Chapter III

Research Methodology

This chapter reports the research methodology undertaken to study the research problem posed in the study. Based on the previous chapter which reviewed existing body of literature, certain research gaps have been identified. Issues to be investigated have been formulated as research questions and objectives of the study have been established in the chapter. To address the research questions, hypotheses to be tested in the study have been framed. Further, the scope of the study has been specified. Data sources and measurement of data variables have then been illustrated and statistical research procedures to test the hypotheses have subsequently been reported. Limitations of the study have then been enumerated.

The present study is mainly descriptive in nature, but with elements of causal purpose as well. According to Saunders, Lewis, & Thornhill (2007), the purposes of research can be categorised as exploratory, descriptive and causal. A descriptive study is described as defining an accurate profile of persons, events or situations and a causal study is described as establishing causal relationships between variables. According to Malhotra (2007), a descriptive study provides comprehensive information about a problem or situation while a causal study is appropriate to determine the nature of the relationship between variables and the effect to be predicted.

This study is a descriptive study as it involves studying the corporate governance situation in India. It has elements of a causal study as it attempts to explain relationships between variables. Such a study was considered necessary because of its ability to comprehensively view the questions raised in the study.

3.1 Research Gap Identification

1- Existing literature examines corporate governance disclosure in India with regard to a specific firm attribute. There is limited literature which is comprehensive in nature and which compares and contrasts level of corporate
governance disclosure across Indian firms varying in size, profits and industries.

2- Early researches on associations between firm characteristics and disclosures started since 1961. However, in the Indian context, not much work has been done so far. Thus, there is a need to extend the study of firm determinants in relation to corporate governance disclosures in India.

3- Studies in India regard disclosure generically. There is limited literature which examines the role of various components of corporate governance disclosure. These components may be related to ownership patterns, shareholder rights, financial and operational information, board structure and management processes. Establishing which component of disclosure is most widely reported and which is not, may have policy implications while formulating corporate governance regulations.

4- Researches in India have examined firm disclosure as of a particular year. There is a dearth of literature which studies firm disclosure over a period of time. To understand the impact of changes in disclosure regulation, there arises a need to measure change in disclosure over a period of time. The increase in information disclosed by companies will help assess effectiveness of new regulation.

5- Traditional regression analysis has been widely used to establish the impact of firm characteristics on firm disclosure. Regression analysis examines the relationship between firm characteristics and their disclosure levels. However, there is a need to understand disclosure patterns as well. The traditional regression technique concerns itself with examining disclosure levels. There is a need to use innovative statistical approaches to complement this technique to analyse the pattern of firm disclosure.

6- While there evidence of a positive impact of Clause 49 on Indian markets, there is a need to evaluate firm-level factors that predict variation in firms' reactions to Clause 49 enforcement.
3.2 Research Questions

This study aims to contribute to literature on corporate governance in a developing country like India by examining the disclosure practices of select listed Indian firms. In order to address the research gaps as mentioned above, the study addresses the following key research questions:

- **Research Question 1**: What is the level of corporate governance disclosure among listed Indian companies?

- **Research Question 2**: Is there a significant difference between corporate governance disclosure of large and medium scale listed Indian companies?

- **Research Question 3**: Is there a significant difference between corporate governance disclosure of Indian companies listed on international stock exchanges and those Indian companies which are not listed on international stock exchanges?

- **Research Question 4**: Do components of information disclosed vary across large and medium scale companies?

- **Research Question 5**: Is there a difference between corporate governance disclosure of large and medium scale companies in the pre Clause 49 and post Clause 49 period?

3.3 Objectives of the study

In order to address the research questions stated above, the study identified the following objectives for a detailed analysis:

- **Objective 1**: To analyse the level of corporate governance disclosure among listed Indian companies with the help of Corporate Governance Disclosure Score.

- **Objective 2**: To establish a relationship between firm characteristics namely size, leverage, profitability, nature of industry, international listing status,
extent of multinational operations and level of corporate governance disclosure of listed Indian companies.

- **Objective 3**: To compare and contrast the components of corporate governance information disclosed across large and medium scale companies.

- **Objective 4**: To examine the impact of Clause 49 on the level of corporate governance disclosures of listed Indian companies and to highlight the difference in corporate governance disclosure levels of large and medium scale companies in pre and post reform period.

