



FINANCIAL MANAGEMENT AND RATIO ANALYSIS FOR AGRICULTURAL COOPERATIVES

Omid Sharifi

MBA, Department of Commerce and Business Management,
Kakatiya University, Warangal, A.P., India.

Abstract

As from the second half of the 19th century, cooperatives began to play an important role in the social and economic development of all countries and they currently maintain these duties of theirs. As agricultural businesses today are becoming more complex, management needs to consider how its financial ratios play an important part in the health of its business. Financial analysis is an activity that includes the association between various accounts in financial statements as well as their measurement and interpretation. Differences between IOFs and cooperatives mean that some standard financial analyses do not relate well with cooperatives. This is especially relevant for profit-oriented ratios. This publication provides a supplement to standard analysis with an eye toward cooperatives. The aim of this study is to describe some common ratios used in cooperative financial analysis. Ratios will be related to data during the last 4 years from the INDIAN FARMERS FERTILISER COOPERATIVE LIMITED (IFFCO).

Key words: financial statements, Ratio Analysis, Cooperatives, financial ratio, activity.

1. Introduction

1.1. Cooperative:

As from the second half of the 19th century, cooperatives began to play an important role in the social and economic development of all countries and they currently maintain these duties of theirs. The cooperative system is accepted as a significant social movement in the world as it contributes to the protection of environment and creation of employment and serves as an essential means in the social and economic development of countries.

A cooperative enterprise belongs to the people who use its services. Members control it, and its gains are distributed to the members in proportion to the use they make of its services. In Kentucky, an agricultural cooperative is a business with five or more producers, voluntarily owned and controlled by its member-patrons and operated for them on a nonprofit or cost basis. Agricultural cooperatives are socioeconomic organizations established to protect the economic rights of farmers and thus to obtain a higher level of profits (Laidlaw, 1981). In the fields of agricultural production and processing and marketing of products, cooperatives are the most frequently seen institutions in the world following the governmental institutions (Erkus and Ozudogru, 2005). An agricultural cooperative, also known as a farmers' co-op, is a cooperative where farmers pool their resources in certain areas of activity. A broad typology of agricultural cooperatives distinguishes between agricultural service cooperatives, which provide various services to their individually farming members, and agricultural production cooperatives, where production resources (land, machinery) are pooled and members farm jointly. Agricultural production cooperatives are relatively rare in the world, and known examples are limited to collective farms in former socialist countries and the kibbutzim in Israel. Worker cooperatives provide an example of production cooperatives outside agriculture.

1.2. Financial Statements:

A brief review of cooperative financial statements is warranted before starting a discussion of financial analysis. Financial statements provide certain basic information that focuses on the entity as a whole and meets the common needs of external users. Three main financial statements are required from businesses—a statement of financial position (balance sheet), a statement of activities (operating statement), and a statement of cash flows. The balance sheet states the cooperative's assets, liabilities, and members equity as of a particular date.. Asset values are usually stated at historical cost (what the cooperative paid for it).

The operating statement reveals a cooperative's performance during a particular period of time. It reports revenues from sales, services, and patronage refunds received from other cooperatives. It also includes various costs, including the cost of goods sold, general and administrative expenses, interest expenses, and taxes. Some marketing cooperatives report the results of their commodity pools in the operating statement.

The Statement of Cash Flows (SCF) indicates cash receipts and cash disbursements during the accounting year. The SCF summarizes the operating, investing, and financing activities of a business enterprise during an accounting period and completes the disclosure of changes in financial position that aren't readily apparent in comparative balance sheets and income statements. The SCF complements the financial description of a business when used in conjunction with the operating statement and balance sheet.

1.3. Financial Statement Analysis:

The amount of information contained in a cooperative's financial statements is voluminous, spanning the cooperative's internal operations, its relationship with the outside world, and its relationship with its member/patrons. To be useful, this information must be organized into an understandable, coherent, and sufficiently limited set of data. Financial statement analysis can be beneficial in this respect because it highlights a firm's strengths and weaknesses.

