

## CHAPTER - 3

### RESEARCH DESIGN

CHAPTER CONTENTS		
SR. NO	TOPIC	PAGE NO.
3.1	Introduction	67
3.2	Hypotheses	68
3.3	Data Source and Sample	69
	3.3.1 Meaning of Foreign Direct Investment Companies	69
	3.3.2 Data Collection	70
3.4	Methodology Adopted	73
	3.4.1 Methodology Followed for Analyzing the Trends in Capital Structure of FDI Companies in India	73
	3.4.2 Specification of the Model for Company Level Study to Examine the Determinants of Capital Structure	75
	3.4.3 Specification of the model for Determinants of Capital Structure for Industry-Wise Analysis	81
3.5	Dependent and Independent Variables Defined	81
	3.5.1 Measures of Capital Structure	81
	3.5.1.1 Short Term Debt Ratios	82
	3.5.1.2 Long Term Debt Ratios	84
	3.5.1.3 Total Debt Ratios	85
	3.5.2 Determinants of Capital Structure	88
	3.5.2.1 List of determinants selected for the purpose of studying their impact on capital structure of FDI Companies in India	89
	3.5.3 List of determinants which are not selected for the purpose Study	109
	3.5.4 Macroeconomic Factors Influencing the Capital Structure	111
	References	113

## **CHAPTER - 3**

### **RESEARCH DESIGN**

This chapter discusses the details of the research methodology followed in the study to analyze the impact of potential Determinants of Capital Structure on Capital Structure practices of FDI Companies in India (company wise and industry wise) and to study the trends in Capital Structure practices of FDI Companies in India. The hypotheses to be tested are stated in this chapter. The procedure followed for sample selection along with the period of study, the statistical tools and techniques adopted for the analysis are discussed in detail. The measures of Capital Structure employed in the study have been discussed and defined. The chapter provides a theoretical background of the various Determinants that influence the Capital Structure decision of a firm. The Determinants selected for the purpose of studying their impact on Capital Structure of FDI Companies in India have been listed and the indicators for the Determinants employed in the study have been defined. The chapter also lists the Determinants of Capital Structure which are not selected for the study.

### **3.1 Introduction**

The importance of financing decision of private corporate sector of India cannot be overemphasized. The financing decision of corporate companies has implications not only on the health of their own business thereby affecting the value of the company but also, for the entire economy both in terms of economic growth and employment.

Efforts are being made by the Indian government to attract large FDI flows in India and one of the ways is encouraging foreign private equity participation in Indian companies. The companies having Foreign Direct Investment will be referred to as FDI Companies in India in this study and the exact definition of FDI Companies has been mentioned in Section 3.3 in this chapter. Throughout this study, the terms 'company' and 'firm' have been used interchangeably. Considering their importance in the Indian economy particularly in the changed globalised environment, an attempt has been made in this study to examine the financing practices of such companies which will provide considerable insight into the preferred choice of their financing

mix. The study attempts to focus on Determinants of Capital Structure of FDI Companies in India and aims to analyze the impact of various Determinants on the Capital Structure of the selected group of companies with Foreign Direct Investment. On the basis of available literature and existing theories of Capital Structure and keeping in view the results of related research studies, (Refer Section 3.5.2), a list of relevant determinants is prepared. An attempt is made in the first step to analyze the impact of independent variables in general on Capital Structure of selected group of companies. In the second phase, an attempt is made to examine the difference, if any in the Determinants of Capital Structure grouping the companies into major industry groups.

### 3.2 Hypotheses

The objectives of the present study have been stated in Chapter-1, Section-1.4. Keeping in view the objectives of the study, the study aims to test the following null hypotheses:

**To study the time trends in capital structure of FDI Companies in India:**

**H<sub>01</sub> :** No significant linear trend is observed in Debt Ratios of FDI Companies over a period of time. The Debt Ratios of FDI Companies do not change with passage of time.

**To study industry-wise time trends in capital structure of FDI Companies in India:**

**H<sub>02</sub> :** No significant linear trend is observed in industry-wise Debt Ratios of FDI Companies over a period of time. The industry-wise Debt Ratios of FDI Companies do not change with passage of time.

**To study the impact of the independent variables (Determinants of Capital Structure) on the Capital Structure of FDI Companies in India:**

**H<sub>03</sub> :** There is no significant impact of the Size of a company on its Debt Ratios.

**H<sub>04</sub> :** There is no significant impact of the Profitability of a company on its Debt Ratios.

**H<sub>05</sub> :** There is no significant impact of the Collateral value of assets of a company on its Debt Ratios

**H<sub>06</sub> :** There is no significant impact of the Business Risk (Volatility) of company's earnings on its Debt Ratios.

- H<sub>07</sub>** : There is no significant impact of the Growth Rate of a company on its Debt Ratios.
- H<sub>08</sub>** : There is no significant impact of existence of Non- Debt Tax Shields of a company on its Debt Ratios.
- H<sub>09</sub>** : There is no significant impact of the Debt Service Capacity of a company on its Debt Ratios.
- H<sub>10</sub>** : There is no significant impact of Age of a company on its Debt Ratios.
- H<sub>11</sub>** : There is no significant impact of Dividend Payout of a company on its Debt Ratios.
- H<sub>12</sub>** : There is no significant impact of Liquidity of a company on its Debt Ratios.
- H<sub>13</sub>** : There is no significant impact of Net Exports of a company on its Debt Ratios.
- H<sub>14</sub>** : There is no significant impact of Cost of Borrowing of a company on its Debt Ratios.
- H<sub>15</sub>** : There is no significant impact of Cost of Equity of a company on its Debt Ratios.
- H<sub>16</sub>** : There is no significant impact of Uniqueness of a company on its Debt Ratios.

**To identify the industry-wise Determinants of Capital Structure of Foreign Direct Investment Companies in India**

- H<sub>17</sub>** : There is no significant impact of the Determinants of Capital Structure- Size, Profitability, Collateral Value, Volatility, Growth, Non-Debt Tax Shields, Debt-Service Capacity, Age, Dividend Payout, Liquidity, Net Exports, Cost of Borrowings, Cost of Equity and Uniqueness on Debt Ratios of FDI Companies affiliated to a particular industry group.

### **3.3. Data Source and Sample**

**3.3.1 Meaning of FDI Companies:** The present study relates to, “Determinants of Capital Structure - A Study of FDI Companies in India”. As per the Balance of Payments Manual<sup>1</sup>, “Direct investment enterprise is an incorporated or unincorporated enterprise in which a direct investor, who is resident in another economy, owns 10 per cent or more of the ordinary shares or voting power (for an incorporate enterprise) or the equivalent (for an unincorporated enterprise)”. This definition is used as the base for sample selection criterion in this study.

“FDI is defined as a cross-border investment in which a resident in one economy (the direct investor) acquires a lasting interest in an enterprise in another economy (the direct investment enterprise). The lasting interest implies a long-term relationship between the direct investor and the direct investment enterprise and usually gives the direct investor an effective voice, or the potential for an effective voice, in the management of the direct investment enterprise. By convention, a direct investment is established when the direct investor has acquired 10 percent or more of the ordinary shares or voting power of an enterprise abroad. FDI does not comprise a “10 percent ownership” (or more) by a group of “unrelated” investors domiciled in the same foreign country - it must be one investor or a “related group” of investors”, Report of CMCG group (2003)<sup>2</sup>.

**3.3.2 Data Collection:** Using the above definitions of a ‘Direct Investment Enterprise’ as the base for sample selection, the data for the research is obtained from PROWESS Database maintained by Center for Monitoring Indian Economy (CMIE) (updated up to 26<sup>th</sup> June, 2007). The database gets updated on regular basis and hence the total number of companies keeps on changing. Similarly the number of listed companies also keeps on changing as and when the database is updated.

1. **First step:** Table 3.1 shows the sample selection procedure. Out of the total 9918 (the number keeps on being updated /changed) companies representing various industries existing as on 26<sup>th</sup> June, 2007, the number of listed companies (listed on various stock exchanges in India) as on 26<sup>th</sup> June, 2007 was found out to be 6114. Prowess gives information about listing as on the current date. There is no provision whereby one can find out how many companies have been listed as on eg. 31/03/2006. So first a list of listed companies existing as on 26<sup>th</sup> June, 2007 is obtained (6114 companies).
2. **Second Step:** Out of these 6114 companies listed companies, those having 10% *or more of Foreign promoter's share in equity holding existing as on 31/03/2007* were selected (375 companies). These 375 companies represent FDI Companies.
3. **Third Step:** Out of these 375 companies, only those companies having audited financial information available throughout the period starting from - 31<sup>st</sup> March, 1991 to 31<sup>st</sup> March, 2006 (16 years) were selected. Thus, there were 153 Foreign Direct Investment companies in India as sample.

Table 3.1 Sample Selection*					
Sr. No	Industry	Total Companies existing as on 26th June, 2007	Listed companies as on 26th June, 2007	FDI companies existing as on 31st March, 2007	Companies having data from 1990-91 to 2005-06
1	Food	774	472	21	14
2	Textiles	758	549	18	3
3	Chemicals	1282	885	83	39
4	Non-metallic minerals	320	224	14	5
5	Metal & Metal Products	602	389	28	7
6	Machinery	720	461	67	40
7	Transport	285	154	29	21
8	Miscellaneous Manufacturing	373	215	12	5
9	Diversified	59	46	1	Nil
10	Mining	89	42	5	2
11	Electricity	100	20	Nil	Nil
12	Services	4221	2490	90	15
13	Irrigation	2	1	Nil	Nil
14	Construction	333	166	7	2
	<b>Total</b>	<b>9918</b>	<b>6114</b>	<b>375</b>	<b>153</b>
*Prowess (CMIE Database Updated up to 26th June, 2007)					

- Some companies have accounting period of more or less than 12 months. Comparison between such companies with different accounting period is not possible. Hence to serve the purpose of accounting comparison, the data for companies which do not have a normal 12 months accounting period have been annualized to bring these companies on even platform with other companies.
- Annualization is only for items of profit and loss account. Balance sheet items are as on a particular date and hence not annualized. Whereas profit and loss account represents profit and loss for a particular period and hence items are annualized.
- The data are adjusted for those companies, which change their financial year. Such changes result in one year with missing data and the subsequent year data of more than 12 months. Following Pandey I.M (2001, page5)<sup>3</sup>, first the subsequent year data is annualized, and then the missing data is substituted by mean value.
- For screening purpose for the selection of sample, the date selected was 26<sup>th</sup> June 2007. However, later, the data was updated to include the years 2006-2007 and

2007-2008 for the sample of 153 companies. This resulted in a sample of 153 companies having data for the period from 31<sup>st</sup> March, 1991 to 31<sup>st</sup> March, 2008 (18 years).

- **For detecting outliers** – In this study, for analysis purpose, average ratios for the entire period from 1992 to 2008 have been taken. Companies reporting zero sales value for some years were excluded. Some companies reported negative Net Worth. If, the average debt ratio for a particular company was negative due to negative Net Worth in some years, such company was excluded from the sample. I N G Vyasya Bank Ltd was excluded, as it was the only bank in the entire sample. Apeejay Tea Ltd. was excluded as it was delisted in 2007.
- After removing all outliers, **the final sample was a set of 140 Listed Foreign Direct Investment companies** representing 11 industries having audited financial information available throughout the study period of eighteen years starting from 1990-91 to 2007-2008.
- Table 3.2 shows the industry-wise classification of the selected sample of 140 FDI Companies.

Table 3.2		
The Final Sample Set of 140 FDI Companies in India Representing 11 Industries		
Sr. No	Industry Classification:	No. of Companies
1	Food	11
2	Chemicals	37
3	Machinery	38
4	Transport	18
5	Services	14
6	Metal & Metal products	6
7	Non metallic minerals	5
8	Miscellaneous Manufacturing	5
9	Textiles	3
10	Construction	2
11	Mining	1
	<b>Total</b>	<b>140</b>

### **3.4 Methodology Adopted**

On the basis of available literature and existing theories of Capital Structure and keeping in view the results of related research studies, a list of relevant Determinants of Capital Structure is prepared. Based on the findings of literature review, the study aims to analyze the impact of various Determinants on the Capital Structure of the selected group of sample companies (Final sample of 140 companies) with FDI.

#### **3.4.1 Methodology Followed for Analyzing the Trends in Capital Structure of FDI Companies in India**

- 1. Trends in Debt Ratios:** To analyze the trends and direction of changes in the Capital Structure practices of 140 FDI Companies in India, various Debt Ratios (as mentioned in Section 3.5.1), along with their mean, median, standard deviation and coefficient of variation are calculated over the period of the study. The year wise mean Debt Ratios for the total sample of 140 companies and for each industry for entire study period (1991-2008) have been calculated. Along with tabular presentation of various Debt Ratios, diagrams and graphs have been used for obtaining a visual impression of trends in Debt Ratios over the sample period. Bar diagrams have been used to show the mean Debt Ratios of the sample companies. Bar diagrams have also been used for representing the financing mix adopted by the overall sample of 140 FDI Companies as well as to represent industry-wise financing mix. Line graphs have been used to indicate the trends in various Debt Ratios over time. The trends in Debt Ratios of all the industries except Mining industry are observed as Mining industry has only one company in its sample.
- 2. Time Trends in Debt Ratios:** To study the time trends in Capital Structure of FDI Companies, the 'Method of Least Squares' is applied. The 'Method of Least Squares' may be used for fitting a 'Linear Trend Model' or a 'Quadratic Trend Model'.

