.) Current liabilities increased 4.4% and term liabilities decreased 5.5%. The major increases were accounts and notes payable, and the major decreases were certificates of indebtedness and bonds.

Net worth increased from $47.3 million to $152.5 million. A change of 222.4%. Net worth as a percent of assets increased from 46.2% to 47.3%, a 1.1% change on the positive side. The two items that accounted for most of the increase were unallocated savings (342%) and allocated savings (245%).

Additional information on intercooperative investments was gathered (see Table 2). Such investments have increased between 1970 and 1978 from 16% to 23% of the total assets and from 34.7% to 48.7% of the net worth.

TABLE 2
Intercooperative Investments as Percent of Total Assets and Net Worth Missouri Locally Owned Farm Supply and Marketing Coops 1970 - 1978

	1970	1978
Number of Associations	126	119
Intercooperative Investments	$7,587,178	$35,120,039
Intercooperative Investments as Percent of Total Assets	16.03%	23.03%
Intercooperative Investments as Percent of Net Worth	34.73%	48.69%

Income Statements. The consolidated and common size income statements were developed (see Table 3). In terms of dollars, all items were significantly higher in 1978 than in 1970. The largest percentage increase occurred in net sales and net income, which includes patronage dividends received from other cooperatives. The smallest percentage increases occurred in gross margins and net operating income, the earnings from internal operations. The common size statements showed a reduction in gross margin; and, hence lower gross operating income. Operating expenses as a percent of gross margin also decreased, however, this resulted in a relatively small change in net operating income. The patronage refunds received increased sharply both in dollars and in relative terms, and were responsible for almost no change in net income as a percent of total sales.

Net operating income in 1970 was 1.7% of total assets, 3.6% of net worth and 0.6% of net sales. The net operating income for 1978 was 1.3%, 2.7%, and 0.5%, respectively. Net income in 1970 was 4.5% of total assets, 9.8% of net worth, and 1.6% of net sales. In 1978, the figures were 4.5%, 9.5%, and 0.5%, respectively.

The following conclusions can be drawn from the income statements. The local cooperatives were doing more business but realized slightly lower earnings in 1978 compared to 1970. Earnings from internal operations were low in 1970 and even lower in 1978, when compared to earnings in the economy from other investments. Patronage dividends received were 68% higher than earnings from internal operations in 1970 and 149% higher in 1978. The success of the locals, consequently, was highly dependent on the success of the regionals.

Financial Ratios. Commonly used financial ratios were computed for the locally owned cooperatives in 1970 and 1978 (see Table 4). The values shown are the weighted means. (The ratios are defined in the Appendix.)

Liquidity ratios measured a firm's capacity to meet its short-term obligations. Liquidity was tested with two ratios. Liquidity decreased over time as measured by the current ratio and acid test.

TABLE 3

Consolidated and Common Size Income Statements Missouri Locally Owned Farm Supply and Marketing Coops

1970 - 1978

	1970 126 Locals		1978 119 Locals		1970–1978
	$ Amount (000)	% Net Sales	$ Amount (000)	% Net Sales	% Change Net Sales
Net Sales	$131,597	100.00	$405,239	100.00	0
Cost of Goods Sold	116,088	88.21	368,695	90.98	2.77
Gross Margin on Sales	15,509	11.79	36,544	9.02	(2.77)
Other Income	2,483	1.89	9,283	2.29	.40
Gross Operating Income	17,992	13.68	45,827	11.31	(2.37)
Operating Expenses	17,190	13.06	43,865	10.82	(2.24)
Net Operating Income	802	.62	1,962	.48	(.14)
Patronage Dividends Received	1,347	1.02	4,886	1.21	.19
Net Income	2,149	1.64	6,848	1.69	.05

TABLE 4

Financial Ratios
Missouri Locally Owned Farm Supply and Marketing Coops
1970 - 1978

	1970	1978
Number of Associations	126	119
Liquidity Ratios		
Current Ratio	1.50	1.36
Acid Test	.76	.73
Leverage Ratios		
Current Liabilities to Net Worth	.72	.80
Term Liabilities to Net Worth	.44	.32
Total Liabilities to Net Worth	1.17	1.11
Fixed Asset to Net Worth	.71	.53
Profitability Ratios		
Local Return	2.40	1.67
Return on Investments in Other Cooperatives	17.75	13.92
Net Income to Net Worth	9.84	9.49
Net Income to Total Assets	4.54	4.49
Activity Ratios		
Sales to Working Capital	16.81	19.46
Sales to Fixed Assets	8.58	10.57
Sales to Total Assets	2.82	2.66
Inventory Turnover	9.86	10.13
Net Accounts Receivable Collection Period	22.61	25.91

Leverage ratios generally measured the contributions of the member patrons compared to the financing provided by outside creditors. Three of the four ratios used showed that the cooperatives were leveraged less in 1978 than in 1970.

Profitability ratios measured management's overall effectiveness as shown by the returns generated on investments and sales. The four ratios shown in Table 4 reinforced the conclusions drawn from the income statement analysis. Profitability was lower in 1978.