- **Objective 5**: To suggest ways and means of financial disclosure to improve the healthy working of organisations.

### 3.4 Hypotheses Related to Firm Attributes

In order to answer the second and third research questions, seven firm specific characteristics namely size, profits, leverage, revenues in foreign currency, listing status, whether belonging to financial sector or non financial sector, whether belonging to private sector or public sector have been selected.

#### 3.4.1 Hypothesis related to Firm Size:

To test the impact of firm size proxied by market capitalisation on corporate governance disclosure score, the following hypothesis has been postulated with respect to listed Indian companies:

\[ H_0: \text{There is no significant difference between the corporate governance disclosure scores of large and medium scale companies.} \]

\[ H_1: \text{Significant difference exists between corporate governance disclosure scores of large and medium scale companies.} \]

In order to answer research question four, it needs to be found out whether large and medium sized listed companies in India differ in the components of corporate governance information disclosed. Thus, the following hypothesis with respect to listed Indian companies has been framed:
H₀₂: There is no significant difference between the ownership information of large and medium scale companies.

Hₐ₂: Significant difference exists between the ownership information of large and medium scale companies.

H₀₃: There is no significant difference between the financial information of large and medium scale companies.

Hₐ₃: Significant difference exists between the financial information of large and medium scale companies.

H₀₄: There is no significant difference between the board and management structure related information of large and medium scale companies.

Hₐ₄: Significant difference exists between the board and management structure related information of large and medium scale companies.

The following hypotheses were constructed to verify the relevance of other firm characteristics in corporate governance disclosure of listed Indian companies:

3.4.2 Hypothesis related to Listing Status

Listed Indian firms whose shares are also listed internationally face additional pressures for the disclosure of information, compared to companies whose shares are only listed domestically. Thus, the following hypotheses have been postulated:

H₀₅: There is no significant difference between corporate governance disclosure scores of internationally listed companies and companies which are not internationally listed.
**Hₐ₆:** Significant difference exists between the corporate governance disclosure scores of internationally listed companies and companies which are not internationally listed.

Within the group of listed Indian companies which are also internationally listed, this study now tests whether there is a difference between corporate governance disclosure score of internationally listed large and medium scale companies. The following hypothesis has been postulated:

**H₀₆:** There is no significant difference between corporate governance disclosure scores of large companies which are internationally listed and medium sized companies which are internationally listed.

**Hₐ₆:** Significant difference exists between corporate governance disclosure scores of large companies which are internationally listed and medium sized companies which are internationally listed.

### 3.4.3 Hypothesis related to Leverage

To study the impact of degree of indebtedness of listed Indian companies on corporate governance disclosure scores, the following hypotheses have been postulated:

**H₀₇:** There is no significant difference between corporate governance disclosure scores of companies which are leveraged and companies which are not leveraged.

**Hₐ₇:** Significant difference exists between corporate governance disclosure scores of companies which are leveraged and companies which are not leveraged.

To examine whether significant difference exists in the corporate governance disclosure scores of leveraged companies based on whether they are large or medium sized, the following hypotheses has been postulated with respect to listed Indian companies:

**H₀₈:** There is no significant difference between corporate governance disclosure scores of large companies which are leveraged and medium scale companies which are leveraged.
**Hₐ₆:** Significant difference exists between corporate governance disclosure scores of large companies which are leveraged and medium scale companies which are leveraged.

### 3.4.4 Hypothesis related to Sales in Foreign Currency

The amount of sales in foreign exchange represents the extent of globalised operations of a company. A listed Indian company with diversified international operations is likely to disclose more. This study tests the following hypotheses with respect to listed Indian companies:

**H₀₉:** There is no significant difference between corporate governance disclosure scores of companies with foreign exchange revenues and companies with no foreign currency revenues.

**Hₐ₉:** Significant difference exists between corporate governance disclosure scores of companies with foreign exchange revenues and companies with no foreign currency revenues.