To examine whether Debt Ratios of FDI Companies in India exhibit a significant linear trend, the linear trend model (The simple linear regression equation) is used. Here, in linear regression analysis, regressions of the selected Debt Ratios as



dependent variables and time in years as independent variables are conducted. The time period is 18 years (1990-91 to 2007-08). Time Dummies are used to denote the independent variable – (time in years) from the year 1991 to 2008. The straight line trend if any in the Debt Ratios is represented by the equation:-

$$Y = a + \beta_1 X + e$$

Where,

Y = The value of the Dependent variable (Y), what is being predicted or explained

a = Constant term of the model

$\beta_1$  = Beta, the coefficient of X, the slope of the regression line

X is the value of the Independent variable (X), what is predicting or explaining the value of Y

e = e is the error term; the error in predicting the value of Y, given the value of X

Here, in time series analysis, 'Y' represents the trend value of the debt ratio, 'X' variable represents time in years.  $\beta_1$  represents the slope of the trend line, 'a' is the computed trend figure of the Y variable when X = 0.

3. **Autocorrelation Problem:** A problem encountered in regression analysis using time series data is autocorrelation of the residuals. "When data are collected over sequential periods of time, residual at any point in time may tend to be similar to residuals at adjacent points in time. Such a pattern in residuals is called autocorrelation. When substantial auto correlation is present in a set of data, the validity of a regression model can be in serious doubt", Levine *et.al* (2003, pg.442)<sup>4</sup>. To rule out autocorrelation problem, **the Durbin-Watson (D) statistic**, a traditional test for detecting the presence of autocorrelation is used in this study. "The limits of 'D' are 0 and 4. These are the bounds of 'D'; any estimated 'D' value must lie within these limits. If there is no serial correlation (of the first-order), 'D' is expected to be about 2. Therefore, as a rule of thumb, if 'D' is found to be 2 in an application, one may assume that there is no first – order auto correlation, either positive or negative. The closer 'D' is to 0, the greater the evidence of positive serial correlation", Gujarati D (2003, page 468-469)<sup>5</sup>. 'd<sub>L</sub>' represents the lower critical value of 'D'. 'd<sub>U</sub>' represents the upper critical value of 'D'. "If 'D' is between 'd<sub>L</sub>' and 'd<sub>U</sub>', you are unable to arrive at a definite conclusion, Levine *et.al* (2003, pg.445)<sup>4</sup>.

- 4. Quadratic Trend Model:** The results of 'Linear Trend Model' along with 'd' statistics for each debt ratio are observed. However, in some Debt Ratios, the problem of first order autocorrelation is detected, which can be due to specification bias in the model, that is, the ratio actually follows the non-linear trend rather than linear trend. To take care of this, the following 'Quadratic Trend Model' is also fitted.

$$Y = a + \beta_1 X + \beta_2 X^2 + e$$

Where,

Y = The value of the Dependent variable (Y), what is being predicted or explained

a = Constant term of the model

$\beta_1$  = estimated linear effect on Y (slope of the curve at origin)

$\beta_2$  = estimated quadratic effect on Y (the rate of change in slope)

X is the value of the Independent variable (X), what is predicting or explaining the value of Y

e = e is the error term; the error in predicting the value of Y, given the value of X

Both 'Linear Trend Model' and Quadratic Trend Model' are applied to find whether there is a linear trend or curvilinear trend observed in the Debt Ratios over the period of study. The results of both 'Linear Trend Model' as well as, Quadratic Trend Model' are interpreted jointly. The trends in Debt Ratios are observed for the Debt Ratios of overall sample of 140 FDI Companies together. Industry-wise trends in Debt Ratios are also observed. Five major industries are selected for observing time trends- Food Industry, Chemical Industry, Machinery Industry, Transport Industry and Services industry.

### **3.4.2 Specification of the Model for Company Level Study to**

#### **Examine the Determinants of Capital Structure:**

- 1. First Stage of Analysis- Simple Linear Regressions:** To examine the impact of various determinants (independent variables) on capital structure of a company, in the first stage of analysis, simple linear regression between each indicator of an independent variable, one at a time, with each measure of leverage (dependent variable) is conducted. This gives indications which of the indicators of independent variables are significant and are able to predict the values of dependent variable.

The simple linear regression equation used to estimate the impact of each of the indicators of explanatory variables on the dependent variable (Debt Ratio) is:

$$Y = a + \beta_1 X + e$$

Where,

Y = The value of the Dependent variable (Y), what is being predicted or explained

a = Constant term of the model

$\beta_1$  = Beta, the coefficient of X, the slope of the regression line

X is the value of the Independent variable (X), what is predicting or explaining the value of Y

e = e is the error term; the error in predicting the value of Y, given the value of X

The simple linear regression of each indicator of independent variable with each measures of dependent variable (Debt Ratio) will give an idea which of the indicators of independent variables is having significant impact on the Debt Ratio.

- **The 't' test:** To determine the existence of a significant linear relationship between the dependent (Debt Ratio) and independent variable (determinants), a hypothesis test - the 't' test concerning whether  $\beta_1$  (the slope of the regression line) is equal to zero is conducted. If the null hypothesis (mentioned in section 3.2) is rejected, one can conclude that there is evidence of linear relationship. The best and only significant predictors, which have significant impact on the Debt Ratio, where significance of 't' statistics at ( $\alpha=.05$ ), and ( $\alpha=.01$ ) is tested are selected for the next stage of analysis. This is done so because in this study several debt measures have been used along with 14 independent variables represented by 34 indicators. This step significantly reduces the number of variables entering into multiple regression equation which is the third stage of analysis.

2. **Second Stage of Analysis- Detecting Multicollinearity:** *In the second stage of analysis*, a correlation structure among various indicators of determinants is examined. Since each independent factor (determinant) has been defined in several ways and more than one indicator has been selected for some factors, multicollinearity may exist between some of them.

When two independent variables are highly correlated, they both basically convey the same information. Multicollinearity refers to a situation in which two or more

explanatory variables in a multiple regression model are highly correlated. When the correlation between two independent variables is equal to 1 or -1, perfect multicollinearity exists. When multicollinearity exists, between any two independent variables, the collinear variables do not provide new information as they essentially measure the same thing and it becomes difficult to separate the effect of such variables on the dependent variable. Multicollinearity results in increased standard error of estimates of the  $\beta$ 's and it becomes difficult to come up with reliable estimates of their individual regression coefficients and may lead to misleading results.

To detect multicollinearity, one of the options is to examine the correlation structure between all the predictors. Hence in the second stage of analysis, a correlation structure among various indicators of determinants is examined. The correlation matrix depicts significant (two tailed) correlations, significant at 5% ( $p < .05$ ) and 1% ( $p < .01$ ) levels. From the first step only significant predictors (independent variables), which have significant impact on a particular measure of the Debt Ratio, are selected and correlation among them is examined. If significant correlations exist among the selected variables, this would mean that multicollinearity exists. One of the easiest ways to tackle multicollinearity is to drop one of the collinear variables or avoid simultaneous use of collinear variables. In this study, we have selected the second option, where care is taken to avoid simultaneous use of collinear variables in the multiple regression equation.

- **Variance Inflationary Factor (VIF):** Another method of measuring collinearity is examining the **Variance Inflationary Factor (VIF)** of each explanatory variable. “The variance inflationary factor shows how the variance of an estimator is inflated by the presence of multicollinearity”, Gujarati D (4<sup>th</sup> edition, pg 351)<sup>5</sup>.

$$\text{Variance inflationary factor (VIF)} = \frac{1}{1-R_j^2}$$

Where,  $R_j$  is the multiple correlation coefficient.  $(1 - R_j^2)$  is also called as tolerance. The tolerance is the percentage of the variance in a given predictor that cannot be explained by the other predictors. When the tolerances are close to 0, there is high multicollinearity and the standard error of the regression coefficients would be inflated. “If a set of explanatory variables is uncorrelated, then  $VIF_j$  is equal to 1. If

the set is highly intercorrelated, then  $VIF_j$  may exceed even  $10^7$ , Levine *et.al* (2003, pg.538)<sup>4</sup>. Thus If  $VIF_j \geq 10$  then there is a problem with multicollinearity. Some statisticians suggest that to be on the conservative side, even if  $VIF_j$  exceeds 5, the regression model should be used with caution.

If multicollinearity exists, the variable with the largest VIF value is deleted. In this way we can make certain that multicollinearity problem, if any, among the predictors is solved. Variance inflationary factors for each multiple regression conducted in the third stage of analysis are reported in this study.

3. **Third Stage of Analysis- Multiple Regression Technique:** In the *third stage* of analysis, in this study, the impact of determinants on capital structure of companies has been analyzed by using multiple regression technique. Multiple Regression is a technique with which one can ascertain the joint effect of a set of independent variables in explaining a proportion of the variance in a dependent variable. It is an extension of simple regression technique where instead of a single explanatory variable, several explanatory variables can be used to predict the value of a dependent variable.

The multiple regression model used to estimate the impact of each of the indicators of explanatory variables on the dependent variable (Debt Ratio) is:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \dots \beta_n X_n + e$$

Where

Y = The value of the Dependent variable (Y), what is being predicted or explained.

a = Constant term of the model.

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_n$  are the coefficients of the independent variables.

$X_1, X_2, X_3$ , and  $X_n$  are the independent variables which are predicting or explaining the value of Y.

e = e is the error term; the error in predicting the value of Y, given the value of X

Since each independent variable has been defined in several ways, several combinations of these indicators with indicators of other independent variables are possible. Hence, several combinations are tried to find out the best combination which can predict the selected measure of dependent variable (Debt Ratio). Care is taken that no two indicators of same independent variable are taken together

while performing multiple regressions. Several combinations are tested and a number of test runs are conducted for each measure of dependent variable.

To conduct the statistical analysis, SPSS (Statistical Package for Social Sciences), a statistical software has been used. In this study, along with standard model where all the specified independent variables enter the regression equation at once, stepwise multiple regression method has also been used. In the standard model, since we want to observe the relationship between the entire set of independent variables and dependent variables, all the independent variables are entered by SPSS regardless of their significance levels.

- **The Coefficient of Multiple Determination ( $R^2$ )** measures the proportion of the variation in dependent variable 'Y' that is explained by a set of independent variables selected. " $R^2$  is an accurate value for the sample drawn but is considered an optimistic estimate for the population value. The adjusted  $R^2$  is considered a better population estimate and is useful when comparing the  $R^2$  values between models with different number of independent variables," George & Mallery (2006, page 203)<sup>6</sup>. Hence in this study, for multiple regression analysis, both  $R^2$  and adjusted  $R^2$  are observed, particularly when comparison are being made between two regression models that predict the same dependent variable but have different number of independent variables.
- **'t-tests'** are used to assess the statistical significance of individual  $\beta$  coefficients (regression coefficients), specifically testing the null hypothesis that the regression coefficient is zero. The rule of thumb adopted is to drop all variables not significant at the 5% level or 1% level from the equation.
- **'F test'** is used to test the significance of  $R^2$  or the significance of the regression model as a whole. It is used to test the null hypothesis that all the slopes are equal to zero. F= test statistic from an F distribution, is a function of  $R^2$ , the number of independents, and the number of cases. F is computed with k and (n - k - 1) degrees of freedom, where k = number of independent variables in the regression model. At 5 % and 1% level of significance level, if p-value is < .05, or < .01 (depending on the level of significance), then the model is considered significantly better than would be expected by chance and we reject the null hypothesis of no linear relationship of Y (dependent variable) to the independent variables.

- **'p-value'** is the observed level of significance and is the smallest level at which the null hypothesis can be rejected for a given set of data. If the p-value for one or more coefficients is less than 0.05 level of significance, then these coefficients can be called statistically significant, and it can be inferred that the related independent variables affect the dependent variable 'Y'.

**4. Stepwise Regressions:** To confirm the results of standard model of regression, stepwise regression method has been employed in this study. In the standard regression model, since we want to examine the impact of whole set of the independent variables together on the dependent variable, all the independent variables enter the regression equation at once. "An important feature of stepwise process is that an explanatory variable that has entered into the model at an early stage may subsequently be removed after other explanatory variables are considered. In stepwise regression, variables are added or deleted from the regression model at each step of model building process. The stepwise procedure terminates with the selection of a best fitting model, when, no additional variables can be added to or deleted from the last model fitted", Levine *et.al* (2003, page 542)<sup>4</sup>. In stepwise procedure, a new regression is run for each new variable that is considered to be included in the model in order to see if the variable is beneficial to the model and how beneficial it is. In this method, SPSS enters the independent variable with highest 't' statistic and continues entering these variables until there are no variable is left with 't' statistic that have significance values less than .05. The stepwise process comes to an end when the best fitting model is selected and when no more independent variables can be added or deleted or would make any significant difference to model  $R^2$ .

Since this study uses a fixed sample of 140 companies covering a span of 18 years from 1990-91 to 2007-08, to carry out multiple regressions, the values of all the independent variables and dependent variable have been calculated for each company of the sample of 140 companies for each year from 1991 to 2008. The ratios used as indicators for the dependent and explanatory variables have been calculated for each year and for each company and then are averaged over the time period of 18 years.