Activity ratios measured how effectively the cooperatives used resources at their disposal. For the five ratios used, either a very high or a very low value indicated problems. The higher sales to working capital ratio in 1978 was due to the shift to increased use of short-term financing. Sales to fixed assets were higher in 1978, while sales to total assets were lower than in 1970. Inventory turnover was higher in 1978; but the net accounts receivable collection period was longer than in 1970. A comparison of the five ratios with the guidelines presented in Table 18 suggests that resources were not used as effectively in 1978 as in 1970.

Inflation Effects

The economy experienced a high level of inflation during the last half of the 1970s. Locally owned farmer cooperatives experienced inflation's effects in the same manner as other business firms. These included:

- increased working capital requirements (As goods increased in price, more dollars were required to finance a constant physical volume of inventory. Accounts receivable increased as these higher valued inventory items were sold.);
- increased cost of labor, utilities, supplies, etc.; and
- increased price of equipment and facilities needed to maintain the cooperative's productivity.

Another effect of inflation showed in the purchasing power value of the firm and in its earnings. Financial statements generated from a firm's operation may have distorted the *real* progress of a firm. This may have happened for several reasons:

(1) Fixed assets were valued at their purchase cost less accumulated depreciation. With prices increasing, these assets may be worth more than they were valued on the firm's records. Depreciation charges did not reflect the replacement value of the assets.

(2) Cost of goods sold may be low because the cost of replacing inventory was greater than the cost at which it was acquired. This assumed First in-First out accounting, a common practice for most cooperative firms.
(3) Balance sheet accounts which were valued in fixed dollar amounts such as accounts receivable, investments, and accounts payable experience changes in purchasing power. A firm losses purchasing power on such asset items and gains on liability items when obligations were paid back in cheaper dollars.

As part of the financial analysis of Missouri's locally owned farmer cooperatives, the effects of inflation during the 1977-79 period were identified and evaluated.[4] This portion of the study was based on the records of 106 firms; 77 MFA and 29 Farmland affiliates.

Balance Sheet Changes. Each balance sheet account changed from statement date to statement date. When there was no inflation affecting account values, the amount of change in each account indicated a change in *real* purchasing power. With inflation, changes in reported values may be misleading. Table 5 shows the reported change between 1977-78 and 1978-79 in account categories for Missouri's locally owned farmer cooperatives. For the 1977-78 period, the total assets used changed by $10.32 million. Only $1.77 million was a change in constant dollars. The remaining $8.54 million or 82.8%, was the result of inflation. For the 1978-79 period, the corresponding figures were: $11.32 million, $451,000, $10.87 million, and 96%.

Earning Changes. The combined earnings of the 106 cooperatives for 1978 was $5.4 million. If there had been no inflation, earnings would have been only $827,753 (Table 6). Nearly 85% of the reported earnings resulted from inflation. The effect of inflation on reported earnings decreased slightly in 1979, but accounted for 77% of the $9.8 million reported earnings.

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[4] For a detailed statement of the procedure used see: Devino, Gary T., Measuring the Impact of Inflation on Agribusiness Firms, *The Cooperative Accountant*, Summer, 1980.

TABLE 5

Changes in Reported & Constant Dollar Balance Sheet Accounts

106 Locally Owned Missouri Farm Supply and Marketing Cooperatives

1977 - 1979

	Reported ($1000)	Constant Dollar ($1000)
	1977-78	
Current Assets & Inv.	+ 7,304	+ 1,145
Plant, Property, & Equip.	+ 3,012	627
	$10,316	$ 1,772
Liabilities	+ 8,673	+ 2,840
Members Equity	+ 1,643	- 1,068
	$10,316	$ 1,772
	1978-79	
Current Assets & Inv.	+ 9,251	+ 148
Plant, Property, & Equip.	+ 2,068	+ 303
	$11,319	$ 451
Liabilities	+ 5,110	- 321
Members Equity	+ 6,209	+ 772
	$11,319	$ 451

TABLE 6

Reported & Inflation Adjusted Earnings

106 Locally Owned Missouri Farm Supply and Marketing Cooperatives

1978 - 1979

	1978	1979
Reported Earnings	$5,455,944	$9,810,924
Inflation Adjusted Earnings	$ 827,753	$2,235,177
Earnings Attributed to Inflation	$4,628,191	$7,575,747
Percent of Reported Earnings Attributed to Inflation	84.8%	77.2%

Analysis by Volume of Sales - 1978

The cooperatives were grouped by size and performance in terms of net income and net losses (see Table 7). Size, as measured by sales, was a major factor influencing net returns. Nearly half the units with sales less than $2 million showed net losses. For those groups, the losses sustained almost equaled the gains of the groups with positive incomes. The average net income was $28,259 for the 33 cooperatives showing positive incomes. Only 10 of the 56 cooperatives with sales over $2 million showed losses and the remaining 46 with a positive income had an average net income of $159,659.