1.4. Ratio Analysis:

Ratios are the most widely used tools for financial analysis. Yet, their function is often misunderstood, and, consequently, their significance may easily be overrated. A ratio expresses the mathematical relationship between two quantities.

Ratios are analysis tools that provide clues to help identify symptoms of underlying conditions. Analysts, depending on their needs, may differ in the ratios they find useful when examining a cooperative's financial position. Short-term creditors are primarily interested in the cooperative's current performance and its holdings of liquid assets that can provide a ready source of cash to meet current cash requirements. These assets include cash, marketable securities, accounts receivable, inventory, and other assets which can be sold for cash or can become cash through the normal course of a business cycle. Long-term creditors and member/owners, on the other hand, are concerned with both the long-term and short-term outlook. Management will also find ratios useful in measuring its own performance.

Standard Financial Ratios—four categories of ratios are typically used in analyzing financial Position:

- _ Liquidity
- _ Leverage
- _ Activity
- _ Profitability

Liquidity ratios measure the ability to fulfill short-term commitments with liquid assets. Such ratios are of particular interest to the cooperative's short-term creditors. These ratios compare assets that can be converted to cash quickly to fund maturing short-term obligations. The current ratio and the quick ratio are the two most commonly used measures of liquidity. For most cooperatives, these two ratios provide a good indication of liquidity. However, these ratios do not address the quality of liquid assets.

Leverage ratios measure the extent of the firm's "total debt" burden. They reflect the cooperative's ability to meet both short- and long-term debt obligations. The ratios are computed either by comparing earnings from the income statement to interest payments or by relating the debt and equity items from the balance sheet. Creditors value these ratios because they measure the capacity of the cooperative's revenues to support interest and other fixed charges, and indicate if the capital base is sufficient to pay off the debt in the event of liquidation.

Activity ratios show the intensity with which the firm uses assets in generating sales. These ratios indicate whether the firm's investment in current and long-term assets is too large, too small, or just right. If too large, funds may be tied up in assets that could be used more productively. If too small, the firm may be providing poor service to customers or inefficiently producing products.

Profitability ratios measure the success of the firm in earning a net return on its operations. Profit is an important objective of a cooperative, so poor performance indicates a basic failure that, if not corrected, would probably result in the firm going out of business.

Cooperatives must operate profitably. Hence, appropriate profitability ratios pose the biggest challenge for analyzing cooperatives.

1.5. Ratios for Cooperatives:

There are some inherent problems associated with some common ratios used in cooperative financial analysis. Some problems are intrinsic with the ratios themselves and some are with the cooperative structure. For instance, the current ratio is used to analyze liquidity. It provides a good benchmark for determining whether a cooperative has liquid assets to cover current payments. However, interpreting these ratios beyond the conclusion that it represents current resources over current obligations at a given point in time requires a more in-depth look at the trends of the individual parts that make up the ratio. A current ratio doesn't show the quality of the liquid assets which can greatly affect the "true" liquidity. Profitability ratios can also be deceiving. As mentioned earlier, cooperatives are generally not profit motivated. They are more concerned toward serving member-owners. Therefore, low profit ratios can be misleading to the analyst, especially with some pooling cooperatives. This next section looks at limitations and tries to remedy the shortcomings of common ratios. Along with each ratio, a table illustrates the values from the database of the largest agricultural cooperatives. These values are presented to show an order of magnitude. The average values and the high and low corresponding to the 95 percentile are included in the table. These ratio values might not relate to the optimal value for efficient operations, but have value for comparison purposes.

Some of the studies conducted on the financial analysis of agricultural cooperatives are Lerman and Parliament (1989), Binion (1998), Ozudogru (2004), Akono et al. (2005), Carlberg et al. (2006), Surmeli (2006), Arslan (2007), Banaszak (2007), Boyd et al. (2007), Gurung and Unterschultz (2007), Laziková et al. (2008), McKee (2007), McKee (2008), Cosgun et al. (2009), and Pashkova et al. (2009).

