CHAPTER-I

INTRODUCTION
INTRODUCTION

In order to carry out its normal business activities, every industrial organization must have adequate amount of capital at its disposal. The capital is regarded as the life blood of an organization and available in a limited quantity, an industrial organization must acquire and spend the same in a planned and systematic manner. The size of capital and its composition affects not only the profitability, but also the value of the company. Many of the companies have become sick because of either redundancy or excessive capital employed. The capital structure affects cost of capital, return, control, risk and firm's value in corporate form of organization. Unsound capital structure may cause various problems for the management.¹

Financial management considers wealth maximization as the main objective of a firm. For achieving this objective, we have to take three major decisions as functions of finance, i.e. investment, financing and dividend decisions. The investment decision relates to the selection of assets in which funds will be invested by a firm. The finance decision is concerned with the selection of right mix of debt and equity in its capital structure. The third decision is related to the dividend policy of a firm. Needless to say, the dividend decision is based on the success of the first two decisions, i.e. the investment and financing decisions.²

Because of the above discussed importance of the capital, the important areas related to it, viz., financing pattern and value of the firm are selected for the study. Capital structure, cost of capital and value of the firm play a vital role in the real life of an enterprise. Capital structure decision of an enterprise affects the cost of capital through the risk complexion and ultimately the value of enterprise. So, financial manager should try his best to minimize the overall cost of capital by optimizing the capital structure decision and maximize the value of an enterprise. The cost of capital can be minimized and value of an enterprise can be maximized by the
judicious mixture of the different components of capital. This is, generally, applicable in the private sector enterprises provided that there is an existence of an optimal capital structure. For, the concept of ‘optimal capital structure’ itself is the most contentious issue in the finance literature since the publication of the Modigliani and Miller’s seminal works in 1958 till now. Solomon has stated an optimal financial structure succinctly and it would not be out of place to quote his few sentences which run as follows:

“The advantage of having an optimal financial structure, if such an optimum does exist, is two fold. It maximizes the value of the company and hence the wealth of its owners, it minimizes the company’s cost of capital which in turn, increases its ability to find new wealth creating investment opportunities. We can also look at these same advantages from the social point of view. An optimal financial structure makes better use of society’s fund of capital resources, and thus, it increases the total wealth of society.”

Capital structure is the product of the market discipline and optimal capital structure is based on the value of an enterprise. The value of an enterprise is based on the prevailing capital market and prices of the securities of an enterprise. The price of securities is the function of the expected income and required rate of return. Further, required rate of return of investors is the function of risk free rate of returns and risk premium required to compensate the risk involved in the investment. In most of the developing countries, capital structure is not the product of market discipline and they are the outcome of the deliberate decisions of the concerned government agencies. Capital structure is essential to boost up the moral of both management and work forces by making management more cost conscious, and cut down the unhealthy dependence on government.

The present study is an attempt to probe the relationship of capital structure with cost of capital and value of the firm. It is an intensive probe limited only to a few firm in three selected industries, viz., automobile, chemical and engineering.
Objectives:

The specific objectives of the study are as under:-

1. To examine the financing pattern in the use of various sources of funds.
2. To find out the capital structure practices of firms in regard to proportion of funds maintained between owned funds and borrowed funds which is known as debt equity ratio.
3. To assess the cost of capital of various sources of funds.
4. To ascertain the value of the selected firms.
5. To study the affect of debt equity ratio on the cost of capital and value of the firm.
6. To verify on the basis of research finding the applicability of various capital structure models.

Hypotheses:

The study proposes to test the following hypotheses:-

1. Different sources of funds used for obtaining finance may not be equally popular.
2. Debt-Equity ratio may not differ over time period and among different groups of the firms.
3. Debt-Equity ratio may not affect cost of capital and value of the firm.
4. The findings of this study may not prove existing theories of capital structure.