As would be expected, the size of the balance sheet items increased in direct relation to volume of sales (see Table 8). The average per cooperative showed an even more dramatic picture. For example, the total assets increased from $200,000 for cooperatives with sales

TABLE 7

Net Income and Net Loss for Missouri Locally Owned Farm Supply and Marketing Cooperatives (119 Cooperatives)

1978

Groups	I Less Than 1 Million	II 1-1.9 Million	III 2-3.9 Million	IV 4-7.9 Million	V Greater Than 8 Million	Total
Number of Associations	25	38	27	22	7	119
Number of Associations with Positive Net Income:	11	22	21	18	7	79
Percent with Positive Net Income:	44.00%	57.89%	75.00%	81.82%	100.00%	66.39%
Total Net Income:	$204,973	$749,702	$1,954,243	$2,190,704	$3,202,395	$8,302,017
Net Incomes to Net Sales (includes only those with positive net income)	1.31%	1.34%	2.21%	1.80%	2.53%	2.03%
Number of Associations with Net Losses	14	16	6	4	0	40
Percent with Losses	56.00%	42.11%	22.22%	18.18%	00.00%	33.61%
Total Net Losses	($241,916)	($634,181)	($327,343)	($250,180)	0	($1,453,620)
Net Losses to Net Sales	(1.55)%	(1.13)%	(.30)%	(.21)%	00.00%	(.39)%

TABLE 8

Balance Sheets for Missouri Locally Owned Farm Supply and Marketing Cooperatives

1978

Groups	I Less Than 1 Million (000)	II 1-1.9 Million (000)	III 2-3.9 Million (000)	IV 4-7.9 Million (000)	V Greater Than 8 Million (000)	Total (000)
Number of Associations	25	38	27	22	7	119
Total Assets	$5,388 100.00%	$20,673 100.00%	$34,326 100.00%	$44,600 100.00%	$47,543 100.00%	$152,531 100.00%
Current Assets	2,864 53.17%	10,041 48.57%	18,238 53.28%	21,539 48.29%	25,712 54.08%	78,443 51.43%
Other Assets	1,615 29.97%	6,242 30.19%	8.893 25.91%	10,071 22.58%	8,913 18.75%	35,733 23.43%
Fixed Assets	909 16.87%	4,390 21.24%	7,146 20.82%	12,991 29.13%	12,919 27.17%	38,354 25.15%
Current Liabilities	1,750 32.47%	8,005 38.72%	13,027 37.95%	16,385 36.74%	18,453 38.81%	57,620 37.78%
Term Liabilities	612 11.37%	2,415 11.68%	3,328 9.69%	7,382 16.55%	9,037 19.01%	22,774 14.93%
Net Worth	3,026 56.16%	10,253 49.59%	17,972 52.36%	20,833 46.71%	20,054 42.18%	72,137 47.29%

under $1 million to almost $7 million in total assets for those with sales over $8 million. Several trends were evident. The percent in fixed assets tended to increase with volume of business. Term liabilities as a percent of assets tended to increase and was reflected in a declining net worth as percent of total assets. This indicated a more highly leveraged position.

The composite income statements for each category are presented in Table 9. The following trends, expressed as percent of total sales, are identified with increasing volume: (1) Gross margin decreased; (2) other income, generally payment for services, increased; (3) gross operating income decreased; (4) operating expenses decreased; (5) operating expenses decreased; (6) net operating income increased; (7) patronage dividends received decreased; and (8) net income increased. The volume of patronage dividends greatly exceeded net operating income for all except category 5.

There was no trend evident in the liquidity ratios. The leverage ratios confirmed that a more highly leveraged position was associated with larger volume cooperatives. The profitability ratios improved sharply with increased volume. Taken as a group, the activity ratios reflected no trend related to volume of sales (see Table 10).

Patronage Refunds from Regionals and Intercooperative Investments - 1978

Income from patronage refunds to local cooperatives was important. All locals followed an accounting practice that showed the total patronage refund as income in the year it was received. These refunds were a combination of cash and allocated equity. The locals, consequently, did not have the entire refund available to distribute as cash to its members or to use in its operations. The data presented in Table 11 indicate that 48.4% of the patronage refunds received in 1978 were in cash. The differences in percent received in cash by sales categories were a reflection of different product mixes and not due to separate treatment of small and large *per se*.

TABLE 9

Income Statements of Missouri Locally Owned Farm Supply and Marketing Cooperatives 1978

Groups	I Less Than 1 Million	II 1-1.9 Million	III 2-3.9 Million	IV 4-7.9 Million	V Greater Than 8 Million	Total
Number of Associations	25	38	27	22	7	119
Sales	$15,610 100.00%	$56,008 100.00%	$85,094 100.00%	$121,968 100.00%	$126,559 100.00%	$405,239 100.00%
Cost of Goods Sold	13,809 88.46%	50,696 90.52%	76,818 90.27%	111,130 91.11%	116,242 91.85%	368,695 90.98%
Gross Margin on Sales	1,801 11.54%	5,312 9.48%	8,276 9.73%	10,838 8.89%	10,317 8.15%	36,544 9.02%
Other Income	204 1.31%	953 1.70%	1,815 2.13%	2,679 2.27%	3,542 2.80%	9,283 2.29%
Gross Operating Income	2,005 12.84%	6,265 11.19%	10,091 11.86%	13,607 11.16%	13,859 10.95%	45,827 11.31%

TABLE 9 (Continued)