### 3.4.5 Hypothesis related to Nature of Industry

The sample has been divided into eight industrial sectors. These industries are fuel, power & steel, banking, pharmaceuticals, cement & construction, information technology & telecom, automobiles, fertilisers & chemicals, and FMCG. The study seeks to find out if nature of industry has an impact on corporate governance disclosure by setting the following hypotheses in the context of listed Indian companies:

**H₁₀:** There is no significant difference between corporate governance disclosure scores among various industries.

**Hₐ₁₀:** Significant difference exists between corporate governance disclosure scores among various industries.
The sample of listed Indian companies has been bifurcated into services and manufacturing sector. Banking and information technology form a part of services sector. Fuel, power & steel, pharmaceutical, cement, automobiles, fertilisers & chemicals, and FMCG constitute manufacturing companies. The study seeks to examine whether there is a difference in disclosure levels of large and medium sized companies in the services sector. Similarly, the study seeks to examine whether there is difference in disclosure levels of large and medium sized companies in the manufacturing sector. Thus, the following hypotheses have been postulated in the Indian context:

**H_{11}:** There is no significant difference between corporate governance disclosure scores of large scale companies in service sector and medium scale companies in the service sector.

**H_{a11}:** Significant difference exists between corporate governance disclosure scores of large scale companies in the service sector and medium scale companies in the service sector.

**H_{12}:** There is no significant difference between corporate governance disclosure scores of large scale companies in the manufacturing sector and medium scale companies in the manufacturing sector.

**H_{a12}:** Significant difference exists between corporate governance disclosure scores of large scale companies in the manufacturing sector and medium scale companies in the manufacturing sector.

The sample of companies consists of 21 companies belonging to the financial sector and 93 belonging to the non financial sector. The study examines whether belonging to financial / non financial sector impacts the corporate governance disclosure in listed Indian companies. Thus, the following hypotheses have been postulated:
**H13**: There is no significant difference between corporate governance disclosure scores of companies belonging to financial sector and companies belonging to the non financial sector.

**Ha13**: Significant difference exists between corporate governance disclosure scores of companies belonging to financial sector and companies belonging to the non financial sector.

### 3.4.6 Hypothesis related to Management Control

The sample consists of 30 listed Indian companies belonging to the public sector and 84 listed Indian companies belonging to the private sector. The study examines whether belonging to private/public sector impacts the corporate governance disclosure in listed Indian companies. Thus, the following hypotheses have been postulated:

**H14**: There is no significant difference between corporate governance disclosure scores of companies belonging to the public sector and those belonging to the private sector.

**Ha14**: Significant difference exists between corporate governance disclosure scores of companies belonging to the public sector and those belonging to the private sector.

### 3.5 Hypothesis related to Disclosure in the Pre Reform and Post Reform Period

The SEBI Clause 49 is expected to have a positive impact on corporate governance disclosure practices of Indian companies. The study a priori conjectures that there will be an increase in the corporate governance disclosure scores of listed Indian companies after Clause 49 came into effect from January 01, 2006. Given that most provisions of Clause 49 formed a part of the earlier instituted CII code, it is the threat of enforcement of Clause 49 which has coerced industry to comply. However, a differential reaction is expected from large and medium sized companies.

**H15**: Clause 49 has same impact on the level of corporate governance disclosure of large and medium scale companies.
**Ha15**: Clause 49 has differential impact on the level of corporate governance disclosure of large and medium scale companies.

### 3.6 Scope of the Study

The scope of the study is mentioned below:

- Firstly, the present research makes an attempt to examine the level of corporate governance in listed Indian companies. It focuses specifically on the role of financial disclosure in corporate governance. Although studies related to corporate governance disclosures around the world started as early as 1961, developments in India on this score have been particularly slow. This has been due to the fact that there existed a closed system of economic development where foreign players were not encouraged to participate in the Indian economy and market. The situation changed post liberalisation in 1991 when corporate governance started being considered in the international context. Consequently, focus on corporate governance increased and rules and regulations started to be framed.

- Secondly, this study aims to provide a comprehensive picture about what determines corporate governance disclosures of listed Indian companies. It addresses itself to understanding firm attributes which impact corporate governance and examines those attributes that have a direct linkage with corporate governance disclosures in India. By doing so, the study aims to suggest how to augment corporate governance disclosures in listed Indian companies.

- Thirdly, the study aims to examine corporate governance disclosures over a period of eight financial years. Thus, the scope of the study is also to document evidence that it is possible that firms change their disclosure behaviour over time.
3.7 Data Collection

3.7.1 Identification of Variables

3.7.1.1 Independent Variables

The choice of independent variables has been based on previous studies conducted in international settings. The studies noted that these variables have significant relationships with corporate governance disclosures. The independent variables in this study are a mix of ordinal, interval and ratio type data variables.