Nature of the Study:

The present study being empirical in nature has been under taken to examine the financing pattern and their impact on the cost of the capital and value of the firm. The study may also point out the relevance of prevailing capital structure theories.
Selection of sample:

Our study basically relates to the “Financing Pattern and Value of the Firm in Corporate Sector of Haryana.” As the period of our study was ten years i.e. from 1996-97 to 2005-06. It was essential for us to select only those industrial units, which existed earlier to 31st March, 1996. The total number of large and medium industrial units exist in the State of Haryana on December, 2002 were 1203 (Directory December 2002). Out of these 1203 units there were only 28 units where the investments exceeded 100 crores. Now these 28 units were grouped into five types of industries, the details of which are given in the table produced below. Out of the five industrial groups, automobile, chemical and engineering constituted the major group of industries consisting 7, 9 & 6 units respectively. So, in effect a total number of 22 units of these three industries constituted our universe. We selected three units from each of these three industries i.e. nine units in total, which is nearly 40% of the universe constitute our sample. The units were selected on the basis of stratified cum purposive technique sampling. It could have been better, if representation given to these three types of industries was proportionate instead equal but on account of practical difficulties experienced in collecting information, it was not possible to follow this principle. The units selected were as under:

Hero Honda Limited, Dharuhera, Rewari (HHL), Maruti Udyog Limited, Gurgaon (MUL), Escorts Ltd., Faridabad (EL), Ballarpur Industries Limited, Yamunanagar (Bilt), Hindustan Sanitary Ware & Industries Limited, Bahadurgarh, Jhajjar (HSIL), Asahi India Safety Glass Ltd., Jaliawas, Rewari (AIGL), Surya Roshni Limited, Bahadurgarh, Jhajjar (SRL), Jindal Strips Limited, Hissar, (JSL) and ECE Industries Limited, Sonepat (ECEL).
### TABLE: SELECTION OF SAMPLE UNITS

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Type of Product</th>
<th>Total units</th>
<th>Universe</th>
<th>Sample</th>
<th>Percentage of Sample Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Automobile Product</td>
<td>7</td>
<td>7</td>
<td>3</td>
<td>42.86</td>
</tr>
<tr>
<td>2.</td>
<td>Chemical Product</td>
<td>9</td>
<td>9</td>
<td>3</td>
<td>33.33</td>
</tr>
<tr>
<td>3.</td>
<td>Engineering Product</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>50.00</td>
</tr>
<tr>
<td>4.</td>
<td>Electric Product</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Others</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>28</strong></td>
<td><strong>22</strong></td>
<td><strong>9</strong></td>
<td><strong>40.90</strong></td>
</tr>
</tbody>
</table>

Source: A Directory of Large and Medium Industrial Units of Haryana – 2002.

**Collection of data:**

The study was mainly related to secondary data. The data for this study was collected from the annual reports of respective companies (i.e. 1996-97 to 2005-06). The data was collected from the corporate database (Prowess) of the Centre for Monitoring Indian Economy (CMIE), Directory of Large & Medium Industrial Units of Haryana 2002. The published information available in books and journals related to the subject has also been used when found necessary for the purpose.
Analysis Strategy or Tool of Analysis:

The analysis has been carried out separately sector-wise viz., automobile, chemical and engineering groups as well as in aggregate of all enterprises together. The data have been analyzed through various types of accountings and statistical tools. Statistical techniques such as arithmetic mean, standard deviation, coefficient of variation, test of significance, (‘t’ test of mean), trend indices, coefficient of correlation (r), ‘t’ test of correlation, coefficient of determination ($r^2$) and variance analysis (‘F’ test) have been applied. The use all these techniques at different places has been made in the light of nature and suitability of data available and requirement of analysis.

Ratio Analysis:

Ratio analysis is regarded as an important tool in analyzing the financial statement of companies. A ratio is defined as “The indicated quotient of two mathematical expressions” and as “the relationship between two or more things.”

