CHAPTER III
FINANCIAL STABILITY ANALYSIS

3.1. AIM: - The construction Industry consists of fully Government owned Companies, Public limited Companies and Private Companies. These companies should have financial stability in conducting the business to achieve their objectives such as profit maximisation, sales maximisation, growth in market share etc for its growth and survival in the long run among competition. Hence the analysis of their financial stability in terms of asset backing, equity backing and the health of an articulated dividend policy, at a given point of time in order to identify the stage at which the companies are working. This will facilitate the owners or the promoters to take appropriate managerial decisions and formulation of strategies through corrective and remedial measures. In this chapter, three models are used in case of the representative company, Simplex Concrete Piles (India) Ltd. The analysis is done at micro level (Company/firm) which can also be applied at industry level. In order to identify the positions of financial stability factors and the effect on the strategy change requirements which can be broadly considered for industry in the same manner at a given point of time with macro level data. Hence the analysis is portrayed at micro level taking the above representative company to emphasise on the individual factors arising. The three models are 'Z' score financial model (asset based), 'Z' score Equity model (Equity based) and dividend analysis based on Gordon model for estimating future dividends.
3.2. 'Z' SCORE FINANCIAL MODEL (ASSET BASED)

This model has been used to indicate the financial stability and overall performance of a company at a given point of time. The original "Z" score was created by Edward L. Altman at New York University in mid 1960. Out of a selection of 22 financial ratios (parameters) Altman found 5 parameters that could be combined to discriminate between the bankrupt and the non-bankrupt company.

The Altman's Z score is expressed as under:

\[ Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.99X_5 \]

- \( X_1 = \frac{\text{Current assets - current liabilities}}{\text{Total assets}} \)
- \( X_2 = \frac{\text{Retained earnings}}{\text{Total assets}} \)
- \( X_3 = \frac{\text{Earnings before interest and taxes}}{\text{Total assets}} \)
- \( X_4 = \frac{\text{Networth}}{\text{Total liabilities}} \)
- \( X_5 = \frac{\text{Sales (i.e.) Gross billing works done}}{\text{Total assets}} \)

"As per this model, score less than 1.8 would mean a bankruptcy, score 1.8 to 3.0 -- Approaching bankruptcy. Above 3.0 point -- strong."
The limitations of this are as under:

(i) The Z score is more asset backed score and so is valid only for manufacturing and construction companies. Construction companies manufacture asset and sell to the client on negotiated/tendered value.

(ii) The score is more quantitative and does not take into factor qualitative aspects like management strengths, product quality, changing economic and market.

(iii) The constant ratios should also change as one moves from one industry to another.

3.3. ANALYSIS:

The Z score financial model indicates the financial stability and overall performance of a company. The Z score is very effective tool to foretell the financial position of the company and can also evaluate a bankrupt company to analyse the grey areas in order to arrive at a turn around solution.

Model calculations for the 'Z' score for March '91 data are given below.

\[
\begin{align*}
X_1 &= \frac{37.59 - 24.60}{44.91} = 0.29 \\
X_2 &= \frac{8.62}{44.91} = 0.19 \\
X_3 &= \frac{4.53}{44.91} = 0.10 \\
X_4 &= \frac{9.87}{44.91} = 0.22
\end{align*}
\]
Networth is calculated as under

\[ N.W. = \text{Total net asset} - \text{Total Borrowings} \]

\[ \text{Total net asset} = \text{Gross fixed asset} \]
\[ - \text{Accumulated depreciation} \]
\[ + \text{Capital work in progress} \]
\[ + \text{Investment} + \text{Net current asset} \]
\[ = 15.12 - 7.89 + 0.06 + 0.01 + 12.99 \]
\[ = 20.29 \text{ crores} \]

\[ \text{Total borrowings} = 10.21 + 0.21 = 10.42 \text{ crores} \]

\[ N.W. = 20.29 - 10.42 = 9.87 \text{ crores} \]

\[ Z \text{ score} = 1.2 X1 + 1.4 X2 + 3.3 X3 \]
\[ + 0.6 X4 + 0.99 X5 = 3.03 > 3 \]

The other calculations have been tabulated in Table 3.1 and Exhibit 3.1., at the end of the thesis under "Tables" and "Exhibits".