### **3.4.3 Specification of the model for Determinants of Capital**

#### **Structure for Industry-Wise Analysis:**

To identify the industry-wise Determinants of Capital Structure of FDI Companies in India, empirical examination based on Industry-wise classification of companies is also carried out. Same technique of analysis (Multiple regression technique) as applied for company level analysis (Section 3.4.2) has been applied to examine the impact of various determinants (independent variables) on capital structure of companies belonging to a particular industry group. Out of the final sample set of 140 FDI Companies representing 11 industries, three major industry groups having at least 15 member companies are selected for industry-wise analysis. This is necessary for having at least ten data points for conducting multiple regression analysis. This condition is satisfied for three industries: Chemicals, Machinery and Transport Industry.

### **3.5 Dependent and Independent Variables Defined**

The empirical literature on the Determinants of Corporate Capital Structure done in Chapter-2, Section II- 2.3 has revealed that, researchers have analyzed the applicability of specific determinants and their effects on the company's Debt-Equity choice. e.g., whether they are positively or negatively related to various measures of Capital Structure and researchers have interpreted the results by relating them to various Capital Structure theories.

#### **3.5.1 Measures of Capital Structure**

Based on previous studies, this study has employed variety of Long Term and Short Term Debt measures to analyze the effect of potential Determinants of Capital Structure. "Since hundreds of articles have been written about capital structure and its determinants since the 1958 paper by MM, one must be aware of the fact that different measures of Capital Structure exist, and that each Capital Structure measure itself can be measured in different ways," Song (2005,page5)<sup>7</sup>. "Given the observed differences in the composition of liabilities, before undertaking any investigation of leverage it is appropriate to define what we mean by this term. Clearly, the extent of leverage and the most relevant measure depends on the objective of analysis." Rajan & Zingales (1995, page 8)<sup>8</sup>.



The various measures of Capital Structure employed in this study are divided into three major categories- Short Term Debt Ratios, Long Term Debt Ratios and Total Debt Ratios. Bevan & Danbolt (2000)<sup>9</sup> had employed a variety of Long and Short-Term Debt components instead of using aggregate gearing measures and had found significant differences in the determinants of short term and Long Term Debt Ratios. They had also decomposed Short Term and Long Term Debt Ratios into further sub components that make up Short Term and Long Term Debt, like Trade Credits and equivalent, Short Term Bank Borrowings etc. Following Bevan & Danbolt (2000)<sup>9</sup>, various Long Term and Short Term Debt measures have been applied in this study to study the effect of Capitals Structure Determinants on these measures.

The various Capital Structure measures selected for the study are categorized into three major heads:

- a) Short Term Debt Ratios**
- b) Long Term Debt Ratios**
- c) Total Debt Ratios**

### **3.5.1.1 Short Term Debt Ratios**

Bevan & Danbolt (2000)<sup>9</sup> had analyzed several components of Short Term Debt separately. Kakani (1999)<sup>10</sup> had calculated Short Term Debt ratio as (Current Liabilities & Provisions)/Book value of equity. Previous researchers except Bevan & Danbolt (2000)<sup>9</sup> and Kakani (1999)<sup>10</sup>, have not explicitly mentioned the composition of Short Term Debt, but it is generally understood that Short Term Debt would be used mainly for funding working capital requirements. In this study, for calculation of Short Term Debt Ratios, Short Term Debt is decomposed further. Two major variants of Short Term Debt have been used:

- i) Short Term Debt (STD) = Short Term Bank Borrowings repayable in less than one year + Commercial Paper and
- ii) Short Term Debt1 (STD1) = Short Term Bank Borrowings repayable in less than one year + Commercial Paper + & Provisions

In calculation of STD, Short Term Bank Borrowings and Commercial Paper have not been considered as a part of Current Liabilities.

Short Term Bank Borrowings represent the secured as well as unsecured loans taken from banks for a period of less than twelve months. Commercial Paper is a short-term, unsecured promissory note issued at a discount to face value by companies with a minimum maturity period of 15 days and a maximum maturity of 1 year. Both are included as a part of Short Term Debt (STD) and are not treated as a part of current liability due to their explicit nature of borrowings.

The various measures of Short Term Debt Ratios are:

**1. Short Term Bank Borrowings Repayable in Less than One Year +Current Portion of Long Term Debt) / Total Assets:** Following Bevan & Danbolt (2000)<sup>9</sup> this was the first Short Term Debt measure selected. Current portion of Long Term Debt

represents the total amount of long-term debt that must be paid within the next year. This current portion of Long Term Debt along with short term bank borrowings as compared to total assets will denote the immediate risk profile of the companies and would give an idea of immediate payments a company will have to make apart from Current Liabilities.

**2. Short Term Debt / Total Assets:** Following Pandey I.M (2001)<sup>3</sup>, Bhaduri (2002)<sup>11</sup>, Bukherna *et.al* (2005)<sup>12</sup>, this Short Term Debt measure is selected as it shows how much of the assets of the company are financed through Short Term Debt funds.

**3. Short Term Debt1 / Total Assets:** This measure differs from the previous one with regards to inclusion of Current Liabilities and Provisions in calculation of Short Term Debt.

**4. Total Trade Credit & Equivalent /Total Assets:** Trade Credit and equivalent consists of Trade Credit and other Current Liabilities. This measure is not a variant of Short Term Debt but a subcomponent of STD1 and with this measure the contribution of Trade Credit and other Current Liabilities as a source of short term finance for Indian companies can be found out.

Titman& Wessel's (1988)<sup>13</sup> and Kakani (1999)<sup>10</sup> had measured Short Term Debt as a proportion to book value of equity. Hence the next measure of Short Term Debt ratio selected is:

**5. Short Term Debt / Net worth:** Since even the Short Term Debt lenders like banks or even creditors can have a prior claim or almost equal claim, equal to Long Term Debt lenders in case of liquidation of a company, their relationship with owners funds is important .

**6. Short Term Debt1 / Net worth:** This measure differs from the previous one with regards to inclusion of Current Liabilities and Provisions in calculation of Short Term Debt. This is a Short Term Debt ratio which measures the extent to which the company is using creditor funds versus their own investment to finance the business.

### **3.5.1.2 Long Term Debt Ratios**

**7. Bank Borrowings Repayable In More Than One Year/Total assets:** Following Bevan & Danbolt (2000)<sup>9</sup> this measure is selected to find whether long term bank borrowings play an important role in financing of assets of companies in India and what determinants play an important role in obtaining these loans from banks.

**8. Long Term Debt/ Total Assets:** Following Bevan & Danbolt (2000)<sup>9</sup>, Pandey I.M (2001)<sup>3</sup>, Bhattacharyya & Banerjee(2001)<sup>14</sup>, Bhaduri (2002)<sup>11</sup>, Jong *et.al* (2005)<sup>15</sup> and Bukherna *et.al* (2005)<sup>12</sup> this debt ratio is selected as it shows how much of the assets of the company are financed through Long Term Debt funds.

**9. Long Term Debt / Net worth:** Following Titman & Wessels (1988)<sup>13</sup>, Mittal & Singla (1992)<sup>16</sup>, Kantawala (1997)<sup>17</sup>, Kakani (1999)<sup>10</sup>, Garg & Shekhar (2002 )<sup>18</sup> and Gupta (2004)<sup>19</sup> this measure was selected. This is the most accepted measure of long term financial solvency of a company and expresses relationship between borrowed funds and owner's capital. This ratio shows the relative proportion of debt funds verses equity funds that make up the Capital Structure of a company. While calculating this ratio, only long term liabilities have been included.

**10. Long Term Debt / (Net worth+ Long Term Debt):** Following Rao & Lukose (2002)<sup>20</sup> and Huang & Song (2002)<sup>21</sup> this measure was selected. Here the borrowed funds are related to total capitalization (capital employed) of a company. Capital employed is basically the long term funds employed in a business which includes both

shareholders equity as well as Long Term Debt funds. This ratio indicates what proportion of capital employed of the company is made up of Long Term Debt.

**11. Long Term Debt/ Short Term Debt<sup>1</sup>:** This ratio will indicate change in the composition of debt if any over the period of study and the profile of debt financing used by Indian companies.

### **3.5.1.3 Total Debt Ratios**

**12. Total Debt / Total Assets:** Following Kakani (1999)<sup>10</sup>, Das & Roy (2005)<sup>22</sup>, Drobetz & Fix (2003)<sup>23</sup>, Bukherna *et.al* (2005)<sup>12</sup>. This measure was also employed by Rajan & Zingales (1995)<sup>8</sup>. They believed that, this measure might provide good indication of whether the firm is at risk of default any time soon. Here Total Debt includes Short Term Debt and Long Term Debt.

$$\text{Total Debt} = \text{Long Term Debt} + \text{Short Term Debt}$$

In this measure Current Liabilities and Provisions are not added to Total debt.

**13. Total Liabilities (Non Equity) / Total Assets:** This measure differs from earlier measure as in this measure; Current Liabilities and Provisions have also been included to calculate Total Liabilities of companies. Here,

$$\text{Total Liabilities} = \text{Long term Debt} + \text{Short Term Debt} + \text{Current Liabilities} + \text{Provisions}$$

According to Rajan & Zingales (1995)<sup>8</sup>, "The broadest definition of stock leverage is the ratio of Total Liabilities over to total assets. This is a measure of what is left for shareholders in case of liquidation." Thus following Rajan & Zingales (1995)<sup>8</sup>, Bevan & Danbolt (2000)<sup>9</sup>, Bhaduri (2002)<sup>11</sup>, Drobetz & Fix (2003)<sup>23</sup>, Gupta (2004)<sup>19</sup> and Bhole & Mahakud (2004)<sup>24</sup> the measure Total Liabilities to Total assets has been selected as one of the measures of leverage. According to Rajan & Zingales (1995, page 8)<sup>8</sup>, although this is a broadest definition of leverage, this measure does not provide indication of whether the company is at risk of default any time soon, neither does it provide a correct picture of past financing choices, because it is greatly influenced by non financial factors, like Trade Credit is used for transactions purposes, and not as financing, including accounts payable may distort the level of leverage. At the same time however it was pointed out by Rajan & Zingales (1995)<sup>8</sup> that in countries, or specific classes of companies who use Trade Credit as a means of

financing, accounts payables should be included in measures of leverage. Thus following their opinion, this study has employed measures of leverage where Trade Credit as well as Accounts Payables have been included in the leverage measures and some other measures where they are excluded to project a correct picture of past financing choices by the companies.

**14. Total Debt / Net Worth:** Bhat (1980, page 453)<sup>25</sup> had argued that short term debt component is included in the ratio as, such borrowings account for a larger proportion of companies liabilities and they are continually being repaid and renewed and that Short Term Debt and Long Term Debt have considerable substitutability for each other. Here, in this measure, Total Debt includes Short Term Debt and Long Term Debt.

$$\text{Total Debt} = \text{Long Term Debt} + \text{Short Term Debt}$$

In this measure Current Liabilities and Provisions are not added to Total debt. Since this measure was calculated without adding Current Liabilities and Provisions, following variant of Total Debt ratio was selected.

**15. Total Debt / (Total Debt+ Net worth):** This measure was employed by Rajan & Zingales (1995)<sup>8</sup>, Booth *et. al* (2001)<sup>26</sup>, Huang & Song (2002)<sup>21</sup> and Drobetz & Fix (2003)<sup>23</sup>, Rajan & Zingales (1995)<sup>8</sup>, argued that the effects of past financing decisions is probably best represented by this measure.

**16. Total Liabilities / Net worth:** Garg & Shekhar (2002)<sup>18</sup>, Gupta (2004)<sup>19</sup> felt that if other liabilities are treated as debt equivalent, then these have to be added to Long Term Debt. Hence following them, after including Current Liabilities and Provisions to Total debt, this measure was selected. The difference between the measure (14) Total Debt/Net worth and this measure is only with respect of inclusion of Current Liabilities and Provisions. As Khan & Jain (4<sup>th</sup> Edi, pg 7.10)<sup>27</sup> had mentioned, "Individual items of Current Liabilities are certainly short term and may fluctuate widely, but as a whole, a fixed amount of them is always in use so that they are available more or less on a long term footing." It is also pointed out by Khan & Jain (4<sup>th</sup> Edi, pg 7.10)<sup>27</sup> that Current Liabilities have, like long term lenders, have prior right on the assets of the business and are paid along with long term lenders at the time of liquidation of the company. Considering this, it is logical to include measures

of leverage which include Current Liabilities and this measure indicates proportion of total amount contributed by outsiders to the amount provided by owners of the business. Here,

$$\text{Total Liabilities} = \text{Long Term Debt} + \text{Short Term Debt}$$

The various measures of Capital Structure (Debt Ratios), their abbreviations selected have been listed in Table 3.3.

Averages of these Debt measures over the period of study have been taken. All the Debt Ratios in this study have been measured in book values. Deb (1995, page 72)<sup>28</sup> had considered book value figures for calculation of debt as he believed that historical figures reflect the cumulative effect of funding pressures. Drobetz & Fix (2003)<sup>23</sup> had pointed out that, “The market value of equity is dependent on a number of factors which are out of direct control for the company. Therefore, using market values may not reflect the underlying alterations within the company. In fact, corporate treasurers often explicitly claim to use book ratios to avoid distortions in their financial planning caused by the volatility of market prices.”