Arithmetic Mean:

Arithmetic mean gives a single value to describe the whole data. It has been calculated by adding the value of all observations and dividing it by the number of observations. Symbolically:

$$\overline{X} = \frac{X_1 + X_2 + X_3 + \ldots + X_n}{N} \quad \text{or} \quad \frac{\sum X}{N}$$

Where $\overline{X}$ = Arithmetic mean
$\sum X$ = Sum of all the values of the variable X, i.e. $X_1, X_2, X_3, \ldots X_n$

N = Number of observations.
**Co-Efficient of Variation:**

Co-efficient of variation is a relative measure of dispersion. The measure of dispersion gives an idea of the extent to which the data are spread out or scattered. Among the various measures of co-efficient of variation one developed by Karl Pearson is the most common and this is used in this study. Symbolically,

\[
C.V. = \frac{S}{\bar{X}}
\]

Where \( C.V. \) = co-efficient of variation.
\( S \) = standard deviation defined as
\[
S = \sqrt{\frac{\sum (X-\bar{X})^2}{N}}
\]

However in this study while computing the co-efficient of variation, the standard deviation (s) has been derived by taking number of observation (n-1).

**‘T’ Test of Significance:**

In order to determine whether the mean of a sample deviates significantly from population mean, the ‘t’ values have been computed along with \( \bar{X} \) and \( \sigma \) values for different variables. The formula for calculating ‘t’ value is as under:

\[
t = \frac{\bar{X} - \mu}{\sigma / \sqrt{N}}
\]

Where \( \bar{X} \) =Mean
\( \mu \) = Population Mean
\( \sigma \) = Standard deviation of the sample with size \( N \)

If the calculated value of ‘t’ exceeds the table value at desired level of confidence, this shows that difference between \( \bar{X} \) and \( \mu \) is significant. On the other hand, if the calculated value of ‘t’ falls short of table value at a desired level of confidence, it will show, that the difference between \( \bar{X} \) and \( \mu \) is not statistically significant i.e., the sample distribution closely resembles population distribution.
Co-efficient of Correlation:

A simple correlation is a numerical expression of relationship between two variables i.e., X and Y, it is defined as:

\[
r = \frac{NXY - (\Sigma X)(\Sigma Y)}{\sqrt{\left(N\Sigma X^2 - (\Sigma X)^2\right)\left(N\Sigma Y^2 - (\Sigma Y)^2\right)}}
\]

Where \( r \) = Co-efficient of correlation,
\( N \) = Number of observations,
\( \Sigma XY \) = Sum of product of two variables X and Y,
\( \Sigma X \) = Sum of variables X.
\( \Sigma Y \) = Sum of variables Y.
\( \Sigma X^2 \) = Sum of square of variables X.
\( \Sigma Y^2 \) = Sum of square of variables Y.

The correlation co-efficient calculated as such measures the degree of relationship between two variables but it does not necessarily imply functional relationship. One very convenient and useful way of interpreting the value of \( r^2 \) is the value of \( r^2 \), which is called co-efficient of determination. The co-efficient of determination explains the variations in dependent variable caused by independent variable. Thus before coming to a conclusion, about the extent of relationship between two variables, the use of \( r^2 \) is very much useful.

Where there are major fluctuations in any one or two years and product moment correlation has not given very reliable results the concurrent deviation method has been applied.

\[
r_c = \pm \frac{\sqrt{2c-n}}{\pm \sqrt{n}}
\]

Where, \( r_c \) = Co-efficient of Concurrent Deviations,
\( c \) = Number of concurrent deviations or Number of positive signs obtained after multiplying \( dx \) with \( dy \);
\( n \) = Number of pairs of observations minus one.

Further in order to test the significance of correlation between two variables, ‘t’ test has been applied. Our null hypothesis here is that the correlation co-efficient of population is zero, i.e. the variables in the population are uncorrelated. The ‘t’ value for ‘r’ is:

\[
t = \frac{r}{\sqrt{\frac{N-2}{1-r^2}}}
\]
Where $r$ = Co-efficient of correlation

t is based on (n-2) degree of freedom.

If the calculated value of $t$ exceed $t_{0.05}$ for (n-2) degree of freedom we say that the value of $r$ is significant at 5 per cent level. If $t$ is less than $t_{0.05}$, the data are consistent with the hypothesis of an uncorrelated population.

