Financial Ratios and Financial Statement Analysis
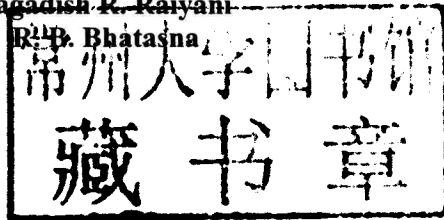
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About the Book

The focus of financial analysis is on key figures in the financial statements and the significant relationship that exists between them. The analysis of financial statement is a process of evaluating the relationship between component parts of financial statements to obtain a better understanding of the position and performance of a firm. The first task of the financial analyst is to select the information relevant to the decision under consideration from the total information contained in the financial statements. The second step is to arrange the information in a way to highlight significant relationships. The final step is interpretation and drawing of inferences and conclusions. In brief, financial analysis is the process of selection, relation and evaluation.

Keeping all this in view, the present book is devoted to an in-depth analysis of financial statements and its use for decision-making by various parties interested in them. The focus of the book is on ratio analysis which is the most widely used technique of financial statement analysis.

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Preface

The financial sector of India, especially banks, is subject to prudential regulations, both in regard to capital and liquidity. As the current global financial crisis has shown, liquidity risks can rise manifold during a crisis and can pose serious downside risks to macroeconomic and financial stability. Reserve Bank of India (RBI) had already put in place steps to mitigate liquidity risks at the very short-end, risks at the systemic level and at the institution level as well.

Large reliance by banks on borrowed funds can exacerbate vulnerability to external shocks. This has been brought out quite strikingly in the recent financial crisis in the global financial markets. Accordingly, in order to encourage greater reliance on stable sources of funding, RBI has imposed prudential limits on banks on their purchased inter-bank liabilities and these limits are linked to their net worth. Furthermore, the incremental credit deposit ratio of banks is also monitored by RBI since this ratio indicates the extent to which banks are funding credit with borrowings from wholesale markets (now known as purchased funds).

Asset liability management guidelines for dealing with overall asset-liability mismatches take into account both on and off-balance sheet items. Finally, guidelines on securitization of standard assets have laid down a detailed policy on provision of liquidity support to Special Purpose Vehicles (SPVs).

In order to further strengthen capital requirements, the credit conversion factors, risk weights and provisioning requirements for specific off-balance sheet items including derivatives have been reviewed. Furthermore, in India, complex structures like synthetic securitisation have not been permitted so far.

The analysis of financial statement is a process of evaluating the relationship between component parts of financial statements to obtain a better understanding of the

firm's position and performance. The focus of financial analysis is on key figures in the financial statements and the significant relationship that exists between them. The first task of the financial analyst is to select the information relevant to the decision under consideration from the total information contained in the financial statements. The second step is to arrange the information in a way to highlight significant relationship. The final step is interpretation and drawing of inferences and conclusions. In brief, financial analysis is the process of selection, relation and evaluation.

Keeping all this in view, the present book is devoted to an in-depth analysis of financial statements and its use for decision making by various parties interested in them. The focus of the book is on ratio analysis as the most widely used technique of financial statement analysis. The importance of ratio analysis and its limitations are briefly outlined in this book.

The book is primarily intended for undergraduate, postgraduate students in commerce and management and chartered and cost accountancy. Those doing similar courses in business management or appearing in the restructured civil services and other competitive examinations will find it equally useful. Its usefulness, however, is not confined to academicians alone. It may also be of special interest to the practitioners in the field.

Finally, we would be failing in our duty if we do not acknowledge the deep debt of gratitude that we owe to the various authors whose writings have provided us insights into the intricacies of the subject.

September 2010   **Jagadish R. Raiyani**
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Ratio as Aid to Management

1.1 Meaning of Ratio Analysis

The Latin word 'ratio' stands for reason, and so also its derivative 'ratiocinari'. Sister words like 'reri' and 'ratus' imply the need to think. In English language, 'ratiocinate' means to reason, whereas 'ratio' stands for the relation or the proportion of one thing to another (along with reason or cause). As applied to mathematics, it is the quotient of one quantity divided by another of the same kind, usually expressed as a fraction, say 1/2 (or 1:2). In the context of music, the term ratio refers to the relation between the vibration numbers of two tones which may be vital for harmony and melody (an agreeable musical air or tune, as against noise or other disagreeable sound).

Such a relationship can be *either* fixed *or* variable. A fixed relationship may subsist between two objects (or parts of an object) of a static character. For example, a piece of land owned by a farmer may have a fixed ratio, between its length and width, so long as it is not sub-divided or consolidated with another pace of land. But the analysis of such a relationship is likely to have little relevance, unless it can be shown that a particular ratio between length and width is optimum or ideal for cultivation (use of mechanical devices, manures, irrigation facilities and the like). Furthermore, it has to be seen if the farmer has a choice between two or more pieces of land having different ratios between length and width (and whether such a choice can be exercised in the midst of historical, sociological, legal and other- constraints).

