Chapter 3

Hypotheses & Modeling

3. HYPOTHESES AND METHODOLOGY

The present chapter deals with the detailed description on the scope of the study, assumptions as to the corporate governance norms, data selection, dependent and independent variables and the empirical model developed for testing the hypotheses.

3.1. HYPOTHESES

This section develops empirical hypotheses that relate corporate governance norms to firm performances based on existing theories and empirical results, and identifies variables that will be used to test the hypotheses.

Good corporate governance secures an effective and efficient operation of company in the interest of all stakeholder. It provides assurance that management is acting in the best interest of the corporation, thereby contributing to business prosperity through openness in disclosures and accountability. An analysis of these practices and the association of their adoption and effects on firm performances can form a basis for economic reforms in the context of the changing corporate environment.

Studying the impact of the best practices on the companies across diverse sectors of the Indian Economy would enable us to analyze the efficacy of the said practices. This research aims at exploring the impact of adoption of the Clause 49 of Listing Agreement pertaining to corporate governance clause recommended by SEBI, by the selected Indian corporate.

The main objectives of the study are analyzing the impact of having an optimum representation of non-executive directors on board on the performance of the firms; examining the effect of having established an Audit Committee on the performance; evaluating the corporate performance in the light of representation of a key executive director in the audit committee; impact of having established a Remuneration Committee on the performance; analyzing the effect of Disclosure of Director remuneration in the Annual Reports on the performance; studying the association of Certification of Annual Reports by CEO/ CFO and corporate performance and; examining the relationship of inclusion of Corporate Governance Compliance Report in Annual Report & the firm performance. The present section will take into account the following corporate governance practices and draw assumptions to investigate their impact on firm performances.

3.1.1. HYPOTHESIS 1 : BOARD COMPOSITION

H_{11} : An optimum representation of non-executive directors on the board will lead to better performance of the firms.

It is assumed that the board composition i.e. optimum mix of executive and non-executive directors on board facilitates enhanced corporate performance. The expertise and competence of the board of directors is significant in shaping firms' performance.

3.1.2. HYPOTHESIS 2 : PRESENCE OF AUDIT COMMITTEE

H_{12} : Firms having established an Audit Committee should reflect higher performance than those who do not have such committees.

The establishment of Audit committee is mandated by the listing agreement. Still, many organizations treat it as a matter of option and go ahead without adhering to apt norms. In this study, it is assumed that a properly formed audit committee functions in such a way that it would enhance the firm performance.

3.1.3. HYPOTHESIS 3 : COMPOSTITION OF AUDIT COMMITTEE

H_{13} : Representation of a key executive director in an audit committee will be associated with lower corporate performance.

It is assumed that the presence of a key executive director in audit committee hampers the unbiased functioning of the committee. Their presence may lead to biased decisions which may inhibit corporate performance.

3.1.4. HYPOTHESIS 4 : PRESENCE OF REMUNERATION COMMITTEE

H_{14} : Firms having established a Remuneration Committee should reflect higher performance than those who do not have such committees.

A remuneration committee is a non-mandatory requirement of clause 49 which gives an option to firms to function without this committee. However, in this study, it is assumed that a remuneration committee facilitates disclosures and transparency which is instrumental in instilling stakeholders confidence and thus enhancing firms' image and performance.

3.1.5. HYPOTHESIS 5 : DIRECTORS' REMUNERATION IN ANNUAL REPORT

H_{15} : Disclosure of Director remuneration in the Annual Reports has a positive impact on the performance.

It is assumed that the compensation details, if included in annual reports would provide the stakeholders with the idea on company's earnings and disbursements and will enhance the firms' value in their mind leading to enhanced corporate performance.

3.1.6. *HYPOTHESIS 6 : CEO/ CFO CERTIFICATION*

H_{16} : Certification of Annual Reports by CEO/ CFO has a positive impact on the performance of an organization.

The CEO/CFO certification will authenticate the annual reports and will act as a more legitimate source for extracting any kind of information from the annual reports. Thus, this boost investors' confidence in firms' functioning.

3.1.7. HYPOTHESIS 7 :CORPORATE GOVERNANCE COMPLIANCE REPORT

H_{17} : Inclusion of Corporate Governance Compliance Report in the Annual Report will be associated with higher corporate performance.

It is assumed that the inclusion of corporate governance compliance report binds the company officials to adhere to the specified laws and regulations and provide reasons for non-adherence, if any. This leads to an overall effective functioning and thus, enhanced corporate performance may be accomplished.

3.2. SAMPLE SELECTION

For the purpose of the present analysis, fifty companies, listed on the NSE, were selected, from across the various sectors, on a random basis. The sectors included companies from IT, Finance and Banking, Manufacturing, Automobiles, Energy, Real Estate, PSUs, Pharmaceuticals, Retail, Aviation, Hospitality, Services and so on. The companies are necessarily those companies who are having a paid up share capital of Rs 3 crores and above or net worth of Rs 25 crores or more at any time in the history of the entity.

A Panel study was aimed by obtaining the data of the fifty companies (50) selected over a period of two financial years (2 FY) ie 2007-2008 and 2008-2009, providing a total of 100 observations. The Annual reports were obtained from various sources and an in-depth analysis of the Annual Reports of the selected companies was undertaken wherein the financial data as well as the statistics of the corporate governance norms practiced or otherwise was observed, in the stated duration by the selected companies. A careful analysis of the Annual Reports revealed the data pertaining to the financial performance and the adherence status to various corporate governance norms, as selected for the purpose of the study.