**Analysis of Variance:**

The analysis of variance, one of the most important tools of statistical analysis has been developed to test whether the mean values of several samples have significant differences or not. The formula for its computation is as under:

**Analysis of Variance (ANOVA TABLE)**

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>Degree of Freedom</th>
<th>Mean sum of Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Row</td>
<td>$\sum (\sum Xr)^2 - T^2 = S_1^2$</td>
<td>(r-1)</td>
<td>$S_1^2 (r-1)$</td>
<td>$F_1 = \frac{S_1^2}{S_3^2}$</td>
</tr>
<tr>
<td></td>
<td>$\frac{\sum (\sum Xr)^2}{N_t}$</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column</td>
<td>$\sum (\sum Xc)^2 - T^2 = S_2^2$</td>
<td>(c-1)</td>
<td>$S_2^2 (c-1)$</td>
<td>$F_2 = \frac{S_2^2}{S_3^2}$</td>
</tr>
<tr>
<td></td>
<td>$\frac{\sum (\sum Xc)^2}{N_c}$</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>SST-( $S_1^2 + S_2^2$ ) = $S_3^2$</td>
<td>(c-1)</td>
<td>$S_3^2 (c-1)$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$\frac{SST-( \sum X_1^2 + \sum X_2^2 + \ldots \sum X_n^2) - T^2 = TSS}{(r-1)}$</td>
<td>N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$9$
Trend Indices:

In order to compute the index of change in a variable, the following formula has been used:

\[ I_t = \frac{Y_t}{Y_0} \times 100 \]

Where \( Y_t \) = the value of the variable in the year \( t \) for which index is to be computed.
\( Y_0 \) = the value of the variable in the base year.

Period of Study:

The period of study is from 1996-97 to 2005-06. A period longer than ten years could have been better to draw out more reliable conclusions, particularly on the basis of time series analysis; however, we restricted ourselves to ten years period due to non-availability of information for a period longer than this.

Expected contribution from the Research:

The study may be useful to the companies in planning the capital structure and make change in the capital structure so as to enhance the value of the firm.

Limitations of the Study:

The generality of this research is restricted due to certain limitations. Most of these limitations are off shoots of the self-imposed restrictions during the process of research for keeping research within manageable limits.

1. The period of study is restricted to 10 years only due to non-availability of information for a longer period.
2. The size of sample could have been larger for drawing better results.
3. In case where industry figures data is not available, the aggregate of all the sample units from that industry will be representing the industry.
Plan of the Study:

The whole study is divided into seven chapters as under:

First Chapter: ‘Introduction’ deals with the nature of problem, objectives, hypotheses, research design, period of study, limitations and chapter scheme of the study.

Second Chapter: Consists of the review of the existing literature on the subject.

Third Chapter: ‘Conceptual Framework’ discusses the meaning attached to the various terms like sources through which funds can be raised, the cost of specific source of funds, weighted average cost of capital (WACC), debt-equity mix and relationship between cost of capital and value of the firm.

Fourth Chapter: ‘Financing Pattern of Funds’ analyses the growth pattern of various sources of long term funds (i.e. equity share capital, reserve and surplus, shareholders funds and debt capital); composition of each specific source in the total long term funds and capital mix i.e. debt-equity ratio.

Fifth Chapter: ‘Determination of Cost of Capital’ deals with the calculation of cost of debt (Kd) before tax, cost of debt (Kd) after tax, cost of equity (Ke), WACC (Ko) before tax and WACC (Ko) after tax.

Sixth Chapter: ‘Capital Structure, Cost of Capital and Value of the Firm’ deals with the relationship of cost of debt (before tax), cost of debt (after tax), cost of equity, WACC (before tax), WACC (after tax), value of the firm with debt equity ratio.

Seventh Chapter: ‘Conclusions’ major findings and suggestions deals with important findings of the study and suggestions submitted for improvement.
REFERENCES