3.4. DEDUCTIONS :

FINANCIAL STABILITY AND OVERALL PERFORMANCE :

'Z' score is the indicator of financial stability and overall performance. This has been more than 3.00 during the period under study, indicating the marginal as it is nearer to cut of point. But it is worth noting that 'Z' score has declined to 3.03 i.e. half its level in March '91 compared to Dec. '81. This shows erosion of asset base. If the trend is projected, 'Z' score being marginally closer to cut of score, the position indicates that there is a trend likely to lead to potential bankruptcy status unless precautions are taken to arrest the erosion of asset base appropriately.
3.4.2. LIQUIDITY MEASURE :-

'X1' being the measure of liquidity, it is having fluctuating trend from 0.01 to 0.30 during the period under study. From Dec. 1982 to Dec. 1985, X1 fell below 0.20. When a company faces the liquidity problems, the working capital i.e. current asset minus current liability (CA-CL) will fall leading to lower X1. There exists liquidity problem during this period where X1 is lower than 0.20.

3.4.3. RESERVES AND SURPLUS POSITION :-

The parameter X2 indicates this aspect. This X2 fluctuates from 0.14 to 0.23. On looking at the quantum terms of reserves and surplus (Retained earnings), it is steadily increasing over the periods. The fluctuation of X2 is due to inadequate corresponding rate of increase in total asset. New companies with lower reserves have more chances of falling sick than established companies. Increased rate of reserves and surplus, show satisfactory throughout the period. Rate of increase in asset side is not impressive.

3.4.4. PRODUCTIVITY MEASURE :-

The parameter X3 shows how effectively the assets of the company has been deployed. This also fluctuates from 0.08 to 0.38. If the ratio exceeds the average interest rate than the cost of company borrowings, dynamic companies will have better chances of recovery. The cost of borrowings at industry level is 18% (0.18). From Dec. '84 to March '91, the productivity measure is not bright.
3.4.5. DEBT SERVICES CAPACITY :-

X4 being the debt services capacity indicator, the measure stood at more than 0.20 level except during 1984 which has been 0.19. Hence it can be construed that the company has stable debt services capacity to meet the cost of debt. Companies with the better debt service capacity will always have a better chances of financial stability.

3.4.6. USE OF ASSET IN TURNOVER OF WORKS PROGRESSED :-

The construction industry’s efficiency depends on achieving increase in gross billing of works over the period in order to increase the profitability. In this case, the company’s X5 parameter illustrates this picture. If the ratio is more than 3 in a year, it indicates that the assets are effectively used. It can be seen from Table 3.1 and Exhibit 3.1, that from 1st January ’87 to 31st March ’91, the ratio is below 3 compared to the initial period. This shows the deteriorating trend in effective use of asset during the later part of the years under study.

3.5. IMPLICATIONS FOR MANAGEMENT :-

From the above deductions, the following implications for management are deduced for the various players in construction industry, with suggested strategies.

(i) Since the asset base erosion is detected, the strategy to reduce debt by increasing the equity base will reduce the debt services charges which are one of the cause for asset base erosion. This will facilitate the increase in profit even after tax liabilities arresting the asset base erosion.
(ii) Prevailing reduced cost of debt from financial institutions, the increasing influence of Foreign Institutional Investors (FIIS) on the Indian capital market and the prospects of political stability are the opportunities favourable to Construction industry. It is worth noting that the recent changes in the interest rate structure (This has made the lending rate at home internationally competitive) drop in the rate of inflation and good monsoon which are also some of the economic fundamentals for a boom in the construction industry activities. These are to be accounted for in deciding the access route for debt at lower cost to cope up with plugging erosion of its asset base, availing the present environmental opportunities.