- **Size**: Larger companies have a dispersed shareholding. To reduce the information asymmetry caused due to a dispersed shareholding, large firms disclose more information. Also, large firms have lower costs of competitive disadvantage associated with their disclosures. Thus they are likely to disclose more.

- **Listing Status**: Firms whose shares are listed internationally face additional pressures for the disclosure of information, compared to companies whose shares are only listed domestically. Thus, firms listed internationally are likely to disclose more.

- **Leverage**: Higher debt levels are associated with lower levels of disclosure since debt holders do not demand the same level of disclosure of public information as shareholders. On the other hand, agency costs are higher for firms with proportionally more debt in their capital structures (Jensen & Meckling, 1976). To overcome these agency costs, disclosures increase with leverage.

- **Sales in Foreign Currency**: As firms go multinational, they are forced to follow disclosure norms of the host countries. These could be more stringent than those required at home. The increased internationalization of operations results in a larger proportion of foreign stakeholders in the corporation. Thus, the variety of information demanded can be expected to increase, resulting in an increased level of disclosure (Choi & Mueller, 1992).
• **Nature of Industry:** Cost of competitive disadvantage related to disclosures varies across industries (Verrecchia, 1983). Some companies will be more sensitive about disclosures to competitors and public than companies in certain other industries. The relevance of selected items of disclosure can also vary across industries. In this study, an attempt is being made to find out if disclosure scores for financial and non financial sectors are significantly different. Secondly, the study aims to find out if disclosure scores of public and private sector are significantly different.

• **Profitability:** Profit margin and earnings, both are positively associated with disclosures because managers are more likely to signal to the market, profitability of the company (Wallace & Naser, 1995). However, in the context of Chinese companies, the more profitability a company has, the less voluntary information it discloses (Xiao et al., 2004). The argument is that a profitable company does not want to make public information which competitors can use against it.

• **Management Control:** Corporate governance mechanism varies according to the ownership structure of the company. Literature on the relationship between management control and corporate governance suggests that performance is negatively related to the role of government in companies. Evidence suggests positive relationship between concentration of family ownership and corporate performance. Research on the performance of state-owned, privately-owned, and mixed-ownership companies in India over the period 1973–1989 concluded that privately-owned firms and mixed-ownership firms exhibit greater efficiency than state-owned firms (Majumdar, 1998).

### 3.7.1.2 Dependent Variable

Corporate Governance Disclosure Score (CGDS) is the dependent variable. The score provides a measure of a company's disclosure. It is computed by aggregating dichotomous responses to eighty eight questions. The final score of each firm ranges from 0 to 88. The questions form a part of the Standard and Poors' Transparency and Disclosure Survey.
There is general consensus on the determination of disclosure by computing a disclosure index or score. (Buzby, 1975; Stanga, 1976; Cooke, 1989). A majority of disclosure studies adopt an item based approach using a procedure where an item scores one if disclosed and zero otherwise. Few studies however use a different technique. Some studies use the number of words to describe an item disclosed (Copeland & Fredricks, 1968), while others use content analysis based on the number of sentences (Entwistle, 1999). Another form of content analysis entails assigning a score to firms' disclosures (Wiseman, 1982; Freedman & Wasley, 1990).

Most studies are in favor of unweighted items, implying each question of the survey is of equal importance (Ahmed & Nicholls, 1994; Chen & Jaggi, 2000; Archambault & Archambault, 2003). Different stakeholders attach different weights to a question. Hence, the subjective weights of various user groups will average each other out (Cooke, 1989). The approach based on unweighted items has become the norm in annual report studies because it reduces subjectivity (Ahmed & Courtis, 1999). The current study has also used the unweighted approach while measuring disclosure. It assumes that all questions are treated equally, given that there is no specific set of users of information.

3.7.1.3 Operational Definitions

1- Corporate Governance Disclosure Score (CGDS) is the overall disclosure score comprising of ownership disclosure score, financial disclosure score and governance disclosure score.

2- Ownership Disclosure Score represents the score derived from information related to ownership structure and shareholders rights of the company.