	I Less Than 1 Million	II 1-1.9 Million	III 2-3.9 Million	IV 4-7.9 Million	V Greater Than 8 Million	Total
Operating Expenses	2,222 14.23%	7,003 12.50%	9,757 11.47%	13,086 10.73%	11,797 9.32%	43,865 10.82%
Net Operating Income (or Loss)	(217) (1.39)%	(738) (1.32)%	334 .39%	521 .43%	2,062 1.63%	1,962 .48%
Patronage Dividends Received	180 1.15%	854 1.52%	1,292 1.52%	1,420 1.16%	1,140 .90%	4,886 1.21%
Net Income (or Loss)	(37) (.24)%	116 .21%	1,626 1.91%	1,941 1.59%	3,202 2.53%	6,848 1.69%

TABLE 10

Financial Ratios for Missouri Locally Owned Farm Supply and Marketing Cooperatives 1978

	I Less Than 1 Million	II 1-1.9 Million	III 2-3.9 Million	IV 4-7.9 Million	V Greater Than 8 Million	Total
Number of Associations	25	38	27	22	7	119
<u>Liquidity Ratios</u>						
Current Ratio	1.64	1.25	1.40	1.31	1.39	1.36
Acid Test	.78	.71	.72	.66	.80	.73
<u>Leverage Ratios</u>						
Current Liabilities to Net Worth	.58	.78	.72	.79	.92	.80
Term Liabilities to Net Worth	.20	.24	.19	.35	.45	.32
Total Liabilities to Net Worth	.78	1.02	.91	1.14	1.37	1.11
Fixed Assets to Net Worth	.30	.43	.40	.62	.64	.53

TABLE 10 (Continued)

	I Less Than 1 Million	II 1-1.9 Million	III 2-3.9 Million	IV 4-7.9 Million	V Greater Than 8 Million	Total
<u>Profitability Ratios</u>						
% Local Return	(5.74)	(5.07)	1.31	1.49	5.34	1.67
% Return on Investments in other Cooperatives	11.27	14.01	14.73	14.59	12.79	13.92
% Net Income to Net Worth	(1.22)	1.13	9.05	9.31	15.97	9.45
% Net Income to Total Assets	(.69)	.56	4.74	4.35	6.74	4.49
<u>Activity Ratios</u>						
Sales to Working Capital	14.00	27.52	16.17	23.67	17.44	19.56
Sales to Fixed Assets	17.18	12.76	11.91	9.39	9.80	10.57
Sales to Total Assets	2.90	2.71	2.48	2.73	2.66	2.66
Inventory Turnover	9.57	11.87	8.68	10.81	11.17	10.13
Net Accounts Receivable Collection Period	21.55	27.40	31.60	21.99	25.75	25.91

If the locals had included only cash received in net income, it would have been reduced by 37.3% for 1978. In sales Category I, a small loss would have been a large one, and a small gain in Category II would have been a significant loss. The distortion would have become less significant as volume of sales increased.

Policies followed by regional cooperatives for retaining part of the patronage refund had a direct relation to the size of the intercooperative investments held by locals. (The composition of intercooperative investment for 78 locals affiliated with MFA is shown in Table 12.)[5] Written notices of allocation composed 87.7% of such investments and stock in other cooperatives was an additional 4.7%. All borrowers from the Bank for Cooperatives must purchase stock in the bank, an amount related to the size of the loan. This stock becomes a significant item for the larger cooperatives.

Cooperative equity was not liquid. It was redeemable only by the issuing cooperative and in almost all cases the issuing cooperative had an option regarding redemption. Most of the investments of locals in other cooperatives had the added feature of being totally beyond the control of the investing cooperative.

Until recently, neither MFA, nor Farmland had policies of revolving retained patronage refunds. This meant that the size of such investments continued to grow. These investments were allocated by the locals to patrons as retained patronage refunds. This enhanced the problem of the locals in revolving equity. The Bank of Cooperatives has for some time revolved its paper for the locals. Recently, MFA and Farmland have developed policies for revolving equity which partially will reduce the problem of locals regarding size of the investment. These changes should facilitate the equity revolving programs of the locals.

Investments in other cooperatives had an obvious impact on balance sheet accounts. The total impact from 1970 to 1978 was shown in Table 2. The absolute size, both in total and average per cooperative, increased in direct proportion to sales (Table 13). The percent that

[5] Examination of a small sample of the Farmland affiliates indicated that the total picture would not be very different if data were available for all locals. Farmland Industries issued non-voting common stock in lieu of written notices of allocation.

TABLE 11

Total and Cash Portion of Patronage Dividends Received, Missouri Locally Owned Farm Supply and Marketing Cooperatives 1978

Groups	I Less Than 1 Million	II 1-1.9 Million	III 2-3.9 Million	IV 4-7.9 Million	V Greater Than 8 Million	Total
Number of Associations	25	38	26	22	7	118[a]
Cash Patronage Dividends Received	$ 95,233	$430,804	$559,718	$681,149	$545,103	$2,312,007
Total Patronage Dividends Received	180,504	854,117	1,179,380	1,420,497	1,140,318	4,774,816
Cash Dividends to Total Dividends	52.76%	50.44%	47.46%	47.79%	47.80%	48.42%
Net Income Less Non-Cash Patronage Dividends Received	(122,214)	(307,792)	755,057	1,201,252	2,607,180	4,133,483
Net Income	(36,943)	115,521	1,374,719	1,940,600	3,202,395	6,596,262
Net Income Less Non-Cash Patronage Dividends Recieved to Net Income	(330.83)%	(266.45)%	54.92%	61.90%	81.41%	62.66%

[a] One of the 119 locally owned cooperatives was excluded from this analysis due to insufficient data.