(iii) In the wake of economic liberalisation, particularly on the financial sector, the close interactive relationship between the construction industry and the macro financial system, an easy and effective access to the capital market has to be created by creating investors' confidence by the industry. This will facilitate capital flow into construction sector, which is lacking at present. Policy initiatives by govt for the more level playing field to incorporate corrections of existing inter-sectoral imbalances, resulting from priority treatment given to selected sectors in the past, will help the industry the much needed efficiency in allocation and utilisation of scarce financial resources to the construction sector and creation of competition.
(iv) The low productivity of capital in construction industry's activities as generally noticed, is due to the failure of the industry to attract funds of sizeable order. This has an important bearing on the question of creating environment of competition among constructors for profit and affordability in case of residential and non-residential constructions. Hence a strategy for public and private sector agencies in the construction industry to create an environment to work in partnership and supplant each others efforts, deploying their resources to their areas of competitive strength, will create better management of resources. This will facilitate individual companies to tackle the liquidity problem, ineffective use of assets, and to increase productivity, debt servicing capacity and efficient sectoral management in optimum allocation of resources resulting in lower cost and greater affordability to the users of the constructed assets, "Government has a major role in ensuring that the affordability component merges with the overall sectoral strategy as suggested by R.V. Verma in his publication in The Economic Times."  

3.6. 'Z' SCORE EQUITY MODEL (EQUITY BASED) :-

To evolve the model, we should take the relevant variables of equity such as Book Value, Earning per share (EPS) and Price Earning Ratio (P/E). The equation of the model is as under :-

\[ Y = K1 \times X1 + K2 \times X2 + K3 \times X3 \]

where \( X1 \) = Book value \( \frac{\text{Total free Reserve & surplus}}{\text{No. of shares}} \)

\[ X_2 = \frac{\text{Net profit}}{\text{No. of shares}} = \frac{K_1 \cdot X_1 + K_2 \cdot X_2 + K_3 \cdot X_3}{\text{Price}} = \frac{K_1 \cdot X_1 + K_2 \cdot X_2 + K_3 \cdot X_3}{\text{EPS}} \]

K1, K2 & K3 are constants. The simplest form of the model is 'Z' Equity = K1 * X1 + K2 * X2 + K3 * X3

K3 is negative as a high P/E share is less valued than a lower P/E share. Constants K1, K2 and K3 are computed through Discriminant Analysis.55

3.7. ANALYSIS :-

3.7.1. DISCRIMINANT ANALYSIS :-

This is a tool where the total sample (in this case the recent past 5 years equity data) is to be divided into or differentiated into two or more mutually exclusive and collectively exhaustive groups on the basis of a set of predictor variables. Hence we have to find out linear composite of the predictor variables, in this case, Book Value (X1), EPS (X2) & P/E (X3) of the company, in order to compare the performances of the equity shares.

When there are two or more groups, we will be interested to know the ratio of their sums of squares after the set of scores on the linear composite has been computed. One sum of squared deviations represent the variability of the group mean on the composite around their grand mean. The second sum of squared deviations represents the pooled variability of the individual cases around their respective group mean, also on the linear

55. R. Subramaniam, op. cit, Page 10-
composite. The ratio of the two sums of squares is to be maximised through appropriate selection of K1 & K2 and then K2 & K3 to form a composite linear function. In this case, our interest is to find out the variability of two group years having Book Value of the share above Rs. 90/- and below Rs. 90/-. Hence the ratio of the sums of squared deviation, (Variability) of the group means around their grand mean and the sums of the squared deviations (Pooled variability of the individual cases) around their respective group means, are to be maximised through the appropriate selection of K1, K2 & K3.