3- Financial Disclosure Score represents the score derived from information related to financial and operational information of the company.

4- Governance Disclosure Score represents the score derived from information related to board and management structure and processes. It also includes information related to board and management remuneration.
5- Size is defined as the Market Capitalisation of the firm for each of the financial years 2002 to 2009.

6- Profitability is defined as the Profits after Tax of the firm for each of the financial years 2002 to 2009.

7- Financial Leverage is defined as the Debt / Equity Ratio of the firm for each of the financial years 2002 to 2009.

8- Foreign Exchange Sales is defined as the Sales made in foreign exchange for each of the financial years 2002 to 2009.

9- International Listing is defined as whether a firm is listed in any exchange globally. The listing could be as equity or as level 2 or level 3 ADR.

Quantitative measures for the above mentioned independent and dependent variables have been operationalised as explained in the table 3.1 below
Table 3.1 Operationalisation of Research Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Acronym</th>
<th>Operationalisation</th>
<th>Type</th>
<th>Data Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Governance Disclosure Score</td>
<td>CGDS</td>
<td>Total Score obtained by the company</td>
<td>Dependent</td>
<td>Interval</td>
</tr>
<tr>
<td>Size</td>
<td>SIZE</td>
<td>Market Capitalisation</td>
<td>Independent</td>
<td>Ratio</td>
</tr>
<tr>
<td>Profitability</td>
<td>PAT</td>
<td>Profits After Tax</td>
<td>Independent</td>
<td>Ratio</td>
</tr>
<tr>
<td>Leverage</td>
<td>LEV</td>
<td>D/E ratio</td>
<td>Independent</td>
<td>Ratio</td>
</tr>
<tr>
<td>Fx Sales</td>
<td>FER</td>
<td>Sales in Foreign Currency</td>
<td>Independent</td>
<td>Ratio</td>
</tr>
<tr>
<td>Listing Status</td>
<td>INTLIST</td>
<td>Dichotomous with 1 if the company is listed internationally, 0 if the company is not listed internationally</td>
<td>Independent</td>
<td>Ordinal</td>
</tr>
<tr>
<td>Nature of Industry - Financial or Non Financial</td>
<td>IND</td>
<td>Dichotomous variable with 1 if Financial Institution, 0 if Non Financial Institution</td>
<td>Independent</td>
<td>Ordinal</td>
</tr>
<tr>
<td>Management Control - Public or Private Sector</td>
<td>MC</td>
<td>Dichotomous with 1 if the company belongs to Public Sector, 0 if the company belongs to Private Sector</td>
<td>Independent</td>
<td>Ordinal</td>
</tr>
</tbody>
</table>

3.7.2 Methods of Data Collection

The present study uses annual reports of 114 listed Indian companies and examines them over a period of eight years, 2002 – 2009. This study uses a mix of primary and secondary sources for collecting data about the dependent variable i.e. the corporate governance disclosure score. The score is based on information provided by firms in their annual reports to shareholders. It has been constructed by using 88 questions in all to measure corporate governance disclosure in India. These questions have been drawn from the Standard and Poors (S&P) transparency and disclosure instrument. This disclosure instrument has 108 items based on three categories –
1- Ownership structure and investor relations,

2- Financial transparency and operational information disclosure and

3- Board management structure and processes.

The survey has been adapted to suit the reporting scenario in India. Some of the information items which necessarily have to be reported have been excluded from the survey are number and par value of issued ordinary shares, information about listing on exchanges, articles of association, company's accounting policies and name of the auditing firms.

The information attributes used in the survey have been developed in line with the disclosure and transparency guidelines contained in the OECD principles. The OECD principles propose that the corporate governance framework should ensure timely and accurate disclosure of a company's financial situation, performance, ownership and governance (OECD, 1999). These principles serve as a guideline for adopting S&P's three main categories i.e. ownership, company performance and governance.