TABLE 12

Composition of Intecooperatives Investments Owned by 78 Local Missouri Supply and Marketing Cooperatives Affiliated with MFA 1978

Groups	I Less Than 1 Million	II 1-1.9 Million	III 2-3.9 Million	IV 4-7.9 Million	V Greater Than 8 Million	Total
Number of Associations	20	26	19	10	3	78
Written Notices of Allocation	$1,147,402 95.37%	$3,510,614 92.18%	$4,787,909 87.48%	$3,286,504 82.97%	$1,927,469 84.93%	$14,659,898 87.70%
Stock in Bank for Cooperatives	$ 9,107 .76%	$ 54,387 1.43%	$ 271,560 4.96%	$ 334,004 8.43%	$ 285,127 12.56%	$ 954,185 5.71%
Stock in Other Cooperatives	$ 17,775 1.48%	$ 71,369 1.87%	$ 358,065 6.54%	$ 282,142 7.12%	$ 56,275 2.48%	$ 785,626 4.70%
Certificates of Indebtedness and Bonds	$ 28,860 2.40%	$ 171,942 4.51%	$ 55,884 1.02%	$ 58,347 1.47%	500 .02%	$ 315,533 1.89%
Total Intercooperative Investments	$1,203,144 100.00%	$3,808,312 100.00%	$5,473,418 100.00%	$3,960,997 100.00%	$2,269,371 100.00%	$16,715,242 100.00%

TABLE 13

Intercooperative Investments Owned by Missouri Locally Owned Farm Supply and Marketing Cooperatives

1978

	I Less Than 1 Million	II 1-1.9 Million	III 2-3.9 Million	IV 4-7.9 Million	V Greater Than 8 Million	Total
Number of Associations	25	38	27	22	7	119
Total Intercooperative Investment	$1,600,945	$6,097,710	$8,774,691	$9,733,845	$8,912,848	$35,120,039
Intercooperative Investment to Total Assets	29.71%	29.50%	25.56%	21.82%	16.75%	23.03%

intercooperative investments were to total assets decreased as volume of sales increased. There was a tendency for such investments as percent of net worth to decrease with volume; but intercooperative investments were a major component of the assets of all size groups (Table 14). For all locals these investments were 48.7% of all assets, and for the largest they were 44.4%.

In an effort to determine the effect of intercooperative investments on earnings, the locals were sorted by relative size of intercooperative investments (Table 15). There was a strong trend for average net income and the net income to total assets ratio to decline as the size of the investments increased.

It is important to remember that relative size of the intercooperative investment is not independent of size. The larger size cooperatives had relatively smaller investments in other cooperatives.

Ratio Guidelines

Ratios are tools to assist in evaluating financial aspects of a single cooperative. An average of a population is used often for comparative purposes. Gries and Torgerson's guidelines, developed in 1970, are judgments based on simple averages of Missouri cooperatives and three other sets of data, two of which used averages.

Because of the large number of locals with poor performances, in 1978 a different approach was selected. Weighted averages were used in all cases. Two steps were used to select food standards for comparison. First, the eight most profitable cooperatives in sales categories I, II, and III, with IV and V combined, were selected. The measure of profitability was percent of net income plus interest expense to total assets. The net income plus interest expense gave returns on total assets. This step partially offset the impact of volume of sales, yet included the better performing cooperatives. Second, the 32 were divided into quartiles based on profitability. Median values were calculated for the lower and upper quartiles along with the median of the entire group. The lower part of the range was at the midpoint between the

TABLE 14

Intercooperative Investments as a Percent of Patron's Equity Missouri Locally Owned Farm Supply and Marketing Cooperatives 1978

Sales Category	Sales Volume	Number of Association	Total Gross Equity Capital	Total Intercooperative Investments	Net Equity Capital
I	Less than 1 Million	25	$ 3,025,729 100.00%	$ 1,600,945 52.91%	$ 1,424,784 47.09%
II	1-1.9 Million	38	$10,252,722 100.00%	$ 6,097,710 59.47%	$ 4,155,012 40.53%
III	2-3.9 Million	27	$17,971,686 100.00%	$ 8,774,691 48.83%	$ 9,196,995 51.17%
IV	4-7.9 Million	22	$20,832,807 100.00%	$ 9,733,851 46.72%	$11,098,956 53.28%
V	Greater than 8 Million	7	$20,053,700 100.00%	$ 8,912,842 44.44%	$11,140,858 55.56%
	TOTAL	119	$72,136,644 100.00%	$35,120,039 48.69%	$37,016,605 51.31%

TABLE 15

Missouri Locally Owned Farm Supply and Marketing Cooperatives 1978

Intercoop. Investments to Total Assets	Number	In Thousands: Total Sales (000)	In Thousands: Average Sales (000)	In Thousands: Total Net Income (000)	Average Net Income	Net Income / Total Assets %
Less than 18%	17	$133,700	$ 7,685	$ 3,781	222	8.11
18 - 24%	24	82,472	3,436	1,180	49	3.28
24 - 28%	26	82,502	3,173	596	23	1.8
28 - 34%	32	72,154	2,255	916	29	3.8
Greater than 34%	20	34,411	1,721	375	19	2.82

value for the lower quartile and the group median, and the upper point of the range was the midpoint between the group median and the value of the upper quartile.