Song (2005)<sup>7</sup> quoting Brealey and Myers (2003)<sup>29</sup> put forth the argument, “that it should not matter much if only book values are used, since the market value includes the value of intangible assets generated by for instance research and development, staff education, advertising, and so on. These kinds of assets cannot be sold with easiness, and in fact, if the company goes down, the value of intangible assets may disappear altogether. Hence, misspecification due to using book value measures may be fairly small, or even totally unessential.” Hence in this study, book value of equity has been used to compute Debt Ratios. For calculation of Debt Ratios, Net worth is defined as: (Equity Capital + Preference Capital + Reserves & Surplus – Revaluation Reserve – Miscellaneous Expense not written off)

Table 3.3			
Measures of Debt Ratios			
Sr. No	Dependent Variable ( Debt Ratios)	Abbreviation	Category
1	Bank Borrowings Repayable in Less than One Year / Total assets	STBB+CPLTD/TA	STDRatio1
2	Short Term Debt / Total Assets	STD/TA	STDRatio2
3	Short Term Debt1/ Total Assets	STD1/TA	STDRatio3
4	Total Trade Credit & Equivalent / Total Assets	TC&E/TA	STDRatio4
5	Short Term Debt/ Net Worth	STD/NW	STDRatio5
6	Short Term Debt 1/ Net Worth	STD1/NW	STDRatio6
7	Bank Borrowings Repayable in More than One Year/ Total Assets	LTBB/TA	LTDRatio1
8	Long Term Debt/ Total Assets	LTD/TA	LTDRatio2
9	Long Term Debt / Networth	LTD/NW	LTDRatio3
10	Long Term Debt / (Networth + Long Term Debt)	LTD/(NW+LTD)	LTDRatio4
11	Long Term Borrowings / Short Term Borrowings 1	LTD/STD1	LTDRatio5
12	Total Debt / Total Assets	TD/TA	TDRatio1
13	Total Liabilities / Total Assets	TL/TA	TDRatio2
14	Total Debt / Networth	TD/NW	TDRatio3
15	Total Debt/ Total Debt+Networth	TD/(TD+NW)	TDRatio4
16	Total Liabilities/ Networth	TL/NW	TDRatio5
Note: STD Ratio = Short Term Debt Ratio, LTD Ratio = Long Term Debt Ratio, TD Ratio = Total Debt Ratio			

### 3.5.2 Determinants of Capital Structure of a Firm

The basis of selection of independent variables is the existing empirical literature on Determinants of Capital Structure. The choice of variables may be based on the predictions of Capital Structure theories, as discussed in section (2.1- Review of Capital Structure Theories, chapter-2), but Booth *et.al* (2001, page99)<sup>26</sup> had pointed out that, “Empirically, distinguishing between these hypotheses has proven difficult. In cross-sectional tests, variables that describe the Pecking Order Theory can be classified as Static tradeoff or Agency theoretic framework and vice-versa”. Hence Booth *et.al* (2001)<sup>26</sup> believed that it is better to explain Capital Structure choice by using cross sectional tests and a variety of variables that can be justified using any or all of the three models. Frank & Goyal (2004, page 6)<sup>30</sup> explained that, “The theories are not developed in terms of standard accounting definitions. In order to test the theories it is necessary to make judgments about the connection between the observable data and the theory. While many of these judgments seem uncontroversial, there is room for significant disagreement in some cases.” Hence

instead of trying to select variables that determine Capital Structure on the basis of various propositions of competing Capital Structure theories, in this study, a wide variety of variables have been selected which in turn may prove predictions of any of these Capital Structure theories true in Indian context.

The following determinants had been used in previous studies on Capital Structure in India and in foreign countries. In this section, the results of earlier empirical studies have been discussed in context of various important variables to be selected for our study. Two lists are prepared. First list denotes the variables / factors / determinants selected in this study for the purpose of studying their impact on Capital Structure of FDI Companies in India. Along with the determinants, various indicators used to define the determinant and their specifications are also listed. The second list denotes factors which have not been incorporated in this study.

### **3.5.2.1 List of determinants selected for the purpose of studying their impact on Capital Structure of FDI Companies in India.**

#### **1. Size:**

It is believed that in a large firm with diversified operations, the risk of default is less, they are likely to be less susceptible to financial distress and as a result may have better access to external financing thus resulting in higher leverage. "Large multiproduct firms may be less risky than small one product firms and therefore may be able to tolerate higher debt ratios", Remmers *et.al* (1974, page 1)<sup>37</sup>. The cost of issuing debt and equity securities is also related to firm size. "Large firms may be able to take advantage of economies of scale in issuing Long Term Debt, and may even have bargaining power over creditors. So the cost of issuing debt and equity is negatively related to firm size". Huang & Song (2002, page 7)<sup>21</sup>. Their findings confirmed their belief and they found out that leverage increased with company size.

Small firms have to pay much more than large firms to issue new equity or to issue Long Term Debt and several restrictive covenants may be imposed to obtain long term loans. This suggests that small firms might prefer to use Short Term Debt rather than Long Term Debt. The relationship of leverage with size of a firm might also



depend on whether the leverage measure is based on Short Term Debt or Long Term Debt. Agency costs of debt are supposed to be lower for larger companies and hence the tradeoff theory suggests a positive relationship between size and leverage, but according to Pecking Order Theory the relationship between size and leverage is not clear. The evidence from empirical research also gives contradictory results.

Rajan & Zingales (1995)<sup>8</sup> stated that the effect of size on leverage is ambiguous as size may be an inverse proxy for the probability of bankruptcy and in that case should have a positive impact on the supply of debt but if size is a proxy for the information outside investors have, then it would increase their preference for equity relative to debt. They in their concluding remarks had stated that they could not understand why size matters as they found that larger firms had high leverage and thus had found contradictory results themselves in their study. Rajan & Zingales (1995)<sup>8</sup>, Bevan & Danbolt (2000)<sup>9</sup>, Booth *et.al* (2001)<sup>26</sup>, Pandey I.M (2001)<sup>3</sup>, Huang & Song (2002)<sup>21</sup>, Bhaduri (2002)<sup>11</sup>, Baral (2004)<sup>32</sup>, Sogorb-Mira *et.al* (2003)<sup>38</sup>, Bhole & Mahakud (2004)<sup>24</sup>, Akhtar (2005)<sup>35</sup>, Jong *et.al* (2005)<sup>15</sup> found a positive relationship between company size and leverage.

Titman & Wessel's (1988)<sup>13</sup> believed that small firms may be more leveraged than large firms and may prefer to borrow short term rather than issue Long Term Debt because of the lower fixed costs associated with this alternative. Their findings supported this belief. Song (2005)<sup>7</sup> found out that size was positively related to Total Debt and Short Term Debt ratio but was negatively related to Long Term Debt ratio. Even Chen (2003)<sup>39</sup> found negative relationship between firm's size and Long Term Debt. They felt that the negative relationship between size and Long-Term Debt may be due to the fact that large firms have better access to capital markets for equity finance because of their reputation in the markets and the attraction of the capital gains in the secondary markets.

Some studies such as Bhat (1980)<sup>25</sup>, Kakani (1999)<sup>10</sup>, Gupta (2004)<sup>19</sup> found firm size as having no significance in deciding the leverage level of firm. Thus size as a determinant of Capital Structure has been studied by many authors and has been included in this study as it is assumed that size affects the leverage of a firm.

Following Bhat (1980)<sup>25</sup>, Titman & Wessel's (1988)<sup>13</sup>, Bevan & Danbolt (2000)<sup>9</sup>, Booth *et. al* (2001)<sup>26</sup>, Manos & Green (2001)<sup>31</sup>, Pandey I.M (2001)<sup>3</sup>, Huang & Song (2002)<sup>21</sup>, Drobetz & Fix (2003)<sup>23</sup>, Baral (2004)<sup>32</sup>, Song (2005)<sup>7</sup>, Guha & Kar (2006)<sup>33</sup>, the **first measure** used to study company size is a: i) **Natural Logarithm of Sales**. Here sales represent net sales, net of indirect taxes. According to Bhat (1980, page 453)<sup>25</sup>, "Since the absolute size distributions of companies is highly skewed, i.e. there are few large companies and large number of small companies, it is appropriate to use logarithm of this variable than its absolute value". According to Levine *et.al* (2003, pg.535)<sup>4</sup>, "The logarithm transformation is often used to overcome violations to the homoscedasticity assumption". This assumption means that, "the variance around the regression line (which is the line of average relationship between Y and X) is the same across X values; it neither increases or decreases as X varies", Gujarati D (2003, page 68)<sup>5</sup>.

According to Bhattacharyya & Banerjee (2001, page 44)<sup>14</sup>, higher the firms size in terms of assets in place, the higher the debt ratio. They believed that higher the tangible fixed assets of a company, the greater would be the debt capacity as tangible fixed assets provide security (primary or collateral) in raising debt. Following Bhattacharyya & Banerjee (2001)<sup>14</sup>, the **second measure** used to study company size is a: ii) **Natural Logarithm of Gross Total Fixed Assets (net of revaluation)**. Here Gross Total Fixed Assets are net of revaluation and represent the historical cost of the asset without any adjustments for depreciation.

Following Bhaduri (2002)<sup>11</sup>, Rao & Lukose (2002)<sup>20</sup>, Gupta (2004)<sup>19</sup>, Gonenc (2005)<sup>34</sup>, Buferna *et.al* (2005)<sup>12</sup>, Akhtar (2005)<sup>35</sup>, the **third measure** used to study company size is a: iii) **Natural Logarithm of Total Net Assets**.

Here Total Net Assets mean Gross Total Assets net of cumulative depreciation, revalued assets and deferred revenue expenditure.

Hence the three indicators used to measure Size variable are:

- i) Natural Logarithm of Sales
- ii) Natural Logarithm of Gross Tangible Fixed Assets (net of revaluation)
- iii) Natural Logarithm of Total Net Assets

## 2. Profitability / Earnings Rate / Profit:

According to Pecking Order hypothesis, firms prefer to use internal funds over external funds for capital expenditure and a profitable firm will have more internal funds at its disposal than a less profitable firm. Myers (1984, page 589)<sup>40</sup> in their modified Pecking Order Theory had pointed out that, “the observed Debt Ratios will reflect the cumulative requirement for external financing-a requirement cumulated over an extended period”. Pecking Order Theory suggests negative relationship between leverage and profitability.

The results of Bhat (1980)<sup>25</sup>, Titman & Wessel's(1988)<sup>13</sup>, Rajan & Zingales (1995)<sup>8</sup>, Kantawala (1997)<sup>17</sup>, Kakani (1999)<sup>10</sup>, Booth *et.al*(2001)<sup>26</sup>, Garg & Shekhar (2002)<sup>18</sup>, Huang & Song (2002)<sup>21</sup>, Drobetz & Fix (2003)<sup>23</sup>, Frank & Goyal (2004)<sup>30</sup>, Gupta (2004)<sup>19</sup>, Baral (2004)<sup>32</sup>, Song (2005)<sup>7</sup>, Tong & Green (2005)<sup>36</sup>, Akhtar (2005)<sup>35</sup> are consistent with the Pecking Order Theory and suggest a negative relationship between profitability of a firm and Debt Ratios. Booth *et.al* (2001)<sup>26</sup> conclude that more profitable the firm, the lower the debt ratio, regardless of how the debt ratio is defined. Pandey I.M (2001)<sup>3</sup> also find out that profitability has a persistent and consistent negative relationship with all types of Debt Ratios in all periods and under all estimation methods.

As against this, according to Trade-off Theory expected bankruptcy costs decline when profitability increases whereas for a less profitable firm, more leverage will increase bankruptcy risk. This would mean that generally an unprofitable firm will avoid debt financing. Another aspect is of the deductibility of corporate interest payments, which might induce more profitable firms to finance with debt. Since higher profitability means higher debt capacity, tradeoff theory predicts positive relationship between leverage and profitability. Except some few researchers like Buferna *et.al* (2005)<sup>12</sup> who found positive relationship between leverage and profitability, most of the previous studies confirmed the pecking order hypothesis in respect to impact of profits on Capital Structure. It is assumed in this study that profitability of a firm will influence its Capital Structure.

Profitability has been measured by using five indicators. Following Bhat (1980)<sup>25</sup>, Titman & Wessel's (1988)<sup>13</sup>, Pandey I.M (2001)<sup>3</sup>, Huang & Song (2002)<sup>21</sup>,

Garg & Shekhar (2002)<sup>18</sup>, Drobetz & Fix (2003)<sup>23</sup>, Baral (2004)<sup>32</sup>, Gupta (2004)<sup>19</sup>, Song (2005)<sup>7</sup>, Tong & Green (2005)<sup>36</sup>, the first measure of profitability used is:

**i) Ratio of Profit before Interest and Tax to Total Assets: PBIT/TA (Net Assets):**

(PBIT) an indicator of a company's profitability is calculated as revenue minus expenses, excluding tax and fixed interest charges. PBIT is also referred to as "operating profit". Bhat (1980)<sup>25</sup> suggest that exclusion of fixed charges, among other things, a more appropriate measure of inter-company comparison because differences among companies in financial structure, reflected in different interest charges will not affect the ratio. As the numerator is net of depreciation, the denominator represents Total Net Assets; where to calculate Total Assets; Fixed Assets net of depreciation have been taken. This first measure is also interpreted as Return on Assets.

Several previous researchers have used several other variants of Return on Assets to denote profitability. Bevan & Danbolt (2000)<sup>9</sup>, Jong *et.al* (2005)<sup>15</sup>, Rao & Lukose (2002)<sup>20</sup> used Profit Before Interest, Taxes, Depreciation and Amortization to Total Assets as indicator to denote profitability. Kantawala (1997)<sup>17</sup> used Profit Before Tax to Total Net Assets, Manos & Green (2001) used Profit Before Tax to Book value of Total Assets and Akhtar (2005)<sup>35</sup>, Gonenc (2005)<sup>34</sup> used Net Profit to Total Assets as their profitability measure.