A dichotomous procedure has been followed to score each of the disclosure issue. The contents of the annual reports have been examined and scoring has been done in the form of 0 or 1. This procedure has been repeated for all companies. Each company has been awarded a score of “1” if the company appears to have disclosed the concerned issue and “0” otherwise. The score of each company has been aggregated to find out the net score of the company. The subsection scores have also been derived in the same way as the overall scores. A similar approach has been adopted by previous studies on disclosure and corporate governance (Patel et al., 2002). The scores, however, are a quantitative assessment of the disclosure practices of a company. They are not a qualitative indicator of the value of that information. The disclosure score in this study uses the unweighted scoring approach. The underlying assumption is that all disclosure items are of equal importance to corporate information users. Also, there is a degree of arbitrariness inherent in the use of a weighted index, both in the selection of items and the size of the weight.
3.7.2.1 Primary Sources

Primary data were collected by personal interaction with concerned managers for the following items of the survey as detailed information on the same was not available on the website of company’s. These attributes were:

1. The contents of the code of business conduct and ethics
2. Policy on information disclosure
3. Discussion on corporate strategy
4. Plans for investment
5. Output forecast information
6. A detailed earnings forecast
7. Details of the type of business the company is in

The concerned managers were at various designations such as Chief Manager – Public Relations, Company Secretary and Legal Counsel, Vice President – Corporate Communication and Media Relations, President – Corporate Affairs or General Managers.

3.7.2.2 Secondary Sources

Secondary data have been collected from the company websites based on the survey developed by Standard &Poor’s. Information related to questions listed in the survey is mentioned in various sections of the annual reports such as Director's report and MDA. Annual reports have been considered because of their comprehensive nature. These reports and other company details have been obtained from two separate sources. Firstly, the annual reports of companies for the years 2009, 2008, 2007, 2006, 2005, 2004, 2003 and 2002 have been examined either in physical form or by referring to company’s official website. The period under study has been bifurcated into pre- reform period (2001-02 to 2004-05) and post reform period (2005-06 to 2008-09) since financial disclosure reforms of Clause 49 of the Listing Agreement became effective in January, 2006.
Secondly, two databases – Capitaline and Prowess, the financial database maintained by the Centre for Monitoring of Indian Economy have been used extensively to obtain data pertaining to market capitalisation, profits, financial leverage and revenues in foreign exchange. Data on whether company is internationally listed or not, belongs to public or private sector, belongs to financial or non financial sector has been collected from the company profile available on the company website.

3.7.3 The Research Instrument - Adaptation of Standard & Poor Survey

The S& P Survey consisting of 108 questions was adapted to suit the requirements of the study on Indian listed companies. 20 items which have to be necessarily reported were excluded from the survey. Examples of these items are number and par value of issued ordinary shares, information about listing on exchanges, company’s accounting policies and name of auditor.

The modified survey thus constitutes 88 items out of which there are 26 items on ownership structure and shareholder rights, 40 items on financial and operational information, 22 items on board and management structure and processes. The CGDS scores have been developed by searching company annual reports for the inclusion of 88 items. Separate sub section scores have also been computed.

3.7.3.1 Pilot Study

Pilot study of the adapted survey was conducted to check the reliability, validity and consistency of the survey in addressing the objectives. The survey was distributed among practicing managers of ten companies to collect data regarding the governance and ownership attributes of their respective firms. Suitable modifications were made in light of the field experience.

3.7.3.2 Validity of Secondary Survey Data Instrument

According to Cooper & Schindler (2003), there are three criteria for evaluating a measurement tool for data analysis: validity, reliability and practicality. Validity refers to the degree to which the research instrument measures what it is supposed to measure, reliability refers to the degree of accuracy or precision in measurements that the instrument provides, and practicality is concerned with convenience, economy and
interpretability of the research instrument. This study addressed the construct validity by ensuring that the definition of each data variable and applicability of linear regression model of statistical estimation has a strong theoretical basis. The study addressed content validity by ensuring representativeness or sampling adequacy of the data.

Cooper & Schindler (2003) also state that researching secondary sources is complex and challenging and it requires evaluation of the quality of information. To address this concern, the study collected detailed secondary source data from authentic sources. The adapted questionnaire was tested for internal consistency i.e. reliability using Cronbach alpha. Cronbach alpha is one of the most popular reliability statistic in use today. It determines the internal consistency or overall correlation of items in a survey instrument to gauge its reliability. A high value indicates good internal consistency of items in a scale. The computed value of Cronbach alpha was 0.7853 which is within acceptable limits.