The values resulting from the above procedure are given in Table 16. The data from which the ranges were developed are in Table 17. Table 17 also gives the median value for the lower and upper quartile, as well as the median for the population and four sales categories. These data enable a cooperative to compare itself with a number of situations.

The suggested guidelines are the ranges except for the profitability ratios where only a minimum is suggested. The minimum is the low point of the range previously described.

Because of different computation methods, a comparison between the guidelines for 1970 and 1978 has limited value. The suggested liquidity and leverage ratios for 1978, however, were lower than those for 1970. Most of the profitability ratios for 1978 were higher, and there was no consistent pattern for the activity ratios. The suggested range for a value in 1978 usually was wider than in 1970, confirming the observation that there was greater variation in the 1978 population than in the 1970 population.

TABLE 16

Financial Ratio Guidelines for Missouri Locally Owned Farm Supply and Marketing Cooperatives

Ratio	Gries and Torgerson's Guidelines in 1970	Range about the Median for the most Profitable 32 Cooperatives 1978	Suggested Guidelines
Liquidity Ratios			
Current Ratio	2.00 - 3.00	1.55 - 2.32	1.55 - 2.30
Acid Test	1.00 - 1.75	.87 - 1.40	.85 - 1.50
Leverage Ratios			
Current liabilities to net worth	.30 - .40	.34 - .68	.34 - .70
Term liabilities to net worth	.50 - .60	.12 - .28	.12 - .28
Total liabilities to net worth	.80 - 1.00	.54 - 1.03	.54 - 1.00
Fixed asset to net worth	.50 - .60	.29 - .49	.29 - .50
Profitability Ratios (%)			
Local return=Net Operating Margin ÷ (Total Assets - Invest in other Coops)	-------	6.3 - 10.6	Greater than 6.5
Return on Investments in other Cooperatives	20.0 and Over	12.5 - 20.5	Greater than 13.0
Net income to net worth	10.0 and Over	14.4 - 20.2	Greater than 14.0
Net income to total assets	8.0 and Over	8.7 - 12.2	Greater than 9.0
Activity Ratios			
Sales to working capital	10.00 - 13.00	8.45 - 12.30	8.00 - 12.00
Sales to fixed assets	8.00 and Over	11.50 - 16.65	1.00 - 17.00
Sales to total assets	-------	2.35 - 3.05	2.30 - 3.00
Inventory turnover	10.00 - 13.00	9.08 - 12.45	9.00 - 12.00
Net accounts receivable collection period	20.00 - 30.00	18.49 - 28.60	18.00 - 29.00

TABLE 17

Lower Quartile, Median, and Upper Quartiles Financial Ratios for Missouri Farm Supply and Marketing Cooperatives

1978

Ratios	Interquartile Range[b]	Sales Categories[a] I Less Than 1.0 Million	II 1 to 1.9 Million	III 2 to 2.9 Million	IV & V Greater than 4.0 Million	Most Profitable 32 Cooperatives	Population
Number of Associations		25	38	27	29	32	119
<u>Liquidity Ratios</u>	Lower Quartile	1.00	1.12	1.29	1.08	1.25	1.10
Current	Median	2.17	1.46	1.67	1.44	1.84	1.56
Ratio	Upper Quartile	3.56	2.5	1.85	2.02	2.79	2.17
	Lower Quartile	.39	.61	.61	.48	.72	.53
Acid Test	Median	.83	.91	.87	.79	1.01	.84
	Upper Quartile	1.96	1.45	1.16	1.04	1.79	1.22
<u>Leverage Ratios</u>							
Current	Lower Quartile	.12	.15	.47	.43	.18	.26
Liab. to	Median	.31	.46	.60	.76	.50	.56
Net Worth	Upper Quartile	.89	1.09	1.0	1.17	.86	1.05
Term Liab.	Lower Quartile	.03	.02	.07	.16	.08	.07
to Net	Median	.09	.13	.17	.30	.15	.19
Worth	Upper Quartile	.29	.37	.17	.30	.42	.40

TABLE 17 (Continued)