Hence the second variant of Return on Assets employed to measure profitability is:

**ii) Ratio of Profit before Interest, Taxes, Depreciation and Amortization to Total Assets (Gross):** Since depreciation is not deducted from profit measure in the numerator, in the denominator to calculate Total Assets, Gross Fixed Assets including depreciation have been taken and hence Total Assets are referred to as Total Gross Assets.

The third variant of Return on Assets used to denote profitability is:

**iii) Profit Before Tax to Total Assets (Net Assets):** As Profit Before tax is net of depreciation and denotes profit after charging all expenditure and Provisions except tax provision, in the denominator, to calculate Total Assets, Net Fixed Assets net of depreciation have been taken.

Following Titman & Wessels (1988)<sup>13</sup>, Kantawala (1997)<sup>17</sup>, Drobetz & Fix (2003)<sup>23</sup>, Gupta (2004)<sup>19</sup> the fourth measure of profitability is: **iv) Ratio of Profit Before Interest and Tax to Sales:** This measure is also referred to as Gross Margin on Sales.

Following Kakani (1999)<sup>10</sup> the fifth measure employed is: **v) Ratio of Profit before Interest and Tax to Capital Employed:** This measure is also referred to as Return on Capital Employed. Kakani (1999)<sup>10</sup> used PBDIT to Capital Employed (Net worth + Long term Debt) as their measure of profitability. This study has considered PBIT to maintain consistency by having denominator net of depreciation as well as the numerator net of depreciation. Here Capital Employed is calculated as:

Equity Capital + Preference Capital + Reserves & Surplus – Revaluation Reserves – Misc Expense not written off + Total Borrowings – Short Term Bank Borrowings and Commercial Paper

Bhaduri (2002)<sup>11</sup> had selected two indicators cash flow to sales and cash flow to total assets as their measures of profitability. Since information on cash flows is available in PROWESS database only since 2001 and this study needed data from 1991 to 2008, this measure has not been included in the study.

### **3. Collateral / Tangibility / Asset Composition / Asset Structure:**

The composition of a firm's assets or the type of assets owned by a firm affect the Capital Structure of a firm. Booth *et.al* (2001)<sup>26</sup> pointed out that if a firm has more tangible assets, its ability to issue secured debt is increased and the less information is revealed about future profits. They find out that more tangible the asset mix, the higher the Long Term Debt ratio, but smaller the Total Debt ratio.

If there are no assets to act as collaterals for debt, creditors may require more favorable terms and firms instead of borrowing on these strict terms, may opt for equity financing rather than debt financing. Hence most of the Capital Structure theories state that collateral value of assets (tangibility) is positively related to leverage. But as pointed out by Kakani (1999)<sup>10</sup>, collateral value may be positively related to Total Debt and Long Term Debt but collateral's effect on Short Term Debt is not clear. Song (2005)<sup>7</sup> found that tangibility had a positive relationship with Total Debt and Long Term Debt Ratios and was negatively related to

Short Term Debt Ratios. Their results supported the maturity matching principle according to which, Long Term Debt is used to finance fixed assets while Short Term Debt is used to finance non-fixed assets.

The Trade-off Theory also suggests that firms with tangible assets that can be used as collateral are expected to use more debt. Kantawala (1997)<sup>17</sup> found that asset structure had positive and significant relationship with debt-equity ratio. Huang & Song (2002)<sup>21</sup>, found that tangibility had positive effect on Long Term Debt ratio. Drobetz & Fix (2003)<sup>23</sup> found tangibility positively correlated with leverage. Frank & Goyal (2004)<sup>30</sup> concluded that firms having more collateral tend to have more leverage. According to Rajan & Zingales (1995)<sup>8</sup>, the greater the proportion of tangible assets on the balance sheet (fixed assets divided by total assets), the more willing should lenders be to supply loans, and leverage should be higher. Titman & Wessel's (1988)<sup>13</sup> had found out in their study that Debt Ratios were not related to collateral value of assets. Even Bhaduri (2002)<sup>11</sup> found that collateral value of assets was insignificantly associated leverage.

A very important aspect which needs to be pointed out is that some authors have distinguished between collateral and tangibility affect. Garg & Shekhar (2002)<sup>18</sup> used asset composition and collateral value of assets as two independent variables, whereas in some studies, to denote collateral effect and asset composition same variable has been used and is defined in two or more ways to denote the collateral effect or asset composition on Capital Structure. Frank & Goyal (2004, page 3)<sup>30</sup> had pointed out in their study that, "replacing collateral with tangibility is unlikely to matter. Collateral and tangibility differ in that collateral includes inventories while tangibility does not, inventories usually support short-term debt." Although in this study, collateral and tangibility effect has not been dealt separately, several indicators have been used to measure collateral effect and one of them also measures the proportion of inventory to total assets, so both the effects would be reflected.

Following Mittal & Singla (1992)<sup>16</sup>, Kantawala (1997)<sup>17</sup>, Bevan & Danbolt (2000)<sup>9</sup>, Pandey I.M (2001)<sup>3</sup>, Huang & Song (2002)<sup>21</sup>, Garg & Shekhar (2002)<sup>18</sup>, Rao & Lukose (2002)<sup>20</sup>, Drobetz & Fix (2003)<sup>23</sup>, Gupta (2004)<sup>19</sup>, Gonenc (2005)<sup>34</sup>,

Song (2005)<sup>7</sup>, Buferrna *et.al* (2005)<sup>12</sup>, Akhtar (2005)<sup>35</sup>, Guha & Kar (2006)<sup>33</sup> the first measure of Tangibility or collateral factor is:

i) **Fixed Assets (Net) / Total Assets (Net)**: Here in the numerator, Fixed Assets denote Net Fixed Assets, net of depreciation and hence denominator also denotes Total Net Assets.

Kantawala(1997)<sup>17</sup> had also employed Gross Fixed Assets to Total Gross Assets along with the Fixed Assets(Net)/Total Assets(Net) measure, hence following Kantawala(1997)<sup>17</sup>, the next measure employed to denote collateral effect is:

ii) **Gross Fixed Assets / Total Gross Assets** where Gross Fixed Assets in the numerator refer to Fixed Assets before depreciation and hence denominator is taken as Total Gross Assets.

Following Kakani (1999)<sup>10</sup>, Garg & Shekhar (2002)<sup>18</sup>, Bhole & Mahakud (2004)<sup>24</sup>, Gupta (2004)<sup>19</sup> the next measure employed to denote collateral value of assets is:

iii) **(Net Fixed Assets + Inventory + Accounts Receivable) / Total Assets (Net)**

According to Bhaduri (2002, page 202)<sup>11</sup> values of the collateral assets can depend on maturity structure of the debt instruments. Hence instead of using an aggregate indicator, Bhaduri (2002)<sup>11</sup> had employed separate measures as Land & Building / Total Assets, Plant & Equipment / Total Assets and Inventories/Total assets as a measure for collateral value. Following Bhaduri (2002)<sup>11</sup>, the next three measures to denote collateral effect are:

iv) **Land & Building (Gross) / Total Gross Assets**

v) **Plant & Equipment (Gross)/ Total Gross Assets**

vi) **Inventories / Total Assets (Net)**

#### **4. Volatility / Risk (Earnings Volatility) / Business Risk / Bankruptcy costs / Variability / Financial Distress:**

It is said that certainty and regularity of future income of a firm influences its Capital Structure. According to Mittal & Singla (1992, page 300)<sup>16</sup>, "Business risk depends on a number of factors which include demand variability, selling price variability, input price variability, and level of fixed costs. Unstable earnings, whatever their cause may be, make the option of debt capital dangerous and the

company becomes less attractive to the lenders.” According to Trade-off Theory, firms which have variable earnings will use lower debt to avoid risk of bankruptcy, as volatile cash flows increase the chances of default. This suggests negative relationship between earnings volatility and leverage. The Pecking Order Theory also predicts the same negative relationship.

Gonenc (2005, page 51)<sup>34</sup> pointed out that, “fluctuation in profits is used to measure bankruptcy risk. A firm with high level of bankruptcy risk is not expected to have a high level of debt”. Bhat (1980)<sup>25</sup> found negative relationship between business risk and leverage. Kakani (1999)<sup>10</sup> found significant negative relationship between volatility of a firm and short term and Total Debt Ratios. Pandey I.M (2001)<sup>3</sup> found earnings volatility to be negatively related to Long Term Debt Ratios and positively related to Short Term Debt Ratios. Huang & Song (2002)<sup>21</sup> believed that volatility or business risk is a proxy for the probability of financial distress and is expected to be negatively related to leverage. However, they found that volatility was positively related to Total Liabilities ratio and conclude that the companies with high leverage in China tend to make riskier investments. Titman & Wessel’s (1988)<sup>13</sup>, Baral (2004)<sup>32</sup> had found out in their study that Debt Ratios were not related to volatility. Ferri and Jones(1979)<sup>41</sup> also found that variation in income was not associated with leverage. Thus it is presumed that companies having high income variability or volatile incomes would resort to lower debt in their Capital Structure to avoid risks of bankruptcy.

Following Bhattacharyya & Banerjee (2001)<sup>14</sup>, Huang & Song (2002)<sup>21</sup> the first indicator selected to measure volatility was: **i) Standard Deviation of Profit before interest and tax (SD of PBIT).**

Titman & Wessel’s (1988)<sup>13</sup> employed standard deviation of the percentage change in operating income to measure volatility. Mittal & Singla (1992)<sup>16</sup>, Bhaduri (2002)<sup>11</sup> used standard deviation of percentage change in profit before interest and tax as indicator for volatility. PBIT is also referred to as operating income or operating profit. Hence the second measure used to indicate volatility was: **ii) Standard deviation of percentage change in Profit before interest and tax-(SD of %change in PBIT)**



Booth *et. al* (2001)<sup>26</sup> had used variability of the return on assets as a business risk proxy. They calculated return on assets as earnings before interest and tax divided by total assets. Instead of considering PBIT as the numerator, PBITDA is employed as standard deviation of PBIT is already calculated in other measures of volatility. Since PBITDA is considered in the numerator, Total Gross Assets have been considered in the denominator. Hence the next measure used to indicate volatility is: **iii) Standard deviation of Profit before Interest, Tax, Depreciation and Amortization/ Total Gross Assets (SD of PBITDA/TGA)**

Following Bhat (1980)<sup>25</sup>, Mittal & Singla(1992)<sup>16</sup>, Pandey I.M (2001)<sup>3</sup>, Garg & Shekhar (2002)<sup>18</sup>, Gupta( 2004)<sup>19</sup>, Baral (2004)<sup>32</sup>, the next indicator used to measure volatility is: **iv) Coefficient of variation in Profit before interest and tax-(  $\sigma$  PBIT /  $\mu$  PBIT)**

Following Kakani (1999)<sup>10</sup>, two measures of volatility were selected - **v) Coefficient of variation of return on capital employed-(COV of PBIT to CE) & (vi) Coefficient of variation of Return on Assets--(COV of PBIT to TA)**

## **5. Growth Rate:**

Empirical literature has provided contradictory evidences about the relationship of growth rate of a firm and its leverage. To avoid agency costs, a growing firm may issue short-term debt rather than Long Term Debt. Short-term Debt Ratios might be positively related to growth rates if growing firms substitute short-term financing for long-term financing. The association between growth opportunities and Debt Ratios may be dissimilar for short and long term forms of debt. The Trade-off Theory suggests negative relationship between growth rate of a firm and its leverage as higher growth is linked with higher bankruptcy risk. According to Titman & Wessel's (1988, page 4)<sup>13</sup>, "Growth opportunities are capital assets that add value to a firm but cannot be collateralized and do not generate current taxable income". This suggested negative relationship between leverage and growth opportunities. Whereas the Pecking Order Theory suggests a positive relationship between growth and leverage since higher growth would mean greater need of funds and hence need for issuing debt funds.

Pandey I.M (2001)<sup>3</sup>, Bevan & Danbolt (2000)<sup>9</sup>, Kakani (1999)<sup>10</sup>, Baral (2004)<sup>32</sup> found out that growth variables have significant positive relationship with Debt Ratios. Whereas Bhat (1980)<sup>25</sup>, Titman & Wessel's (1988)<sup>13</sup>, Song (2005)<sup>7</sup> found that firms growth rate did not affect firms leverage.

It is important to point out that Rao & Lukose (2002)<sup>20</sup> had considered growth and growth opportunities as two separate variables. They had used market to book ratio to measure growth opportunities. They measured growth by using the proxy -growth rate in total assets. Huang & Song (2002, page 9)<sup>21</sup> argued that sales growth rate is the past growth experience and Tobin's Q (market to book ratio of total assets) a better proxy for future growth opportunities and they employed both these measures in their study. They found out that firms having high growth rate in the past tended to have high leverage and firms with growth opportunities in future had lower leverage.