3.7.4 Sampling Plan

The population data for this study consisted of all listed companies in India. For the purpose of the study, 114 listed companies were selected from the Economic Times Ranking of 2009. The ET list of companies was divided into large and medium on the basis of net worth, a basis of classification used by the Ministry of Corporate Affairs. Out of the list generated, 77 large companies were randomly selected and 37 medium sized companies were randomly selected. This sample was considered a good representation of listed companies in India since the ultimate test of a sample design is how well it represents the characteristics of the population it represents.

Sampling Design

- **Type of universe:** The universe or population for this study is the companies listed on the BSE and NSE. The sample companies have been listed for the entire period of the study. The companies have been classified into large and medium companies on the basis of criteria provided by Ministry of Corporate Affairs for purpose of convergence to IFRS. According to this criterion, listed companies with a net worth of greater than 1000 crore are large companies.
Listed companies with a net worth of Rs.500 - Rs.1000 crore are medium companies.

- **Sampling frame:** The source list used in the study is the ET500 companies of 2009 (Economic Times list of 2009). The complete list provides a ranking of companies, giving a clear picture about the performance of Indian corporates and achievements of top sectors. Till before 2009, the ET500 ranking was based on eight parameters in order to evaluate companies. The eight parameters were: market capitalisation, absolute change in market capitalisation over the past one year, sales, absolute change in sales over the past year, net profit, absolute change in net profit over the past year, price-to-earning (P/E) ratio and return on net worth (RoNW). Companies were ranked based on each of these eight parameters. The composite rank was the sum of all these ranks. The above methodology enabled one to look at a company not only from the point of view of size, but also in terms of performance. For the year 2009, ranking is based on sales turnover in the preceding year. Sales or revenues are the accepted measure of the size of a company. The companies have been selected and ranked on the basis of their total income (or revenues) from all sources in the last financial year.

- **Sampling unit:** Sampling unit for this study is one company.

- **Period of Data Collection:** The annual reports of the selected companies have been examined over eight financial years – from year ended March 2002 upto year ended March 2009.

### 3.8 Research Procedures for Data Analysis

The hypotheses formulated for this study have been tested using univariate and multivariate statistical analysis. All null hypotheses have been tested at the value of alpha = 0.05 level of significance, which assures 95 percent confidence about the statistical inferences drawn from the results of the tests of hypotheses (Larson & Farber, 2003). The statistical data analysis has been performed using the software Statistical Package for Social Sciences-Graduate Pack Version 13.0 (SPSS-Grad Pack 13.0).
3.8.1 Multiple Regression: The most prevalent approach used in literature consists of calculating a firm based disclosure score and then running a multivariate linear regression, with this score as dependent variable and various characteristics of the related firm as independent variables. To provide primary evidence of the impact of corporate attributes on corporate governance disclosures of different companies in India, this study also uses the multiple regression technique. Regression analysis is the most widely and versatile dependence modelling technique applicable to business decision making (Hair, Anderson, & Tatham, 1992). It establishes a predictive relationship between the dependent and the independent or the explanatory variables. The linear regression model assumes that there is a linear, or "straight line," relationship between the dependent variable and each explanatory independent variable/predictor. This relationship is described in the following formula:

\[ Y = a + b_1X_1 + b_2X_2 + \ldots + b_nX_n + e. \]

In this equation, \( Y \) is a dependent scale variable, the corporate governance disclosure score. \( X_1, X_2, \ldots, X_n \) are the independent variables, which are firm specific characteristics that are described in Chapter 2. The values of, \( b_1, b_2, \ldots, b_n \) are the regression coefficients determined by the linear regression equation, and \( e \) is the error term in the estimation. The regression model used in this study to explain the level of Corporate Governance Disclosure Score is as follows:

\[ \text{CGDS} = C + \beta_1 \text{SIZE} + \beta_2 \text{PAT} + \beta_3 \text{LEV} + \beta_4 \text{FER} + \beta_5 \text{INTLIST} + \beta_6 \text{IND} + \beta_7 \text{MC} + e \]

Where, \( C \): Constant; \( \beta_1 - 7 \): Coefficients;

a. CGDS is the Corporate Governance Disclosure Score
b. SIZE is the Firm size measured by market capitalisation
c. PAT is the Profits after tax of a company
d. LEV is the Debt-equity Ratio
e. FER is the: Net earnings in foreign exchange
f. INTLIS is the International listing status of a company; A dichotomous variable which is equal to 1 if the company is listed on an international exchange; is equal to 0 if the company is not listed on any international exchange.