2. MATERIAL AND METHOD

2.1. Material

Co-op management may find a number of ratios useful in following the financial trend of their co-op through the years and in comparing their co-op's operations with similar co-ops. The rest of this publication describes some common ratios used in cooperative financial analysis. As each ratio is defined and explained, the INDIAN FARMERS FERTILISER COOPERATIVE LIMITED (IFFCO) Co-op, will illustrate its use. All examples use the financial statements for the INDIAN FARMERS FERTILISER COOPERATIVE LIMITED (IFFCO) Cooperative, covering the calendar year January 1, 2008 to December 31, 2012.

2.2. Ratios Used in Financial Analysis

2.2.1. Conversion Period of Inventories

Creditors must be concerned not only with the current liquidity position of the firm, but also with its overall financial position. The current or quick ratios alone do not tell the whole story. A firm with adequate liquidity ratios might be a greater threat to short-term creditors if its liquidity is tied up in uncollectible accounts receivable or outdated inventory. However, this does not imply that liquidity ratios are irrelevant. On the contrary, a higher liquidity ratio is generally preferred. A look at the quality of the current assets indicates how well the cooperative can meet current obligations. The average cooperative has more than 75 percent of current assets tied up in inventories and accounts receivable, so the asset quality warrants closer examination. One way to examine the liquidity of accounts receivables and inventories is to calculate the conversion period of inventories.

$$\text{Days to sell inventory} = \frac{\text{Average Inventory}}{\text{Cost of goods sold}} * 360 \text{ days}$$

This ratio provides insight into how many days the average inventory sits on the shelf or in storage. Usually a lower value is better (Table 1).

	2008-2009	2009-2010	2010-2011	2011-2012
	49	95	113	72

Source: data from IFFCO annual reports 2008-2012

The use of average monthly inventory is preferable to taking the beginning and ending inventory divided by two. Many cooperatives end their fiscal year when inventory levels are at their seasonal low. This will suppress the value. Due to limited information, these values are calculated by taking the beginning and ending inventory levels divided by two. However, 360 days is an arbitrary number. Most businesses have fewer than 360 working days. But, using a standardized number allows comparisons between different time periods and cooperatives. If all sales are cash, this procedure gives the number of days to convert inventory to cash. However, two more steps are needed if there are credit sales—calculate the days in accounts receivable and add that value to days in inventory. To calculate this ratio, use the average accounts receivable divided by the total credit sales for the year multiplied by 360 days. As with the days to sell inventory, the days in accounts receivable is 360 days divided by accounts receivable turnover (Table 2).

In the third step, the conversion period is calculated by adding the days to sell inventory and days in accounts receivable. Although using credit sales to determine days in accounts receivable is more accurate, total sales works without more detailed information. If a distinction between credit and cash sales can be made, the following weighted average formula should be used:

$$\text{Days in accounts receivable} = \left(\frac{\text{Average accounts receivable}}{\text{Credit sales}} \right) * 360 \text{ days}$$

Table 2— Days in accounts receivable

	2008-2009	2009-2010	2010-2011	2011-2012
	21	14	32	26

Source: data from IFFCO annual reports 2008-2012

This value should help management and creditors gauge liquidity of the cooperative's inventory and accounts receivable. If the cooperative has a substantial percentage of current assets tied up in these two accounts, then a high ratio number implies the cooperative's current position might not be very liquid (Table 3).

Percent Cash Sales * Days to Sell Inventory + Percent Credit Sales * (Days to Sell Inventory + Days in Accounts Receivable)

Conversion Period of Inventories

Table 3— Conversion period of inventories

2008-2009	2009-2010	2010-2011	2011-2012
84	77	111	69

Source: data from IFFCO annual reports 2008-2012

2.2.2. Payout Ratio

This ratio measures the proportion of current and past earnings returned to members during the year, looking only at total cash disbursements. The numerator consists of all cash payments to members. This is important because the equity portion of cooperatives is not static. This ratio examines the equity evolution and dividend policy. A value of less than 1 indicates the cooperative is growing its equity position or not revolving member equity, while a value of greater than 1 implies a shrinking of its equity base. While this ratio is important to all creditors, those with a long-term stake should look at the trend during the past few years to see if the cooperative's at-risk capital is being maintained (Table 4).