Titman & Wessel's (1988)<sup>13</sup> had used capital expenditures over total assets, growth of total assets measured by the percentage change in total assets and research and development over sales as indicators for growth attribute. They argued that firms that generally engage in research and development generate future investments, and hence used research and development over sales as an indicator of future growth opportunities. Bevan & Danbolt (2000)<sup>9</sup> used market to book ratio as a proxy to measure growth opportunities. They found out that those companies which had high level of growth opportunities tended to utilize more long and Short Term Debt. Drobetz & Fix (2003)<sup>23</sup> found out that firms with more investment opportunities apply less leverage. In this study, growth and growth opportunities are not considered as two separate variables, as growth can be there only if growth opportunities exist and hence they are not considered as two independent variables in this study. It is presumed that growth rate of a firm will influence its Capital Structure decision.

Following Bhat(1980)<sup>25</sup>, Mittal & Singla (1992)<sup>16</sup>, Baral (2004)<sup>32</sup>, (Gupta 2004)<sup>19</sup>, the first measure of growth rate is defined as :

**i) Compound Annual Growth Rate of Total Assets-(CAGR of TA).**

Following (Kakani 1999)<sup>10</sup>,(Gupta 2004)<sup>19</sup>, Guha & Kar (2006)<sup>33</sup> the second indicator selected to measure growth rate is:

## ii) Compound Annual Growth Rate of Sales-(CAGR of Sales)

Compound Annual Growth Rate is the year-over-year growth rate of either total assets or sales over a specified period of time. The Compound Annual Growth Rate is calculated by taking the nth root of the total percentage growth rate, where n is the number of years in the period being considered. This can be written as follows: The time period in this study is eighteen years, from 1990-1991 to 2007-2008, but as growth rate is calculated from 1991 to 2008, number of years would be taken as 17 years beginning from first year 1991 until last figure as on year ending March 2008. The same formula has also been expressed by Bhat (1980)<sup>25</sup>, Mittal & Singla(1992)<sup>16</sup>. Compound Growth Rate of Total Assets or Compound Growth Rate in Sales is calculated as:

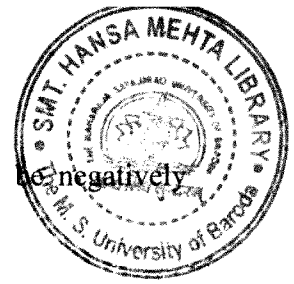
$$G_i = \sqrt[n]{\frac{(\text{Total Assets or Sales } i)_n}{(\text{Total Assets or Sales } i)_0}} - 1$$

$(\text{Total Assets or Sales } i)_n = \text{Total Assets or Sales in the terminal year 2008}$

$(\text{Total Assets or Sales } i)_0 = \text{Total Assets or Sales in the initial year 1991}$

## 6. Non - Debt Tax Shields:

In their pioneering paper on, “ Optimal Capital Structure under Corporate and Personal Taxation, DeAngelo & Masulis (1980, page 4)<sup>42</sup> wanted to show that existence of non debt tax shield such as depreciation deductions or investment tax credits are sufficient to overturn the Miller’s irrelevancy theorem. DeAngelo & Masulis (1980, page21)<sup>42</sup> predicted from their study that, “Ceteris paribus, decreases in allowable investment related tax shields (eg. depreciation deductions or investment tax credits) due to changes in the corporate tax code or due to changes in inflation which reduce the real value of tax shields will increase the amount of debt that firms employ”. Non debt tax shields and interest payments on debt both act as tax shields and this implies that existence of Non-Debt Tax Shields would mean



lower Debt Ratio for a firm. Thus Non-Debt Tax Shields would be negatively related to firm's leverage.

Empirical studies like Kakani (1999)<sup>10</sup>, Bhattacharyya & Banerjee (2001)<sup>14</sup>, Huang & Song (2002)<sup>21</sup>, Song (2005)<sup>7</sup> confirm this belief. Song (2005)<sup>7</sup> found out that NDTS had a positive effect on Short Term Debt ratio while it was negatively related to Long Term Debt ratio. Titman & Wessel's (1988)<sup>13</sup> had found out in their study that Debt Ratios were not related to non debt tax shields. It is presumed in this study that existence of Non-Debt Tax Shields will affect Capital Structure of firms.

Following Titman & Wessel's (1988)<sup>13</sup>, Huang & Song (2002)<sup>21</sup>, Drobetz & Fix (2003)<sup>23</sup>, Song (2005)<sup>7</sup>, Gupta (2004)<sup>19</sup>, Akhtar (2005)<sup>35</sup>

**i) The Ratio of Annual Depreciation over Total Gross Assets is used** as the first indicator to measure non-debt tax shields.

As stated by Bhattacharyya & Banerjee (2001)<sup>14</sup>, exporters in India enjoy significant tax concessions and following them the second indicator to measure Non-Debt Tax Shields is:

**ii) (Annual Depreciation + Export Turnover) / Total Gross Assets**

Drobetz & Fix (2003)<sup>23</sup> had also applied another indicator– the ratio of depreciation over operating profit to measure Non-Debt Tax Shields. Following Drobetz & Fix (2003)<sup>23</sup>, the next indicator used to denote Non-Debt Tax Shields is:

**iii) Annual Depreciation / Profit before Interest, Tax, Depreciation and Amortization**

## **7. Debt Service Capacity:**

According to Mittal & Singla (1992, page 300)<sup>16</sup>, “Debt Service capacity shows the relationship between a committed payment and the source for that payment. A high debt service capacity means that a firm can meet its interest burden even if earnings before interest and taxes suffer a considerable decline. Thus higher the DSC, higher should be the debt ratio suggesting a positive relationship between DSC and leverage.” According to Bhat (1980)<sup>25</sup>, higher the capacity of the firm to serve the debt, the debt ratio of the firm is likely to be higher. Baral (2004)<sup>32</sup> found out from

their results that the relationship between debt service capacity and leverage was statistically insignificant. Hence it is assumed that debt service capacity of a firm will affect the Capital Structure of a firm.

Baral (2004)<sup>32</sup> used EBIT / Interest charge during the year as the ratio to measure debt service capacity. Mittal & Singla (1992)<sup>16</sup> used (EBIT + Deprecation) / Interest ratio to measure debt service capacity. Hence following Mittal & Singla (1992)<sup>16</sup>, the ratio used to measure debt service capacity is: **i) Profit before Depreciation, Interest and Tax / Interest Payments**. Depreciation does not reflect any actual cash outflows and hence to calculate the actual amount of cash flow available for interest payments, it is added back to PBIT.

## **8. Age/Life:**

It is believed that a young company may find it difficult to raise debt capital and may resort to equity rather than debt capital as lending agencies may doubt their credit standing in the market. Hence age acts as a proxy for reputation. A mature firm which has established its credibility in the market may have easy access to debt funds thus suggesting positive relationship between age of a firm and its leverage. Guha & Kar (2006)<sup>33</sup> wanted to test if age of a firm as calculated from the date of incorporation provided a positive influence on firms attitude towards leverage thus implying high credit worthiness of a firm. They found out that the results contradicted their belief as age did not affect the choice of the debt structure of firm significantly and even if it did effect, the effect was negative indicating that higher the age of a firm, lower is the tendency to use debt as a means of finance. Bhaduri (2002)<sup>11</sup> had argued that young firms are more vulnerable to the problem of asymmetric information and are likely to use debt and avoid equity market. Garg & Shekhar (2002)<sup>18</sup> found life of a firm an important determinant of Capital Structure. Hence it is assumed that age may be an important determinant of Capital Structure.

Garg & Shekhar (2002)<sup>18</sup> & Guha & Kar (2006)<sup>33</sup> had calculated age / life of a company as number of years since establishment, that is, from the date of incorporation. Manos & Green (2001)<sup>31</sup> had employed log of age of the company since incorporation as an indicator for age. In this study the age of a company as on

31<sup>st</sup> March, 2008 is calculated from the year of incorporation and following Manos & Green (2001)<sup>31</sup>, even the log of age of company is calculated.

## **9. Dividend payout:**

Pecking Order Theory states that higher the retention, lower the need for debt capital. This indicates a positive relationship between dividend payout and leverage. Higher dividend payout ratio means lower retentions and greater need of debt funds. As opposed to Pecking Order Theory, the Trade-off Theory states that because of lower levels of debt, dividend payout might be high and this indicates negative relationship between dividend payout and leverage. “The firms, for which the dividend payout is high, will prefer low Debt Ratios since the high debt ratio magnifies the financial risk to equity shareholders associated with debt capital,” (Bhat1980, page 452)<sup>25</sup>. Their study proved this belief. Baral (2004)<sup>32</sup> found out that dividend policy did not explain the variation in the leverage ratio. Tong & Green (2005)<sup>36</sup> found positive correlation between current leverage and past dividends supporting the pecking order hypothesis. It is assumed that extent of dividend payout may affect the Capital Structure of firms.

Following Bhat (1980)<sup>25</sup>, Baral (2004)<sup>32</sup> the dividend payout of the company has been measured by:

**i) The Ratio of Cash Dividends to Earnings Available for Equity Shareholders - (Equity Dividend/Profit after Tax)**

## **10. Liquidity:**

A firm's ability to meet its short term obligations as and when they become due is evaluated by liquidity ratios. The liquidity of a firm may affect its Capital Structure in two ways. Firms with greater liquid assets may use these assets to finance their investments. In these cases liquidity is negatively related to leverage. At the same time since liquidity gives an indication of firms' ability to meet obligations, it will increase its debt capacity and thus may be positively related to leverage. Bhole & Mahakud (2004)<sup>24</sup> found that liquidity was negatively related to leverage. It is held that a firm's liquidity position may be an important determinant of Capital Structure decision.

Following Jong *et.al* (2005)<sup>15</sup>, Manos & Green (2001)<sup>31</sup>, Bhole & Mahakud (2004)<sup>24</sup>, the liquidity position of the company is measured by:

**i) The Ratio of Current Assets to Current Liabilities-(Current Assets / Current Liabilities).**

### **11. Net Exports:**

According to Kakani (1999)<sup>10</sup>, “In developing countries such as India, firms which are net exporters, have been given credit benefits such as EXIM credit facility, and forward letter of credit. This implies that firms that are net exporters may have lesser need of debt in their Capital Structure.” He had found that in liberalized era, the net exports of a firm had grown important in determining long term and Total Debt Ratios. Hence it is held that level of Net exports may be an important factor determining leverage.

Kakani (1999)<sup>10</sup>, had used the average of net exports to sales ratio as an indicator to measure the net exports level of a company. Net exports means the amount by which the total exports of a company in an accounting period exceed its imports during the same period. Following Kakani (1999)<sup>10</sup>, in this study, the indicator employed to measure the net exports effect on Capital Structure is:

**i) Net exports to Sales ratio:** Here, Net Exports = Total Exports (Total Forex earnings) Less Total Imports (Total Forex spending).

### **12. Cost of Equity:**

According to Bhole & Mahakud (2004)<sup>24</sup>, if the cost of equity increases, the firm may use more debt than equity and their findings confirmed the expected positive relationship. It is held assumed that cost of equity may affect the Capital Structure of a firm.

Following Bhole & Mahakud (2004)<sup>24</sup> the ratio selected to measure cost of equity is

**i) Dividend Payment/( Equity Share Capital + Reserves)**

### **13. Uniqueness**

Titman and Wessel's (1988)<sup>13</sup> believed that firms which produce unique or specialized products are expected to be negatively related to Debt Ratios because in

case of liquidation their workers and suppliers having specific job skills and customers may find it difficult an alternative servicing for their unique products. They had used expenditures on research & development over sales, selling expenses over sales and labour quit rates as indicators of leverage. Their results had proved their belief. Bhaduri (2002)<sup>11</sup> also used uniqueness as one of the determinants affecting Capital Structure and measured uniqueness as ratio of Research & development to sales and the ratio of selling expenses to sales as they felt such firms are likely to spend more on R&D and may incur high selling expenses to promote their unique product. They found that uniqueness of a firm was negatively related to firms leverage. Indicating that firm with unique products find it difficult to borrow because of their specific use of capital and less tangible assets. Kakani (1999)<sup>10</sup> could find uniqueness as positively related significant factor to short term and Total Debt Ratios of a firms. Hence, it is assumed that uniqueness of a firm will affect its Capital Structure.

Following Titman & Wessel's (1988)<sup>13</sup>, Bhaduri (2002)<sup>11</sup> and Song (2005)<sup>7</sup> the indicator selected to indicate uniqueness of a company is **i) Research & Development Expenditure to Sales Ratio.**

#### **14. Cost of Borrowing:**

According to Bhole & Mahakud (2004)<sup>24</sup>, when the cost of borrowing increases, the dependence on borrowed funds is likely to decline and as a result leverage ratio is expected to have negative relationship with cost of borrowing. They found that their study confirmed their belief and cost of borrowing was one of the important Determinants of Capital Structure. Hence it is assumed that cost of borrowing may influence Capital Structure of firms in this study.

Following Bhole & Mahakud (2004)<sup>24</sup>, The ratio selected to measure cost of borrowings is:

##### **i) Total Interest to Total Debt (Long Term +Short Term Debt).**

Year to year basis calculation of this ratio posed some measurement problems. It was noticed that, if some companies had zero debt or no interest payments in particular year, then the average Interest Payments / Total Debt ratio could not be



calculated. Hence, for this variable, instead of calculating each year ratios, total interest paid by a company over eighteen year sample period is divided by the Total Debt taken over the sample period.

## **15. Industry Classification:**

It is a commonly held belief that Debt Ratios vary significantly by industry. Ferri & Jones (1979, page 631)<sup>41</sup> believed that, “firms in the same industry class should experience similar amounts of business risk, because these firms produce similar products, face similar costs for material and skilled labour, and rely on similar technology.” Hence it is believed that Debt Ratios may vary significantly by industry. Das & Roy (2005)<sup>22</sup> believed that the industry in which a firm operates is likely to have a significant effect on its Capital Structure and found out that Capital Structure of firms are systematically different across industry classes. Some industries typify being high leverage industries, while at the same time some industries are known to have low Debt Ratios.