Ratios	Interquartile Range[b]	Sales Categories[a] I Less Than 1.0 Million	II 1 to 1.9 Million	III 2 to 2.9 Million	IV & V Greater Than 4.0 Million	Most Profitable 32 Cooperatives	Population
Total Liab. to Net Worth	Lower Quartile	.17	.32	.60	.59	.33	.43
	Median	.64	.79	.80	1.07	.75	.81
	Upper Quartile	1.45	1.56	1.40	1.93	1.30	1.48
Fixed Assets to Net Worth	Lower Quartile	.07	.13	.23	.38	.22	.17
	Median	.17	.26	.28	.58	.35	.35
	Upper Quartile	.43	.53	.48	.78	.63	.60
Profitability Ratios							
Local Return (%)	Lower Quartile	-17.28	-10.50	-4.23	-2.05	3.37	-9.33
	Median	-9.34	-3.30	2.67	1.40	9.22	1.28
	Upper Quartile	6.31	5.28	6.93	6.14	11.90	5.78
Return on Invest. in Other Coop. (%)	Lower Quartile	4.80	3.90	10.30	4.00	7.40	4.90
	Median	11.80	13.80	15.70	7.90	17.60	13.10
	Upper Quartile	15.20	19.50	19.10	19.00	23.40	18.60
Net Income to Net Worth (%)	Lower Quartile	-14.00	-7.40	2.40	3.10	11.90	2.00
	Median	5.60	4.40	10.00	7.50	16.90	6.00
	Upper Quartile	11.20	11.30	16.00	17.00	23.60	14.00
Net Income to Total Assets (%)	Lower Quartile	-9.00	-3.60	1.40	.70	8.10	-2.40
	Median	-1.70	1.60	5.40	3.60	9.30	2.90
	Lower Quartile	7.80	7.10	9.00	9.50	15.10	7.80

TABLE 17 (Continued)

Ratios	Interquartile Range	Sales Categories[a]: I Less Than 1.0 Million	II 1 to 1.9 Million	III 2 to 2.9 Million	IV & V Greater Than 4.0 Million	Most Profitable 32 Cooperatives	Population
Activity Ratios							
Sales to Working Capital	Lower Quartile	-1.69	5.98	9.04	11.80	7.30	7.05
	Median	7.31	10.34	12.00	15.30	9.60	11.30
	Upper Quartile	10.67	23.40	18.30	40.60	15.00	21.80
Sales to Fixed Assets	Lower Quartile	14.3	11.0	9.8	7.4	8.6	9.4
	Median	27.3	17.8	14.8	11.1	14.4	16.1
	Upper Quartile	54.0	35.5	24.5	16.7	18.9	27.3
Sales to Total Assets	Lower Quartile	2.3	2.4	2.1	2.3	2.1	2.3
	Median	3.2	3.0	2.6	2.9	2.6	2.9
	Upper Quartile	3.9	3.9	3.3	3.6	3.5	3.7
Inventory Turnover	Lower Quartile	7.3	9.9	6.3	6.7	7.9	7.8
	Median	11.4	12.4	9.8	10.8	10.3	11.5
	Upper Quartile	14.6	17.5	13.8	15.3	14.6	14.9
Net Accounts Receivable Coll. Period	Lower Quartile	12.6	19.3	21.4	11.6	14.4	15.4
	Median	18.5	23.8	32.3	20.3	22.6	22.5
	Upper Quartile	26.6	34.4	42.6	31.3	34.6	33.8

[a] These groupings consist of eight cooperatives within each sales category, with the highest net income plus interest expense to total assets.

[b] Quartile values are determined by dividing the observations into four equal groups. The lower quartile value is the value for the top firm in the group which includes the lowest 25% of the firms. The upper quartile value is the value for the lowest firm in the group which includes the highest 25% of the firms.

Summary and Conclusions

This study was conducted to identify the financial structure and condition of Missouri's locally owned farm supply/marketing cooperatives. Financial statements for the 1978 state population of 119 firms were used for much of the analysis. The analysis included comparisons between 1970 and 1978 financial structure and performance, assessment of the effects of inflation, and development of suggested financial ratio guidelines.

All consolidated balance sheet accounts are over three times as large in dollars in 1978 as in 1970. The major structural changes are an increase in intercooperative investments (7.0%), a decrease in term liabilities (5.5%) and an increase in net worth (1.1%).

The dollar value of all income accounts are two to three times higher in 1978 than in 1970. In relative terms, gross margins on goods sold are lower. Operating expenses also fell. The net income remains unchanged, however, because a decrease in income from local operations (net operating income) is offset by patronage dividends received. Individually, cooperatives show a wide variation in net income. Forty of the firms (33.6%) show losses in 1978.

The cooperatives exhibit a strong relationship between net income and sales volume. Financial strength and earnings increase sharply as volume of sales increase. Over half (52%) of the local cooperatives with sales of less than $2 million in 1978 show a loss while only 14% of those with sales over $4 million show a loss.

The smaller locals need to examine their position. There are small cooperatives that are financially successful but they have adopted strategies suited to small volume. Some may be able to expand sales. For some, the only solution may be merger or dissolvement.

The patronage refunds indicate that the regionals are performing well for the locals. The locals should exercise vigilance, however, over local operations and not let the large patronage refunds mask inefficient operations. On the other hand, the regionals must be mindful of the importance of their performance to the locals. In 1978, the cash portion of the total patronage dividend was 48.4%. The data did not show that this situation impacted adversely in 1978 on the performance of locals, but there are two identifiable effects that lead to communication problems. First, inclusion of the total amount as current income results in earnings of locals being overstated in terms of the amount available for handling cash flow, investment of cash patronage refunds. Second, the regionals' retained patronage refund reduces flexibility for the locals in handling their own refunds. Without disinvesting, a local must retain the patronage refunds withheld by the regional and even more if it intends to make local investments.