A fixed ratio can be visualized even between two variables. There is the well known Einsteinium doctrine (relativity theory) to suggest that if two trains are moving at

exactly the same speed on two parallel tracks, passengers on either side may seem to feel that none of the trains is in motion. A similar fixed relationship has more recently been established between the earth (which is moving round) and certain communication satellites (also in orbit at fixed angles) through which TV network programmes are telecast. The important point is that the proportion of change in one set of variables should always be equal to (commensurate with) the proportion of chance in the other set of variables. In statistical language, this is a state of perfect positive correlation (+1).

Such a state of affairs can be the one actually obtaining in a given set of circumstances, or it may be thought of as an ideal relationship. For example, a slimming centre may be working on the formula that an adult male should weigh just as many kilograms as the number of inches measuring his height. Thus a 6-ft-tall person weighing 90 kilograms may be called upon to reduce his obesity to a level of 72 (indicating a 20 percent cut in weight to match his height running into 72 inches). Likewise, many public enterprises in India thought it fit to assume 1:1 an ideal equity-debt ratio, so that, out of every governmental allocation of two rupees, one rupee was treated as equity, and the other rupee was put in the category of (interest-bearing and repayable) debt.

A variable relationship is bound to exist between two objects if one of these is of static dimensions, whereas the other one is of a changing character. For example, if a tree is growing by the side of a house whose height is constant, the tree: house (height) ratio may continue to vary, say from 1:2 to 1:1, and thereafter to 2:1. The ratio between two variables, too, would vary if the relative change is not always matching, either because of the varying impact of uncertainty, or due to the fact that one of the variables is inherently subject to a higher magnitude of change (upward or downward). It may also be that considerations of idea! Viability suggests a higher (or lower) proportion of change in one of the variables than in the other. Steel girders used to bridge the span(s) of a river

may offer a case in point, if (say) a 20 percent increase in length calls for a 30 percent excavation in width. Likewise (but in a converse direction), the ideal inventory: turnover ratio may vary from 1:3 to 1:4 as the sales volume gets doubled. Thus, as the turnover moves up from Rs. 30,000 to Rs. 60,000, the ideal level of inventory rises from Rs. 10,000 to Rs. 15,000 only and not to Rs. 20,000).

Sometimes the variable relationship between two sets of variables is of an inverse character. As such, art increase in one variable is associated with a decrease in the other. When the rate of increase (in one) is fully matched by the rate of decrease (in the other), it is a state of perfect negative correlation (−1). For example, if the price elasticity of the demand of a commodity is *unity*, this type of relationship subsists between the unit price and the number of units demanded. Thus, when the price per unit is doubled, from Rs. 50 to Rs. 100, the number of units demanded would be reducing to one-half, say from 100 to 50. As such, the total expenditure on the consumption of that commodity would remain constant at Rs 50. Likewise, if a public authority rules that ever agricultural farm-in a particular district would conform to an ideal area (say 6,400 square metres), the relationship between length and width would be inverse (presuming that an individual furrier has some latitude to vary the length and the width, so long as the total area does not depart from the norm).

Thus, if farm is 128 metres long, it will be 50 metres wide; and, if farm B is 100metres long, it will be 64 metres wide. As such, the ratio (A/B) between the lengths of the two farms (128/100) is a reciprocal of the ratio between the widths (50/64) of these farms. However, if a third farm C has dimensions of 80 metres x 80 metres, the practical distinction between length and width disappears (although, in an academic sense, the reciprocal character of the two ratios is still maintained).

This inverse character of relationship may also be

applicable to some of the variables emerging from the Trading/ Profit and Loss Account (Income Statement) and the "Balance Sheet of a business entity. For example, if the payout ratio (proportion of earnings/profits .used for payment of dividend) is high, the retained earnings ratio would be low (and *vice versa*). This stipulation, of course, assumes that 'dividend payment' and 'retention' are the only two outlets for earnings/profits (with the structure of taxation being neutral towards both these outlets). Likewise, the Equity: Total Investment Ratio and Debt: Total Investment Ratio would have an inverse_ relationship. Assuming that the total investment remains constant between the two consecutive dates of a firm; Balance Sheet, and that equity and debt are the only two sources of investment; a reciprocal relationship would be found to subsist between these two variables. This may be subject to the legal constraint that equity capital, as distinguished from debt, cannot (usually) be paid back to the shareholders of a going concern (though redeemable preference shares may sometimes be deemed to form part of equity, whereas the debt, on the other and, may be of a perpetual character).

