

Ratio Analysis in Farm Management

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Abstract— Agriculture plays predominant role in Indian economy. More than two thirds people in rural areas are engaged in agriculture and its allied activities. Presently agriculture is treated as an industry; cost benefit analysis is required for benefits of farmers. Most of the farmers are not maintaining proper accounting record and not using statistical and financial tools to study profitability of the production base activities. Ratio analysis techniques can be useful in managing the farm business by providing a check on the performance of assets and a warning as to potential area of risk. Combining of profitability/returns ratio, solvency ratio, liquidity ratio provide an excellent basis for decision making. Net earnings per acre, intensity of live stock production, labour and land use efficiency measures are appropriate indicators of the performance of farm.

Keywords- Live stock, Yield, Return, Standard and Productivity.

I. INTRODUCTION

There is hardly any need to explain the role of agriculture in the economy of India. But it certainly needs to be examined as to why only a small percentage of the farmers in India Keep a systematic set of accounts books. In spite of the fact that agriculture plays the most significant role in our economy, no comprehensive, detailed and systematic accounting methods, costing system and management techniques have been developed for this industry. The farmers in Indian are not only poor records keepers, but out of those also who keep records, only a small percentage make an analysis of their business at the end of the year from a formal set of records.

In order to make farm management more effective and also to make agriculture more productive it is necessary to maintain systematic proper records for the firms. Specially, in case of big farms which are

involving huge investments, not only to keep accounting records property but also to analyze them for the purpose of better future planning, forecasting and controlling agricultural operating. The use of financial ratios and margins in assessing, benchmarking and monitoring farm performance has become common over past few years. This has complemented efforts to define the economics of producing farm commodities, tying economic performance at the enterprise level to financial performance at the farm level. In the present study some measures of efficiency in the form of ratios have been discussed with their uses and limitation in the operating and financial analysis of farm units [1].

II. RETURN ON INPUTS

Return on inputs is calculated by dividing the net returns by annual inputs and multiplying the result by 100. This ratio shows the efficiency of the management in using various inputs. The higher the ratio the better it is while in case of lower ratio some changes in the proportion of inputs or varieties of crops may be required to be made. The value of this measure varies directly with the size of business in year of high return and inversely in years of low returns and therefore cannot be used to measure the efficiency with which farms are organized and operated in an area of wide variations in total inputs of land, labour and capital. For those studies designed to evaluate the influence of various factors on farms earning, to find the optimum combination of the factors of production or, in general, to study the organization and operation of farms, is a very significant measure in the management of farm affairs [2].

III. RETURN ON INVESTMENTS

This ratio would establish the relationship between net returns and total investment in agriculture. It will show the over-all efficiency of the farm as unit. It may be calculated by dividing net returns by total investment. It is best used in areas in which the capital input is large relative to the value of the operator's labour and in which the farms are large enough to provide full employment for the farmer and his family. It evaluates the farm with respect to the proper combination have been combined nearer to optimum proportions, and the returns per unit of input is fairly high.

A. Value of Production (VOP)

$$\text{VOP} = \text{Farm Cash Receipts} + (\text{Change in Value of Product Inventory} + \text{Change in Value of Accounts Receivable}) - \text{Livestock Purchases}$$

This amount represents the accrued value of commodities produced during the year.

B. Gross Margin (GM)

$$\text{GM} = \text{NFI} - \text{Depreciation}$$

This margin represents the excess of revenue over the cost of goods sold. Gross margin indicates funds available to cover unallocated fixed costs, returns to unpaid operator & family labour, and returns to owner's / share holder's equity [3].

C. Cash Operating Margin (COM)

$$\text{COM} = (\text{VOP} - \text{Production Inventory Change} - \text{Accounts Receivable Change}) - (\text{Direct Costs} - \text{Supplies Inventory Change} - \text{Accounts Payable (Change)} - (\text{Capital Costs} - \text{Depreciation}))$$

The Cash Operating Margin essentially "un-accrues" the farm income statement. It represents the cash available to cover principal payments; net cash capital acquisitions; and family living withdrawals.

D. Return on Farm Assets (RFA)

$$\text{RFA} = (\text{NFI} + \text{Interest Expense} - \text{Unpaid Operator \& Family Labour}) / \text{Total Farm Assets}$$

$$\text{RFA} = \text{Return to Assets} / \text{Total Farm Assets}$$

This ratio represents the total income generated from the farm divided by the total assets employed to generate this income. Unpaid family labour is subtracted as it represents a non-cash expense. This adjustment helps to compare farms which pay family wages to those that do not.

E. Return on Farm Equity (RFE)

$$\text{RFE} = (\text{NFI} - \text{Unpaid Operator \& Family Labour}) / \text{Total Farm Equity}$$

$$\text{RFE} = (\text{Return to Farm Equity}) / (\text{Total Farm Equity})$$

This ratio represents the income generated from the owner's investment in the farm business.

F. Operating Profit Margin Ratio (OPMR)

$$\text{OPMR} = (\text{NFI} + \text{Interest Expense} - \text{Unpaid Operator \& Family Labour}) / \text{VOP}$$

$$\text{OPMR} = \text{Return to Farm Equity} / \text{Value of Production}$$

A low profit margin can be compensated for with a higher asset turnover. Thus this ratio must be viewed in the context of the capital turnover [4].