$$\text{Payout Ratio} = \frac{\text{Cash patronage dividends} + \text{other dividends} + \text{revolving equity redeemed}}{\text{Net margins}}$$

Table 4— Payout ratio

2008-2009	2009-2010	2010-2011	2011-2012
0.66	0.99	0.72	0.90

Source: data from IFFCO annual reports 2008-2012

2.2.3. Capitalization Growth Rate

The payout ratio can further determine the capitalization growth rate of the cooperative. In other words, creditors and members may want to forecast the growth of the cooperative's at-risk capital base. This will show whether the cooperative can continue revolving member equity and still maintain the equity base to ensure enough capital to satisfy creditors. However, care must be used when interpreting the growth rate. The analyst must look at the rate over time to smooth out the boom/bust years (Table 5).

$$\text{Capitalization growth rate} = (1 - \text{Payout Ratio}) * \text{Return on Equity}$$

Table 5— Capitalization growth rate

2008-2009	2009-2010	2010-2011	2011-2012
0.07	0.11	0.08	0.13

Source: data from IFFCO annual reports 2008-2012

2.2.4. Profit Index

The profit index looks at pricing policy and inventory control. Although generally associated with retail sales, it can be used for marketing cooperatives. However, some marketing cooperatives show higher values due to value-added activities and timing of inventory recording. A few of the largest cooperatives have been using this ratio for some time in analyzing their inventory control and pricing policy. The ratio is calculated by taking the gross margin percent times inventory turnover. If a cooperative maintains its inventory and margins so that the profit index is close to 1, the cooperative will likely be profitable. If the cooperative has certain inventory items that have a high turnover (e.g., feed), the profit margin will not need to be high. High volume and low margins should generate enough revenues to cover overhead expenses. However, if the cooperative has items that don't have a high sales volume (e.g., tractors), a higher margin will be needed to compensate for the low turnover (Table 6).

$$\text{Profit index} = \frac{(\text{Sales-cost of goods sold})}{\text{Sales}} * \frac{\text{Sales}}{\text{Average inventory}}$$

Table 6— Profit index

2008-2009	2009-2010	2010-2011	2011-2012
4.72	10.41	5.26	2.92

Source: data from IFFCO annual reports 2008-2012

2.2.5. Local Return on Local Assets:

One area in which cooperatives can get themselves into trouble is relying on patronage refunds from other cooperatives to balance revenue against expenses. Because this income source relies on the operations from an outside business, it does not reflect the operations of the cooperative being analyzed. Therefore, excluding this source of income will provide a more accurate analysis of the cooperative's operation. Similarly, investment in other cooperatives should not be included in the asset base when looking at return on assets. The equity investment in other cooperatives represents business conducted with them. The investment is made at face value and later redeemed at face value. There is no secondary market for cooperative stock, and most cooperative stock is non-transferable. Therefore, as an asset, it is considered a non-performing asset and should not be included within the calculation of the return on assets. Local return on local assets is calculated by taking net income before income taxes and interest less patronage refunds received divided by total assets less investments in other cooperatives. This ratio provides a better indication of the cooperative's operation and its ability to generate revenues (Table 7).

$$\text{Local return on local assets} = \frac{\text{Net income before interest and income taxes - patronage refunds}}{\text{Total assets - investments in other cooperatives}}$$

Table 7— Local return on local assets

2008-2009	2009-2010	2010-2011	2011-2012
0.05	0.09	0.06	0.11

Source: data from IFFCO annual reports 2008-2012

2.2.6. Earnings Variability:

Lenders are concerned with large debt burdens only if the future earnings of the cooperative are uncertain. While future earnings are unpredictable, a look at the past can give a clue to the risk associated with the cooperative's business. A statistician defines "risk" as the variation about the mean or expected return. A creditor defines "risk" as the probability of having to take an unacceptable loss. However, these two definitions are closely related. Both try to define how much the actual return differs from the expected. A creditor might want to look at the variability over time of the cooperative's earnings to see if it is credit worthy. The income variability ratio examines how much income varies from year to year compared to the period-average income. It is calculated by taking the standard deviation of the year-to-year change in local earnings before interest and income taxes from several years divided by the average level of local earnings over the entire period analyzed. This provides a good proxy for earning variability (Table 8).