In fine, ratio analysis may be defined to mean "the establishment of a reasoned relationship" of a fixed or variable character between measurements of certain phenomena having some kind of linkage. Very often, though not correctly, ratio analysis is dubbed merely as a financial or accounting exercise. It is true that liquidity, solvency, profitability and market test ratios are quite widely used measures. Yet, ratio analysis is not confined to the four walls of financial management. There are vast and fruitful opportunities for its application to production, marketing, personnel, and general management. With regard to production (operations) management, statistical quality control (based on spoilage and other ratios) is a casein point. Further, for a multi-product (say automobile) unit, the ratio(s) in which scooters, cars, vans, jeeps, buses and trucks are to be manufactured may be a most

vital one. Such an exercise in product-mix may be based on linear programming or any other modern technique. Likewise, in the domain of marketing management, ratios in the form of reasoned relationships may have to be established between credit and cash sales, between free samples and sales potential, between marketing expenses and sales/revenue, between the cost and benefit of market research/advertising/sales force/after-sales service and all that.

Similarly, in the context of personnel management, it may be vital to keep a close watch on labour turnover ratio, absenteeism ratio, lost mandays ratio and labour productivity ratio, along with other ratios relevant to manpower planning, human resource accounting training, merit rating and the like. So far as general management is concerned, it may (besides making use of vital ratios germane to various functional areas of management) focus attention on reasoned relationships in a broader context, such as social cost-benefit ratio, concentration/diversification ratios and techno-managerial change ratio, besides image building, model building and other sinews of modern management.

1.2 Significance and Limitations of Quantitative Approach to Management

The quantitative approach to management may be said to have manifested itself mainly in three forms. *First*, the theory of probability and other branches of statistics (along with their phenomenal growth) have come in for a great deal of reliance in the decision-making process of modern managers. *Secondly*, and more recently, have come to the fore a variety of quanti-tative techniques under the umbrella of operational/operations research. *Thirdly,* there are the other applications of mathematics to economics, psychology, sociology and other behavioural studies having their bearing on commercial viability or managerial efficacy of various types of entities. Various factors have added to the significance of quantitative approach in management/administration.

Firstly, it is the tremendous increase in the quantum of activity. In ancient India (roughly synchronizing with the dawn of Christian era in the West), when the volume of business (both domestic trade and foreign commerce) was relatively small, it was quite possible to have 100 percent quality control of goods. Kautilya's *Arthashastra* testifies that this situation actually obtained at that time, when this celebrated writer-economist was operating as administrator-politician under a different name (Chanakya). But, after the appearance of Industrial Revolution (or, rather a series of industrial revolutions, as Professor W.W. Rostow has chosen to-suggest), even conscientious producers and public officials have to rest content with sample checking. In a sense, it is ironical that even quality control has to fall back on quantitative techniques like the theory of probability. As such, it is called 'statistical quality control'. Not only that, where the ratio of substandard items to total output tends to be very low, producers may feel tempted even to give up the quality control drive as such. For example, the (accidentally) unfortunate con-sumer of a shaving blade, which scratches his skin, may easily be left to his lot (instead of the manufacturer searching for one defective piece in a whole batch of production).

Secondly, technological and other changes have added many new dimensions to managerial decision-making, so that recourse to quantitative approach is vital for identifying impor-tant elements of various problems and considering the same in a systematic fashion. Sometimes the use of a computer or computerized man (robot) may appear indispensable in the context of too many complexities, the demand for speedy exercise, and the need for stubbornness in a mission. There may also be the need to re-check the results and re-adjust the strategy from time to time in view of the rapidly changing situation.

Thirdly, where choice has to be made from amongst a large number of (apparently viable) alternatives, quantitative techniques provide the much needed fineness in the process of

comparison from time to time on a consistent basis. A standard model may be of considerable utility in this regard. In fact, relativity is the basis not only of modern science but also of contemporary culture and civilization. There is a management joke typifying a situation in which A asks his friend B "how is your wife?" and gets back a retort "as compared to what'?" That is, B's wife may be feeling (today) better in relation to yesterday but worse in relation to the day before yesterday. Alternatively, in a hospital situation, B's wife may be progressing but not as fast as/A's wife. Likewise, the one-eyed may be a privileged lot in an assembly abounding with blind persons, but not so in the midst of those endowed with two eyes each. Applying this to a business situation, the profitability ratio of a firm for a certain year may be compared with its own action in earlier years or with similar ratios of other firms for the same year.

Fourthly, the memory of a computer and other capsule forms be of significant value where managerial problems are of a continuous or repetitive character. The lessons learnt from time to time can be built into a basic model which is able to guide the decision-making process, for a fairly long period. For example, in a social situation, a model can be constructed for matrimonial match-making. This may rest on a number of ratios or reasoned relationships between the attributes of the prospective bride and her groom. These variables may include age, height, weight and the like. As applied to a business entity, one may like to build up a weighted aggregate of ratios (master ratio) as indicator or predictor of industrial sickness, trade cycles and such other situations.

Fifthly, a mathematical model or other quantitative apparatus can be a valuable tool for managerial communication and also for ensuring a critical minimum of uniformity in decision-making. Further, for implementing decisions, the model can be a useful frame of reference. For example, how should a big commercial bank, like the State Bank of India, having thousands of branches within and