Titman & Wessel’s (1988)<sup>13</sup>, Drobetz & Fix (2003)<sup>23</sup>, Boateng (2004)<sup>43</sup>, Gonenc (2005)<sup>34</sup>, Akhtar (2005)<sup>35</sup>, Gupta (2004)<sup>19</sup>, Guha&Kar (2006)<sup>33</sup> had found out that Capital Structure of Indian firms varied across different industry classes. Frank & Goyal (2004)<sup>30</sup> had found out that firms that compete in industries in which the median firm has high leverage tend to have high leverage. Rao & Lukose (2002)<sup>20</sup>, Guha & Kar (2006)<sup>33</sup> found out that industry classification had no effect on debt structures of firms.

One of the important objectives of this study is to examine the effect, if any, of membership of an industry on the Capital Structure of a firm.

As stated in 3.31 (Data source & sample), the total sample of 140 companies has been classified in 11 industries. The Capital Structure determinants of major industry groups are studied to find out whether the impact of Capital Structure determinants of FDI Companies in India differ due to affiliation to a particular industry group. The detail methodology for studying industry affect on Capital Structure has been stated in section 3.4.3.

## 16. Time Trends:

Some researchers have studied the time-series patterns of leverage. Bevan & Danbolt (2000)<sup>9</sup> using dummy variables tried to analyze whether the relationship between gearing and company characteristics change over time to have a better understanding of the dynamics in the Capital Structure determinants. Song (2005)<sup>7</sup> wanted to investigate whether leverage shifts over time, after controlling for the other observable determinants, used time dummies to observe time specific effects. They found that the time dummies were significant and the coefficients were negative reflecting a decrease in Debt Ratios over time. Akhtar (2005)<sup>35</sup> investigated effect of time variation in leverage as well as investigated whether Capital Structure determinants are time sensitive. Akhtar (2005)<sup>35</sup> wanted to test whether the significance of each of the explanatory variables varies across years and for this individual yearly regressions were conducted. Hence one of the important objectives of this study is to analyze the time trends in Capital Structure of firms.

Several researchers have studied time variation effects on Capital Structure. Bevan & Danbolt (2000)<sup>9</sup> had analyzed the time-series dynamics in the determinants of the Capital Structure choice of listed UK companies by using annual dummy variables. Akhtar (2005)<sup>34</sup> tested the time effect on leverage as well as investigated whether Capital Structure determinants are time sensitive. This was done by conducting individual yearly regressions to show the variation in significance of explanatory variables over the years. In this study, time trends of selected Debt Ratios are studied and the detail methodology followed in analyzing the time trends in Debt Ratios is mentioned in Section 3.4.1.

In all, in this study, the impact of fourteen Determinants of Capital Structure will be studied with the help of thirty-four indicators. The definitions of all the indicators used for the determinants have been listed in Table 3.4. Table 3.4 lists the Determinants of Capital Structure along with the indicators and various abbreviations used for each indicator of the Determinants selected for the study.

Table 3.4			
Definitions of Independent Variables- Determinants of Capital Structure			
Sr. No	Determinants	Indicators	Abbreviation
1	Size	Natural Logarithm of Sales	Log of sales
		Natural Logarithm of Gross Total Fixed Assets	Log of GTFA
		Natural Logarithm of Total Net Assets	Log of TNA
2	Profitability	Profit Before Interest & Tax / Total Net assets	PBIT / TNA
		Profit Before Interest, Tax, Depreciation & Amortization / Total Gross Assets	PBITDATGA
		Profit Before Tax / Total Net Assets	PBT / TNA
		Profit Before Interest & Tax / Sales	PBIT / Sales
		Profit Before Interest & Tax / Capital Employed	PBIT / CE
3	Collateral	Net Fixed Assets / Total Net Assets	NFA / TNA
		Gross Fixed Assets / Total Gross Assets	GFA / TGA
		(Net Fixed Assets + Inventory + Accounts Receivable) / Total Net Assets	(Nfa + Inv + AR) / TNA
		Land & Building / Total Gross Assets	L&B / TGA
		Plant & Equipment / Total Gross Assets	P&E / TGA
		Inventories / Total Net Assets	INV / TNA
4	Volatility	Standard Deviation of Profit Before Interest & Tax	SD of PBIT
		Standard Deviation of Percentage Change in Profit Before Interest & Tax	SD of % change in PBIT
		Standard Deviation of Profit Before Interest, Tax, Depreciation & Amortization / Total Gross Assets	SD of PBITDATGA
		Coefficient of Variation of Profit Before Interest & Tax	COV of PBIT
		Coefficient of Variation of Profit Before Interest & Tax / Capital employed	COV of PBIT to CE
		Coefficient of Variation of Profit Before Interest & Tax / Total Net Assets	COV of PBIT to TNA
5	Growth Rate	Compound Annual Growth Rate of Total Assets	CAGR of TNA
		Compound Annual Growth Rate of Sales	CAGR of Sales
6	Non-Debt Tax Shields	Depreciation / Total Gross Assets	Depr / TGA
		Depreciation + Export Turnover / Total Gross Assets	Depr + ET / TGA
		Depreciation / Profit Before Interest, Tax, Depreciation & Amortization	Depr / PBITDA
7	Debt Service Capacity	Profit Before Interest, Tax & Depreciation / Interest payments	PBDIT / INT
8	Age	Age as on 31-03-2008	Age as on 31-03-2008
		Natural Logarithm of Age of firm	Log of age of firm
9	Dividend Payout	Equity Dividend / Profit After Tax	Equity Div / PAT
10	Liquidity	Current Assets / Current Liabilities	CA / CL
11	Net Exports	Net Exports / Sales	Net exp / Sales
12	Cost of Equity	Dividend Payment / Share Capital + Reserves	DIV / SC
13	Uniqueness	Research & Development Expenditure / Sales	R&D / Sales
14	Cost of Borrowing	Interest Payment / Total Debt	INT / DEBT

### **3.5.3 List of determinants which are not selected for the purpose study**

**1. Ownership Pattern:** The ownership pattern of any company may be composed of different groups of equity shareholders. Different groups of equity shareholders may have conflicting interests which may affect the financing mix. Many researchers have tried to find out whether the equity holding pattern affects firm's Capital Structure. Huang & Song (2002)<sup>21</sup> had found out that ownership structure affects leverage. According to Singla & Mittal (1997)<sup>44</sup>, "Due to the prevalence of mutually conflicting interest, financing mix decisions would tend to take place according to the degree of influence of each group being represented by its relative shareholdings." Rao & Lukose (2002)<sup>20</sup> found that ownership pattern was significant when leverage was measured in terms of market value.

In this study, this determinant cannot be incorporated as the sample used in the study will become biased towards one particular group of shareholders. The selected sample is composed of only those companies which have a single foreign promoter's share of more than 10% of a company's equity capital. The sample consists of only foreign direct investment companies in India hence this particular factor cannot be incorporated in the study.

**2. Regulation:** Kakani (1997)<sup>10</sup> had used this attribute to check whether regulated firms have more of longer maturity debt than non regulated firms. It was argued that managers of regulated firms (such as firms in power sector) have less discretion over future investment decisions than managers of non-regulated firms and this reduction in managerial discretion reduces the adverse incentive effect of Long Term Debt. Thus it implied that regulated firms will have more Long Term Debt. This factor could not be incorporated in the study again due to the nature of our sample.

**3. Corporate Strategy** Kakani (1997)<sup>10</sup> indicated that diversified firms will have diversified cash flows which reduce the bankruptcy risk, provide better access to capital markets and cost savings when securing debt finance. Therefore, diversified firms are likely to have more debt. Kakani (1997)<sup>10</sup> found that diversification strategy was of no significance in deciding the leverage level of firms. Akhtar (2005)<sup>35</sup> had measured diversification as the number of subsidiaries operating in overseas countries and found out that greater the level of diversification, lower the leverage. This factor

has not been incorporated in the study. Our sample set already consists of FDI Companies and measurement of diversification of business in our sample will be misleading. Hence this factor has not been incorporated in the study.

**4. Accruals/Flexibility:** Bhattacharyya & Banerjee (2001)<sup>14</sup> felt that firms with high internal accruals will have lower debt ratio. This was one of their variables to represent information cost factors. But they found out that an increase in disposable accruals over time does not imply reduction of Debt Ratios over time. Gupta (2004)<sup>19</sup> used flexibility as a variable to denote negative debt. According to Gupta (2004)<sup>19</sup>, financial flexibility is referred to as the amount of cash that firms build up over time. The Pecking Order Theory suggests negative relationship between leverage and flexibility. Myers (1984)<sup>40</sup> had first used the term financial slack which means firms try to maintain and create financial slack in the form of reserve borrowing power. However, Gupta (2004)<sup>19</sup> could not confirm to Pecking Order Theory as their results suggested a positive relationship between Debt Ratios and flexibility. We have already incorporated one aspect of liquidity in the study; hence this factor might not be able to capture any substantial additional effect, hence not incorporated in the study.

**5. Non-Fixed Assets:** Bhattacharyya & Banerjee (2001)<sup>14</sup> used non-fixed assets as one of their variables to represent information cost factors. Non fixed assets represented the amount of total assets not available to serve as collateral to raise Long Term Debt. It was assumed that higher the non-fixed assets, lower would be the debt ratio. Their study confirmed this belief. This factor has not been incorporated in the study as we have already included tangibility or collateral which will capture exactly the opposite effect. Either of these factors can be included, but both these measures cannot be included in the study.

**6. Intangibility:** This explanatory variable was used as one of the proxies for Trade-off Theory by Manos & Green (2001)<sup>31</sup>. Basically it was supposed to increase the present value of financial distress costs thus negatively related to leverage. Manos & Green (2001)<sup>31</sup> measured intangibility as the ratio of R&D plus advertising expenditure to sales, which is also a proxy to measure uniqueness of a firm. Since uniqueness of a firm is included as an explanatory variable in this study, intangibility as a determinant of Capital Structure is not included in this study.

**7. Stock Illiquidity:** This variable was also included by Manos & Green (2001)<sup>31</sup> to represent agency cost of equity and was expected to have positive effect on leverage, the reason being, a highly traded stock is taken to indicate confidence on the part of investors that a firm is relatively free from agency costs of equity and hence can support more equity. Manos & Green (2001)<sup>31</sup> used a study period of one year and thus could measure the number of days the firms traded on the BSE in a year to calculate stock illiquidity. This measurement was not possible in our sample. Hence this factor not incorporated in the study.

**8. Signaling:** Bhaduri (2002)<sup>11</sup> used ratio of dividend payment to net operating income and affiliation to a business group as proxies to capture signaling effect. Since in this study, we are already incorporating dividend payout as a separate factor affecting the Capital Structure of a firm, we need not use this proxy.

**9. Share price:** Guha & Kar (2006)<sup>68</sup> argued that a firm's choice of opting for debt as a means of finance depends on its status in the stock exchange. They felt that share price of a firm may have positive effect on debt of a firm. They found that share price had little impact on Debt Ratios of firms. Since we have not incorporated any market based measures in the study, this factor was dropped.

**10. Long term Borrowing:** Guha & Kar (2006)<sup>33</sup> also used long term borrowings as explanatory variable because they thought that a firms borrowing pattern and time preference may influence its credit worthiness. They felt that firms with long term borrowings would have high leverage. But long-term borrowings is an integral part of various measures of leverage (dependent variable) in our study and hence could not be incorporated in this study.

### **3.5.4 Macroeconomic Factors Influencing the Capital Structure**

Lee & Kwok (1988)<sup>45</sup> had examined the impact of international environmental variables affecting the MNC's overall Capital Structure. Rajan & Zingales (1995)<sup>8</sup> in their Capital Structure study of G7 countries had believed that apart from size or power of the banking sector, the tax code, bankruptcy laws, development of bond markets, and patterns of ownership of each country also might be an influential factor in deciding

Capital Structure. Jong *et.al* (2005)<sup>15</sup> held that there are many country specific factors that affect leverage indirectly through their impact on firm specific determinants. They found that variables like inflation rate, trade openness and legal environment had a significant influence on Capital Structure and stock market orientation and bond market development had an indirect impact on firms Capital Structure.

Booth *et.al* (2001)<sup>26</sup> had studied the impact of macroeconomic variables because their study was based on developing countries which had heterogeneous economic environment like different growth rates, inflation rates, different accounting practices, tax rates, investor protection and so on.

Mahmud *et.al* (2009)<sup>46</sup> examined the influence of macro-economic factors on Capital Structure of three Asian countries: Japan, Malaysia and Pakistan for the period from 1996 to 2005. The study used six measures of country's economic development and the macroeconomic variables representing the six measures were: - growth in GNP per capital, prime lending rate, financial liberalization, and efficiency of financial markets, creditor's rights & enforcement. It is found that firms in Japan and in Pakistan had high leverage ratios. The high gearing in Japan was in view of its developed market status, but for Pakistan, it was felt that the gearing was due to undeveloped capital market which forced firms to opt for bank loans as opposed to raising new equities. This study also revealed that per capita GNP growth for Japan and Malaysia was significantly related to Capital Structure of firms and higher economic growth tends led to use of more Long Term Debt. Financial liberalization provides major support in the development of Capital Structure and overall corporate sector in all the three countries.