g. IND is the Type of sector (financial or non-financial); A dummy variable, 1 if company is in the Financial Industry, 0 if the company is in the Non Financial Industry.

h. MC is the Type of ownership, 1 if the company is a Public Sector Company, 0 if the company is a Private Sector company.

i. \( \text{et} \) is the stochastic disturbance term

The linear regression model assumes the following - the error term has a normal distribution with a mean of zero, the variance of the error term is constant across cases, independence of the variables in the model, and the value of the error term is independent of the values of the variables in the model (Lattin, et al., 2003). In view of these facts, this study verified the applicability of the regression technique, prior to the data analysis of the dependent variable. The model was subjected to the usual tests of

a. Multicollinearity

b. Autocorrelation

c. Heteroskedasticity

d. Residual Analysis

3.8.2 Step Wise Regression: A step wise procedure is useful in determining which variables should be included in the model. The stepwise procedure adds variables to the model to maximise \( R^2 \) or equivalently minimise the error sum of squares. Stepwise procedure has been used previously by Malone (1993) and Ahmed & Nicholls (1994). This study also uses the stepwise technique as a complementary technique in model building.
3.8.3 Discriminant Analysis: A limitation of using the classical linear regression is that the form of relationship between dependent and independent variables is not always known (Lang & Lundholm, 1993). By aggregating different disclosure items into one disclosure score, all existing studies retain only the quantity of disclosure. The disclosure profile is completely lost in the analysis, although the information is present in the data collected (Chavent, 2006). To address this issue, the study uses Discriminant Analysis (DA). DA is used to answer the question – what firm characteristics help differentiate between firms which have high disclosure and firms which have low disclosure. Using DA, the study splits the sample into homogenous subgroups corresponding to disclosure patterns and determines clearly each group’s financial characteristics. Companies have been first arranged in descending order of corporate governance disclosure scores. They have then been divided into two groups of forty companies each. One group of companies is characterised by high disclosure while the other is characterised by low disclosure. Subsequently, each homogenous group’s financial characteristics have been ascertained with the help of discriminant analysis. This method does not replace the traditional approach but is used as a complementary approach.

3.9 Limitations of the Study

There are a number of potential limitations to this research that would warrant caution in interpreting the results.

- The disclosure score used in the study measures the presence or absence of a particular financial statement item, rather than evaluating the quality of disclosure itself. Hence the score does not help distinguish between quality and quantity of disclosure.

- While S&P scores allot equal weights to every item on the list, some disclosure items may be more important in reality than others. Although allotting equal weights to all items reduces subjectivity, the market may place higher emphasis on certain elements of governance. Also, some aspects of governance may be considered to be a basic component or prerequisite to implementing other and thus should be given more weight.
Some studies have used analyst ratings of firm level corporate governance scores (Lang & Lundhlom, 1993, Khanna & Palepu, 2004). This study however, does not use the ratings of a panel of experts as a measure of financial disclosure. Expert’s ratings are likely to be a noisy measure of disclosure quality and consequently, may limit the power of the tests. Unlike an analyst’s subjective assessment of disclosure, scoring from annual reports is an objective assessment of disclosures (Healy & Palepu, 2000).

While S&P survey groups questions into sub categories – ownership, financial and governance- some attributes in ownership category such as number of shares outstanding can be construed as a financial attribute. As a result of this limitation, overall disclosure scores are used. As a subsidiary dataset, subsection scores are used.

The research has employed companies preselected by Economic Times. They are limited to companies listed on the NSE or BSE. Thus, it is not adequately representative of corporate governance disclosure in all companies operating in India. The findings of this study should be interpreted keeping in mind these limitations. Despite these limitations, the study provides a useful framework of corporate governance disclosure in India.

3.10 Concluding Remarks

In the opinion of the researcher, there are two contributions of this study to the corporate governance disclosure research that are worthy of attention. First, from a theoretical point of view, this study has developed a comprehensive framework of understanding corporate governance disclosure in listed Indian companies. Second, this study is one of the few studies in India to develop and examine the role of various constituents of corporate governance information disclosure rather than treat disclosure generically. In this respect, this study has made a unique contribution to the corporate governance disclosure literature.