$$\text{Earnings Variability} = \frac{\text{Standard deviation (local earnings}_t \text{ - local earnings}_{t-1})}{\text{Average local earnings}}$$

Table 8— Earnings variability

2008-2009	2009-2010	2010-2011	2011-2012
0.81	0.93	0.59	1.00

Source: data from IFFCO annual reports 2008-2012

Local earnings are more appropriate and focus on the operations of the cooperative and don't rely on patronage received from other cooperatives. While there is no set rule of thumb for an income variability value, a value between 0 and 1 indicates fairly stable income. A negative number will indicate that the cooperative, on average, has a negative income. A number greater than 2 usually means that the cooperative will have a large variance in its net margins. This

ratio works well for pooling cooperatives that report minimal net income because it doesn't rely on the magnitude of the earnings. While this ratio gives the variability of a cooperative's income, it doesn't illustrate the quality of that income.

2.2.7. Income Quality Ratio

Both the variability and quality of a cooperative's earnings are important. The ratio of cash flow from operations to net income provides some insight into the quality of earnings. The cash flow from operations has a financing rather than a profit-measurement focus and is well suited in evaluating short-term liquidity and long-term solvency. Cash flow from operations represents cash in the bank that can be used to pay off the loan. Reported net income often has estimated values placed on various revenues and expenses that can distort the amount of funds available. A cooperative can report a positive net income and yet not have funds to pay off its creditors. The higher this ratio, the higher the quality of the reported net income. For example, if the cooperative is selling more products because of a relaxed credit policy, accounts receivable might be higher and less collectible. Therefore, the increase in accounts receivable will cause the cash flow from operations to fall relative to net income, thereby lowering the income quality ratio (Table 9).

$$\text{Income quality ratio} = \frac{\text{Cash flow from operation}}{\text{Net income}}$$

Table 9— Income quality

2008-2009	2009-2010	2010-2011	2011-2012
1.87	2.06	3.34	7.00

Source: data from IFFCO annual reports 2008-2012

2.2.8. Cash Interest Coverage Ratio

“Cold hard cash” is critical to the successful operation of any business. Fixed charges are paid with cash. Net margins taken from the statement of operations might not provide a reliable measure of cash available to meet these fixed-debt charges. Net margins contain many items that do not generate cash as well as expense items that do not require the current use of cash. Therefore, an alternative measure is to use the pretax cash flow from operations. The cash interest coverage ratio is similar to the interest coverage ratio. However, non-cash expenses are added back and noncash revenues are deducted from net margins. When these net margins are adjusted for non-cash items, the result is cash generated from operations. This value is included in the cash flow statement as cash flow from operations (Table 10).

$$\text{Cash interest coverage ratio} = \frac{\text{Cash flow operations} + \text{Income tax} + \text{Interest expense}}{\text{Interest expense}}$$

Table 10— Cash interest coverage

2008-2009	2009-2010	2010-2011	2011-2012
1.97	1.69	3.02	4.18

Source: data from IFFCO annual reports 2008-2012

Conclusion

Financial reports contain a lot of information. The main objective of financial analysis is to sort through that information to find useful and relevant data in analyzing a business. Literature is rich with financial analysis tools that examine the performance and strength of businesses. However, not all businesses are alike. Differences between IOFs and cooperatives mean that some standard financial analyses do not relate well with cooperatives. This is especially relevant for profit-oriented ratios. This report provides a supplement to standard analysis with an eye toward cooperatives. Some ratios help analyze the cooperative's financial performance and cash flow analysis. Managers and creditors should find these findings helpful in appraising the financial strength of the cooperative. While there is no set standard at this time, using these analysis tools should help the cooperative develop its own performance measurements.

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