Here in this study, the impact of macroeconomic factors are not incorporated in this study due to data limitation. Similarly, the effect of macroeconomic factors on Capital Structure can be better understood if a comparative study is undertaken between two or more different countries to study the effect of macroeconomic variables on Capital Structure of a firm. Hence macroeconomic variables impact on Capital Structure has not been included in this study

## References

- <sup>1</sup> Balance of Payments Manual, International Monetary Fund, 5<sup>th</sup> Edition, 1993, para 362, page 86, Available at:  
<http://www.imf.org/external/np/sta/bop/bopman.pdf>
- <sup>2</sup> Foreign Direct Investment In Emerging Market Countries”, Report of the Working Group of the Capital Markets Consultative Group, September 2003, Attachment 1, page 41, Available at:  
<http://www.imf.org/external/np/cm/cg/2003/eng/091803.pdf>
- <sup>3</sup> Pandey I.M (2001), “Capital Structure and the Firm Characteristics: Evidence from an emerging Market”, Indian Institute of Management, Ahmedabad, W.P.No.2001- 10-04, October 2001, [Electronic copy pp.1-17], Available at:  
<http://ideas.repec.org/p/iim/iimawp/2001-10-04.html>
- <sup>4</sup> Levine, Krehbiel & Berenson (2003), *Business Statistics- A First Course*, Third edition, Pearson Education, ISBN- 81-297-0410-2
- <sup>5</sup> Gujarati Damodar (2003), *Basic Econometrics*, Fourth Edition , McGraw-Hill, ISBN 0-07-233542-4
- <sup>6</sup> George Darren & Mallery Paul, *SPSS for Windows Step by Step*, Sixth edition, Pearson Education, ISBN-81-317-0394-0
- <sup>7</sup> Song Han-Suck, (2005), “Capital Structure Determinants An Empirical Study of Swedish Companies”, No 25, Working Paper Series in Economics and Institutions of Innovation, Royal Institute of Technology, CESIS - Centre of Excellence for Science and Innovation Studies, [Electronic copy pp:1-25], [Date accessed:24-12-2009],  
Available at: <http://econpapers.repec.org/RePEc:hhs:cesisp:0025>.
- <sup>8</sup> Rajan, R., Zingales, L. (1995), "What do we know about the Capital Structure? Some evidence from international data", *The Journal of Finance*, Vol.50, pp.1421-60, [Electronic copy pp.1-54], [Date accessed: 9-06-2008],  
Available at: <http://papers.nber.org/papers/w4875.pdf>
- <sup>9</sup> Bevan, Alan A. and Danbolt, Jo (2000), “Dynamics in the Determinants of Capital Structure in the UK”, (May 2000). Capital Structure Dynamics Working Paper No. 2000-9, [Electronic copy pp.1-37], [Date accessed: 21-12-2006], Available at SSRN: <http://ssrn.com/abstract=233551> or doi:10.2139/ssrn.233551
- <sup>10</sup> Kakani Kumar Ram (1999), “The Determinants of Capital Structure – An Econometric Analysis”, *Finance India*, Vol XIII, No.1, March 1999, pp.51-69.



- 11 Bhaduri N.Saumitra (2002), "Determinants of Corporate Borrowings: Some Evidence From the Indian Corporate Sector", *Journal of Economics and Finance*, Vol.26, No.2, Summer 2002 .pp.200-215
- 12 Buferna Fakher, Bangassa Kenbata and Hodgkinson Lynn (2005), "Determinants of Capital Structure: Evidence from Libya", WP 2005/08, Research paper series, ISSN:1744-0718, University of Liverpool, [Electronic Copy pp.1-31], Available at: <http://www.liv.ac.uk/managementschool/research/working%20papers/wp200508.pdf>
- 13 Titman, Sheridan and Roberto, Wessel (1988), "The Determinants of Capital Structure Choice", *The Journal of Finance*, Vol. 43, No.1, pp. 1-19.
- 14 Bhattacharya Malay & Banerjee Ashok(2001), "Determinants of Capital Structure – Revisited Empirically", *The Icfai Journal of Applied Finance*, Vol.7, No.2, April 2001,pp. 38-52.
- 15 Jong, Abe de, Kabir, R. & Nguyen, T.T. (2005). "Capital Structure around the world: What firm and country-specific determinants really matter?", [Electronic copy pp.1-41], [Date accessed: 15-12-2006], Available at: <http://www.rsm.nl/portal/page/portal/RSM2/attachments/pdf1/060207Nguyen1.pdf>
- 16 Mittal R.K & Singla R.K (1992), "Determinants of Debt-Equity Mix", *Finance India* , Vol.VI , No2, June 1992, pp.299-306.
- 17 Kantawala A.S (1997), "Capital Structure Decision", *Journal of Accounting & Finance* , Vol. XI, Spring 1997, pp.78-91.
- 18 Garg C Mahesh & Shekhar Chander, (2002), "Determinants of Capital Structure in India", *The Management Accountant*, February 2002, pp.86-92.
- 19 Gupta P.K. (2004), "An Empirical Investigation into the Determinants of Capital Structure - A Case Study of Indian Companies", *Journal of Accounting & Finance*, Vol. 18, No.1, October-March 2004, pp.58-83.
- 20 Rao Sagar, Narayan and Jijo Lukose, (2002), "An Empirical Study on the Determinants of the Capital Structure of Listed Indian Firms (December 2002), [Electronic copy pp.1- 27], [Date accessed: 11-09-2005], Available at SSRN: <http://ssrn.com/abstract=433120> or doi:10.2139/ssrn.433120
- 21 Huang, Samuel Gui Hai and Song, Frank M. (2002), "The Determinants of Capital Structure: Evidence from China", (July 2002), HIEBS (Hong Kong Institute of Economics and Business Strategy) Working Paper, [Electronic copy pp: 1-35], [Date accessed: 31-12-2006], Available at SSRN: <http://ssrn.com/abstract=320088> or doi:10.2139/ssrn.320088

- 22 Das Sumitra & Roy Malabika (2005), "Inter Industry Differences In Capital Structure: The Evidence from India", [Electronic Copy. pp. 1-17], [Date Accessed: 01-03-2006], Available at: [http://www.igidr.ac.in/~money/mfc\\_5/malabika.pdf](http://www.igidr.ac.in/~money/mfc_5/malabika.pdf)
- 23 Drobetz, W., Fix, R. (2003), "What are the Determinants of the Capital Structure? Evidence from Switzerland", WWZ/Department of Finance, Working paper No. 4/03, [Electronic copy pp: 1-38], [Date accessed: 21-12-2006]  
Available at: <http://pages.unibas.ch/wwz/finanz/publications/researchpapers/4-3%20CStructure.pdf>
- 24 Bhole, L.M and Mahakud, J (2004), "Trends and Determinants of Corporate Capital Structure in India: A Panel Data Analysis", *Finance India*, Vol 18, No1: March 2004, pp 37-55.
- 25 Bhat K.Ramesh (1980), "Determinants of Financial Leverage: Some Further Evidence", *The Chartered Accountant*, December 1980, pp.451-458.
- 26 Booth, L., Aivazian, V., Demircug-Kunt, A., Maksimovic, V. (2001), "Capital Structure in Developing Countries", *The Journal of Finance*, Vol. LVI No.1, pp.87- 130.
- 27 Khan M.Y & Jain P.K (2004) "Financial Management-Text, Problems and Cases", 4<sup>th</sup> Edition, Tata McGraw-Hill Publishing Company Ltd. New Delhi, ISBN 0-058340-4
- 28 Deb, Sandip (1995), "Determinants of Capital Structure Decisions In Large Mature Corporations: An Empirical Analysis ",PhD Thesis, Indian Institute of Management, Ahmedabad
- 29 Brealey, R.A. and Myers, S.C., (2003), *Principles of Corporate Finance*, Seventh Edition, McGraw Hill. Quoted in Song, (2005), "Capital Structure Determinants An Empirical Study of Swedish Companies", No 25, Working Paper Series in Economics and Institutions of Innovation, Royal Institute of Technology, CESIS - Centre of Excellence for Science and Innovation Studies, [Electronic copy pp:1-25], [Date accessed:24-12-2009],  
Available at: <http://econpapers.repec.org/RePEc:hhs:cesisp:0025>.
- 30 Frank, Murray Z. and Goyal, Vidhan K. (2004), "Capital Structure Decisions: Which Factors are Reliably Important?", Draft: February 11, 2004, [Electronic copy pp.1- 66], [Date accessed: 3-03-2006], Available at: <http://mba.tuck.dartmouth.edu/ccg/PDFs/2004conf/CapStrDecisionsFrankGoyal.pdf>
- 31 Manos Ronny & Green Christopher (2001), "Business Groups & Capital Structure: Evidence on Indian Firms", Working paper series, Paper no 34, Economics Dept, Loughborough University and Victor Murinde Birmingham School, University of Birmingham, ISBN:1 904143 040, Available at: <http://www.sed.manchester.ac.uk/idpm/research/publications/archive/fd/fdwp34.pdf>

- 32 Baral J. Keshar (2004). "Determinants of Capital Structure: A Case study of Listed Companies of Nepal," *The Journal of Nepalese Business Studies*, Vol. 1, No1, December 2004, pp. 1-13
- 33 Guha-Khasnobis, Basudeb & Kar, Saibal (2006), "The Corporate Debt Market- A Firm Level Panel Study for India", UNU-WIDER World Institute for Development Economics Research, Research Paper No. 2006/50, ISBN 92-9190-818-5 (internet version), [Electronic copy.pp.1-16], Available at: [http://www.cssscal.org/Faculty%20Publication/Saibal%20Kar\\_pub/WIDER\\_RP\\_06-50.pdf](http://www.cssscal.org/Faculty%20Publication/Saibal%20Kar_pub/WIDER_RP_06-50.pdf)
- 34 Gonenc Halit, (2005), "Comparison of Debt Financing between International and Domestic Firms: Evidence from Turkey, Germany and UK," *International Journal of Managerial Finance*, Emerald Group Publishing, Vol. 1(1), pp. 49-68, January
- 35 Akhtar Shumi ( 2005) "Australian Multinational and Domestic Corporations Capital Structure Determinants", *Australian Journal of Management*, Vol 30, No.2, December 2005, pp.321-341, [Electronic copy pp: 1-41], Available at: <http://cbe.anu.edu.au/research/papers/pdf/FINM0032WP.pdf>
- 36 Tong G, Green C J (2005), "Pecking Order or Trade-Off Hypothesis? Evidence on the Capital Structure of Chinese Companies", *Journal of Applied Economics*, Vol 37, Issue 19, pp.2179-2189, ISSN 0003-6846
- 37 Lee Remmers, Arthur Stonehill, Richard Wright and Theo Beekhuisen (1974), "Industry and Size as Debt Ratio Determinants in Manufacturing Internationally", *Financial Management*, Vol. 3, No. 2 (Summer, 1974), pp. 24-32, Published by: Blackwell Publishing on behalf of the Financial Management Association International, Stable URL: <http://www.jstor.org/stable/3665286>
- 38 Sogorb-Mira, Francisco and López-Gracia, José, (2003), "Pecking Order Versus Trade-off: An Empirical Approach to the Small and Medium Enterprise Capital Structure", (March 2003), [Electronic copy pp: 1-36], [Date accessed:22-10-2009], Available at SSRN: <http://ssrn.com/abstract=393160> or DOI: 10.2139/ssrn.393160
- 39 Chen J. Jean(2004),"Determinants of Capital Structure of Chinese-listed companies", *Journal of Business Research* ,57 (2004) pp. 1341– 1351
- 40 Myers Stewart C. (1984), The Capital Structure Puzzle, *The Journal of Finance*, Vol. 39, No. 3, Papers and Proceedings, Forty-Second Annual Meeting, American Finance Association, San Francisco, CA, December 28-30, 1983. (Jul., 1984), pp.575- 592
- 41 Ferri, M., Jones, W. (1979), "Determinants of financial structure: a new methodological approach", *Journal of Finance*, Vol. 34 pp.631-44

- 42 DeAngelo, Harry & Masulis, Ronald W.,(1980)."Optimal Capital Structure Under Corporate And Personal Taxation," *Journal Of Financial Economics*, Elsevier, Vol. 8(1), March 1980, pp 3-29
- 43 Boateng, A. (2004), "Determinants of Capital Structure -- Evidence from International Joint Ventures in Ghana", *International Journal of Social Economics*, Vol.31,No.1/2, pp.56-66.
- 44 Singla R.K & Mittal R.K, (1997), " Influence of Industry-Class and Ownership Pattern on Corporate Capital Structure in India", *Finance India*, March 1997, pp.17-27
- 45 Lee Kwang Chul and Kwok Chuck C. Y. (1988), "Multinational Corporations vs. Domestic Corporations: International Environmental Factors and Determinants of Capital Structure", Source: *Journal of International Business Studies*, Vol. 19, No. 2(Summer, 1988), pp. 195-217 Published by: Palgrave Macmillan Journals
- 46 Mahmud, Muhammad, Herani, Gobind M., Rajar, A.W. and Farooqi, Wahid (2009):"Economic Factors Influencing Corporate Capital Structure in Three Asian Countries: Evidence from Japan, Malaysia and Pakistan.", *Indus Journal of Management & Social Sciences* , 3(1) (Spring 2009): pp. 9-17.