Inflation has a major impact on the financial statement of the locally owned cooperatives. In 1977-78 it accounts for 82.8% of the annual increase in assets. The comparable figure for 1978-79 is 96%. Inflation accounts for 85% of the increase in earnings in 1978 and 77% in 1979. Better planning - both short and long run - are needed to minimize the impact of inflation in the years ahead.

Financial ratio guidelines were developed around median values for the eight most profitable cooperatives in five diffeent size categories. Relative to 1970, the guidelines reflected a wider variation in the 1978 population.

APPENDIX
Definition of Financial Ratios

I. Liquidity Ratios: These ratios give an indication of the firm's capacity to meet its short-term obligations as they mature.

A. Current Ratios

Calculation: $\dfrac{\text{Current Assets}}{\text{Current Liabilities}}$

Guideline: 1.55 - 2.30 - $ million/or %

Interpretation: The ratio is a rough measure of a cooperative's ability to service its current liabilities at a given point in time. The ratio does not measure the critical factors of quality and composition of current assets.

B. Acid Test

Calculation: $\dfrac{\text{Current Assets - Ending Inventory}}{\text{Current Liabilities}}$

Guideline: .85 - 1.50

Interpretation: The ratio is a more conservative measure of liquidity than the current ratio. The less liquid inventory is not included in current assets. A ratio below 1 to 1 indicates a dependency on inventory to liquidate short-term debt.

II. Leverage Ratios: These ratios measure the amount of debt in relation to net worth.

A. Current Liabilities to Net Worth

Calculation: $\dfrac{\text{Current Liabilities}}{\text{Net Worth}}$

Guideline: .34 - .70

Interpretation: The ratio measures the amount of current debt to net worth. Creditors prefer a low ratio. A high ratio could indicate excessive current debt.

B. Term Liabilities to Net Worth

Calculations: $\dfrac{\text{Term Liabilities}}{\text{Net Worth}}$

Guideline: .12 - .28

Interpretation: The ratio measures the amount of term debt to net worth. Creditors like a low ratio, but a low ratio could indicate under utilization of term debt. A high ratio could indicate excessive debt.

C. Total Liabilities to Net Worth

Calculation: $\dfrac{\text{Total Liabilities}}{\text{Net Worth}}$

Guideline: .54 - 1.00

Interpretation: The ratio expresses the relationship between total liabilities and capital supplied by member patrons. A low ratio indicated greater flexibility to borrow in the future. A high ratio indicated low protection provided by the member patrons for the creditors.

D. Fixed Assets to Net Worth

Calculation: $\dfrac{\text{Fixed Assets}}{\text{Net Worth}}$

Guideline: .29 - .50

Interpretation: The ratio measures the extent to which net worth is tied up in non-liquid fixed assets.

III. Profitability Ratios: These ratios measure the effectiveness of management through the relationships of investment, returns and sales.

A. Local Return

Calculations: $\dfrac{\text{Net Operating Margin}}{\text{Total Assets - Intercooperative Investment}}$

Guidelines: greater than 6.5

Interpretation: The ratio measures the profitability of a cooperative's total non-intercooperative assets.

B. Return on Intercooperative Investment

Calculation: $\dfrac{\text{Returns from Other Cooperatives}}{\text{Investments in Other Cooperatives}}$

Guideline: greater than 13.0

Interpretation: The ratio measures the rate of return on investments in other cooperatives.

C. Net Income to Worth

Calculation: $\dfrac{\text{Net Income}}{\text{Net Worth}}$

Guideline: greater than 14.0

Interpretation: The ratio measures the rate of return on member patrons' investment in the cooperative.

D. Net Income to Total Assets

Calculation: $\dfrac{\text{Net Income}}{\text{Total Assets}}$

Guideline: greater than 9.0

Interpretation: The ratio measures the rate of return to member patrons' and creditors investments.

IV. Activity Ratios: These ratios measure the utilization of a cooperative's resources.

A. Sales to Working Capital

Computation: $\dfrac{\text{Sales}}{\text{Current Asset - Current Liabilities}}$

Guideline: 8.0 - 12.0

Interpretation: The ratio measures how efficiently working capital is employed. A low ratio may indicate poor working capital management. A high ratio may suggest a poor margin of protection for current creditors.

B. Sales to Fixed Assets

Computation: $\dfrac{\text{Sales}}{\text{Net Fixed Assets}}$

Guideline: 11.0 - 17.0

Interpretation: The ratio measures the ability of a cooperative to generate sales from its fixed assets.

C. Sales to Total Assets

Computation: $\dfrac{\text{Sales}}{\text{Total Assets}}$

Guideline: 2.3 - 3.0

Interpretation: The ratio measures the ability of a cooperative to generate sales from its total assets.

D. Inventory Turnover

Calculation: $\dfrac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$

Guideline: 9.0 - 12.0

Interpretation: The ratio measures the numbers of times inventory turned over during the year. A high ratio can indicate better liquidity, superior merchandising or shortages of inventory.

E. Net Accounts Receivable Collection Period

Calculation: $\dfrac{\text{Net Accounts Receivable}}{\text{Sales} \div 360}$

Guideline: 18.0 - 29.0

Interpretation: The ratio measures the number of days sales in accounts receivable. It gives a rough measure of the credit policy of the cooperative.

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