3.7.2. ESTABLISHING LINK BETWEEN X1 & X2

"For ease of calculation let us define

\[ x_1 = x_1 - \bar{x}_1 \] and \[ x_2 = x_2 - \bar{x}_2 \]

\[ \Sigma x_1^2 = \Sigma (x_1 - \bar{x}_1)^2 = \Sigma x_1^2 - N \bar{x}_1^2 \]

\[ \Sigma x_2^2 = \Sigma (x_2 - \bar{x}_2)^2 = \Sigma x_2^2 - N \bar{x}_2^2 \]

\[ \Sigma x_1 \cdot x_2 = \Sigma (x_1 - \bar{x}_1) (x_2 - \bar{x}_2) = \Sigma x_1 x_2 - N \bar{x}_1 \bar{x}_2 \]

The normal equations are

\[ K_1 \Sigma x_1^2 + K_2 \Sigma x_1 x_2 = \bar{x}_1 \text{ (one group)} - \bar{x}_1 \text{ (other group)} \]

\[ K_1 \Sigma x_2 + K_2 \Sigma x_2^2 = \bar{x}_2 \text{ (one group)} - \bar{x}_2 \text{ (other group)} \]

K1 & K2 can be found out solving the above equations."

The normal equations are

\[ 200.57 + K_1 + 46.64 K_2 = 102.38 - 74.83 = 27.55 \]

\[ 46.64 K_1 + 49.93 K_2 = 15.59 - 13.20 = 2.39 \]

\[ 9354.58 K_1 + 2175.29 K_2 = 1284.93 \quad (1) \]

\[ 9354.58 K_1 + 10014.46 K_2 = 479.36 \quad (2) \]

56. "Multivariate Analysis", Ms-95, IGNOU, P-49
Deducting (2) from (1) = (-) 7839.17 K2 = 805.57

\[
\begin{align*}
7839.17 & \quad \text{805.57} \\
\text{K2} & \quad \text{(-)} \quad \frac{805.57}{7839.17} = \text{(-) 0.103} \\
27.55 + 4.80 & \quad \frac{27.55 + 4.80}{200.57} = 0.161
\end{align*}
\]

3.7.3: Establishing link between 'X'2 and 'X'3

Below B.V. Rs. 90/- Above B.V. Rs. 90/- Total
\[
\begin{align*}
\Sigma x_2^2 & \quad 29.71 & \quad 20.22 & \quad 49.93 \\
\Sigma x_3^2 & \quad 0.93 & \quad 0.035 & \quad 0.965 \\
\Sigma x_2 x_3 & \quad (-) 0.93 & \quad (-) 0.92 & \quad (-) 1.85 \\
49.93 K2 - 1.85 K3 & \quad = 15.59 - 13.29 = 2.39 \\
-1.85 K2 + 0.965 K3 & \quad = 1.76 - 1.66 = 0.10 \\
or 48.76 K2 - 1.785 K3 & = 2.31 \quad (1) \\
(-) 3.42 K2 + 1.785 K3 & = 0.19 \quad (2) \\
Adding (1) and (2) & \quad 44.76 K2 = 2.50 \\
\text{. . .} & \quad K2 = 0.056 \\
48.76 \times 0.056 - 2.31 & \quad = 0.217 \\
K3 & \quad \frac{48.76 \times 0.056 - 2.31}{1.785} = 0.217 \\
\text{. . .} & \quad K3 = (-) 0.397 \\
\text{. . .} & \quad Z = 0.161 X1 - 0.103 X2 - 0.397 X3
\end{align*}
\]

'Z' Score Equity and other details are tabulated in Tables 3.2 & 3.3 and Exhibit 3.2, at the end under "Tables" and "Exhibits".
3.8. DEDUCTION :-

(i) The performance of equity shares in March '90, has been the best buy. From April '90 to March '91, the performance stood last in the ranking.

(ii) Price Earning Ratio (P/E Ratio) has been consistent without extra-ordinary fluctuation from 1.52 to 1.90.

(iii) Earning per share has been on the declining trend.

3.9. IMPLICATION FOR MANAGEMENT :-

Linear composite of the predictor variables (viz) book value, EPS and P/E of the construction companies can form the basis for the investors to choose best buy for equity shares of a particular company at a point of time based on past performances. The flow of fund to construction sector through corporate sector has not been to the desired level due to over regulation, segmentation and compartmentalisation stunting its growth. "Different players live with different P/E. If one were advising a conservative person, one would be more inclined to catch stock between a P/E ratio of 5 and 8. If the client was willing to take his chances, then between 9 & 13 would have sufficed. Above 14 the stocks are one's enemy". 57 Hence the construction companies' strategy to create an atmosphere of a free and unobstructed flow of fund from the investors by keeping up the P/E ratio above 5 through better managements of resources, growth through affordability to the users on account of lower cost of construction.