G. Net Farm Income less Net Government Transfers

$$\text{It is equal to } \text{NFI} - (\text{Government Program Receipts} - \text{Government Program Premiums})$$

This ratio is a measure of a farm's dependence on government transfers for income. As the level of government support continues to drop, this ratio will become less significant.

IV. NET EARNINGS PER ACRE

Net earnings per acre may be calculated by dividing the net returns by the total acres in the farms. It is a figure which reflects the productivity of the farm business and is not a measure of farm business and is not a measure of farm efficiency unless the farm in question is compared with other farms similar in size, organization, and quality of land.

Net earnings per acre may be used to compare the returns for a group of farms over a period of years and may be used to calculate the earning value of the land. It is not influenced valuation of land. However, it cannot be used to measure the efficiency of farm organizations

if there are variations between farms in the productive capacity of the land.

V. MEASURES OF LIVE-STOCK PRODUCTION

Livestock production may be measured relative to feed inputs to indicate variations in livestock efficiency. Such input-output ration can be used, in analyzing the record of an individual farm, to discover reasons for success or failure, and also to establish standards which may be used in farm planning and research involving the budget approach. The following are some useful measures: (i) Returns per Rs. 100 of feed fed to each class of live-stock. (ii) Kgs. Of feed per unit of product (iii) Livestock efficiency index (iv) Return per hen, per cow etc. (based on the returns per Rs. 100 of feed fed to each class of livestock)

Returns per Rs. 100 of feed fed is a measure which shows that total returns for a farm unit as a ratio to one of the most important item of input. It is better measure for classes of live stock requiring a large percentage of the total inputs in the form of feed than for those inputs in the form of feed than for those requiring relatively large inputs of labour and other forms of capital. Measures I influenced not only by the rate at which feed is converted into livestock products but by the cost of the feed and the price received for the livestock. A livestock efficiency index, based on the returns per Rs. 100 of feed fed to each class of live-stock may be calculated to represent the combined efficiency-of all the live stock enterprises.

VI. INTENSITY OF LIVESTOCK PRODUCTION

The intensity of livestock production may be evaluated by the following measures (i) animal units per acre, (ii) value of feed fed per acre and (iii) percentage of the value of feed fed in of the total value of crop production. All of these measures are in terms of inputs and are not directly influenced by the efficiency of the livestock. The number of animal units per acre is a good measure for showing the combined intensity of all live stock enterprises. The value of feed fed per acre is an average which is correlated with the productivity of the farm in such way is to render its use unsatisfactory for

many comparisons. If the farms are sorted by type of farming, crop yields and value of feed fed per acre will vary directly with each other as high yields make more feed available.

VII. MEASURES OF CROP PRODUCTION

The level of crop production may be rated by such measures as:

- a) yield per acre for important crops;
- b) Crop yield index which may be calculated to measure the levels of yields secured from all. Important crops;
- c) acres of pasture per animal unit;
- d) Value of crops produced per acre.

However,

- Yield comparisons should be made only with farms having soils of similar quality. The crop yield index has the advantage of combining yield expressed in different units, such as kgs., tons etc.
- The productivity of pasture land is hard to measure accurately but may be expressed as animal units carried per acre. The value of crops produced per acre measured not only the yield level of crops but also the proportion of the land in - high value crops.

A. Labour Efficiency Measures

Labour efficiency may be measured by

- labour cost per crop acre,
- labour input index and (the amount of work accomplished by each man).

B. Land Use Efficiency

The quality of the land is an important consideration in determining its best use. The quality is best measured by soil rating index, if one is available. The land use is indicated by such measures as percentage of tillable land in hay and pasture, percentage in cultivated crops, percentage in high profits crops. A crop system rating index may be calculated if values are assigned to represent the relative profitableness of all the crops grown in an area.

VIII. LIMITATIONS

The following is a list of criteria which may be used to rate the advantages and disadvantages of proposed measures of the efficiency of the farm business as a unit, or of segment of the farm business.

- 1) The measure must be selected in view of the objective;
- 2) The measure should be easily understood;
- 3) The measure should be accurate, precise, and unequivocal;
- 4) The measure should be reasonably easy to calculate;
- 5) It must measure something which is related to the goals of the farmer;
- 6) It should represent a definite period and be comparable through time;
- 7) It should measure something over which the farm operator has a significant degree of control;
- 8) The measure should evaluate only that which it is supposed to measure;
- 9) It should be possible to isolate variations in the measure due to the influence of variables other than one being studied;
- 10) The measure should be one for which accurate and flexible standards can be calculated;
- 11) The data on which the measure is based should be accurate.

In the preceding paragraphs only few important measures of efficiency have been discussed. There are many other important areas also (like power and machinery efficiency, efficiency in buying and selling, organizational efficiency etc.) where, efficiency can be measured properly through the use of ratios. In fact, in order to modernize agriculture in India it is necessary to develop a proper accounting system covering financial, costing and management aspects of the farm affairs.

IX. REFERENCES

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