3.10. DIVIDEND ANALYSIS :-

The level of dividend is a key factor which leads share holders and potential investors to determine the firm's share value in the market place. If there is decrease in dividends, the firm's asset base is increased. Thus it is imperative to overview the dividends declared by the company.

3.11. GROWTH ANALYSIS AND DEDUCTIONS :-

(i) From the Dividend Profile in Table 3.4, the growth (annual) has been nil from the year 1981 to 1984 with a decline during 1986. The percentage of dividend on equity share has been consistently over 42% throughout inspite of vagaries in the pre-tax Profit. The compound growth rate of dividend as on March '91 stood at (+) 7.49%

(ii) The company has maintained stability in dividend pay out, which benefitted the share holders. There has been more than 10% of pre-tax profit, as pay out as dividend during 1981, 1986, 1988- 89 to 1990-91 (5 years out of 10 years considered) and less than 10% during the balance period. Hence there appears to be no uniformity in the long run average pay out ratio, (i.e.) the % of earnings which firms pay out as dividend. The percentage of dividend on equity shares has been attractive. The transfer of pre-tax profit to general reserve in the initial period from 1981 has been on the order from 32.20% to 19% till 1985. From 1987 to 1991, the % has been from 38% to 59%. During 1986, it has been low as 7.71% (ie) less than 10.64% transfer to dividend. These details are tabulated in Table 3.4 and Exhibit '3.3'
3.12. GORDON MODEL FOR ESTIMATING FUTURE DIVIDENDS :-

This method is based on the assumption that the value of a share is the present value of all anticipated dividends, which will give over an indefinite time horizon. The company is viewed as a going concern with an infinite life. "Assuming the most recent dividend, and that 'g' is the growth rate in dividend,

\[ P_0 = \frac{D_1}{K_e - g} \]  or  \[ K_e = \frac{D_1}{Po} + g \]

The compound growth rate has been worked out based on the formula

\[ P_1 = P_0 (1+r)^n \]

where

- \( P_0 \) = Dividend in the base year
- \( P_1 \) = Dividend in the year under consideration
- \( r \) = Compound growth rate.
- \( n \) = number of years from base year to the year considered.

3.13. ANALYSIS :-

\[ K_e = \frac{D_1}{Po} + g \]

From table 3.4

\( g \) = annual rate of growth in dividends.

\( = \) compound rate of growth in 1990-91=7.49%

\( K_e \) = the risk adjusted rate of return expected on equity shares.
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\[ D_1 = \text{the per share dividend expected in March} \]

\[ '92 = \text{Rs. 4.50 (declared by the company)} \]

\[ P_0 = \text{Dividend of the base year at the present market price} = \text{Rs.50/-} \]

\[ Ke = \frac{4.50}{50} + 0.0749 = 0.1649 \]

Risk adjusted value rate of return expected on equity share

\[ = 16.49\% \]

3.14. DEDUCTIONS :- The cost of equity shares is 16.49%. This means that risk adjusted rate of return expected on equity shares is more than the present Bank interest rate 10% on the assumption that the value of the share is the present value of all anticipated dividend over an indefinite period of time.

3.15. IMPLICATIONS FOR MANAGEMENT :- The dividend distribution is one of the attentions required for checking the source and application of funds in any company along with the company's ability to service its debts, payments of taxes as to know whether the company has generated sufficient cash to replenish its capital and invest for future growth. Enlightened investors such as FI & FII will tend to avoid the risk and put a higher premium on current as opposed to future capital gains. This "bird-in-the-hand-" argument suggests that the construction firm's dividend policy for stability and long run dividend pay out ratio, has to take the investors overwhelming inclination factor to reduce their uncertainty. An articulated and periodically monitored dividend policy has to take place in the minds of the construction industry management to attract much needed funds at lower cost.