For further analysis, the data was segregated into dependent and independent variables and their correlation was undertaken. Lets define the variables in the following section.

3.2.1. Independent Variables:

The independent variables (X) were captured from the Clause 49 of Listing Agreement of SEBI pertaining to corporate governance. The scope was focused on the norms namely Composition of Board of Directors, Composition of Audit Committee, Presence & Formulation of Remuneration Committee, Disclosure of Directors Remuneration in Annual Report, CEO/ CFO Certification of Annual Report, Inclusion of Corporate Governance Report in Annual Report & Corporate Governance Compliance Certificate.

As per the recommendations in Clause 49 as laid down by SEBI pertaining to corporate governance norms, there are few guidelines as to the following norms, selected for the purpose of the study:

3.2.1.1. Board Composition

It mandates an optimum representation of Non-Executive Directors in the board of directors. The board of directors of the company shall have an optimum combination of executive and non-executive directors with not less than fifty percent of the board of directors comprising of non-executive directors. The number of independent directors would depend on whether the Chairman is executive or non-executive. In case of a non-executive chairman, at least one-third of board should comprise of independent directors and in case of an executive chairman, at least half of board should comprise of independent directors.

3.2.1.2. Presence of an Audit Committee

SEBI mandates that a qualified and independent audit committee shall be set up and shall comply to the formation, composition and meeting norms. All members of audit committee shall be financially literate and at least one member shall have accounting or related financial management expertise.

3.2.1.3. Representation of Key Executive Director in Audit Committee

The audit committee shall have minimum three members. All the members of audit committee shall be non-executive directors, with the majority of them being independent.

3.2.1.4. Remuneration Committee

Clause 49 has recommended setting up of remuneration committees as per the norms and specified the formation and meeting regulations

3.2.1.5. Directors' Remuneration in Annual Reports

All pecuniary relationship or transactions of the non-executive director's vis-a-vis the company shall be disclosed in the Annual Report. Further the following disclosures on the remuneration of directors shall be made in the section on the corporate governance of the annual report.

3.2.1.6. Certification of Annual Reports by CEO/ CFO

CEO (either the Executive Chairman or the Managing Director) and the CFO (whole-time Finance Director or other person discharging this function) of the company shall certify that, to the best of their knowledge and belief:

3.2.1.7. Corporate Governance Compliance Report

Clause 49 recommended for a separate section on Corporate Governance in the annual reports of company, with a detailed compliance report on Corporate Governance. Non-compliance of any mandatory requirement i.e. which is part of the listing agreement with reasons thereof and the extent to which the non-mandatory requirements have been adopted should be specifically highlighted.

Dummy Variable as Independent variables:

Since these variables as mentioned above are not quantifiable i.e, only their absence or presence can be observed, Dummy Variable Approach has been applied for further analysis. A dummy variable can be defined as a qualitative representative variable incorporated into a regression, such that it assumes the value 1 whenever the category it represents occurs, and 0 otherwise.

For the purpose of the study, the presence of each these variables is denoted by 1 & their absence by 0. A dummy explanatory variable with a value of 0 will cause that variable's coefficient to disappear and a dummy with a value 1 will cause the coefficient to act as a supplemental intercept in a regression model.

3.2.2. Dependent Variable

As the objective of the study is to establish a linkage between the selected corporate governance attributes and corporate performance, we observed two financial ratios, namely P/E Ratio & Asset Turnover Ratio of these selected companies over a period of two financial years as a measure of corporate performance. The average value of these ratios was used as the dependent variable (Y).

The financial measures can be described as:

P/E Ratio (Price-to-earnings ratio)

The P/E ratio (price-to-earnings) ratio is a measure of the price paid for a share relative to the annual net income or profit earned by the firm per share. The P/E ratio can therefore alternatively be calculated by dividing the company's market capitalization by its total annual earnings.

The P/E ratio is can be denoted as:

$$\text{P/E ratio} = \frac{\text{Market Price per Share} \times \#\text{shares}}{\text{Annual Earnings per Share} \times \#\text{shares}}$$

Asset Turnover Ratio

Asset turnover is a financial ratio that measures the efficiency of a company's use of its assets in generating sales revenue or sales income to the company.

$$\text{Asset Turnover} = \frac{\text{Net Sales Revenue}}{\text{Average Total Assets}}$$

Sales is the value of Net Sales or Sales from the company's income statement . Average Total Assets is the average of the values of Total assets from the company's balance sheet in the beginning and the end of the fiscal period.

3.3. MODELLING

On the basis of the selected corporate governance norms, an effort has been made to examine the impact of these factors on the performance of the selected firms. For this, dummy variable regression model has been used and an empirical study has been attempted The study aims at analyzing the importance & weightage of the various corporate governance norms, in isolation & in respect to other norms which can be broadly mentioned as follows:

3.3.1. Significance of each corporate governance norm to the firm performance on an individual basis by way of **Simple Regression analysis.**

3.3.2. The corporate governance norm with the highest influence in comparison to all the other norms taken together, observed through **Multiple Regression analysis**.

3.3.3. **Ranking** of combinations of various corporate governance norms and assessing the best combination derived by observing the **mean performances**.

Based on the observation derived from data of the selected companies, further analysis was done with the following empirical models using dummy variables :

EMPIRICAL MODEL FOR SIMPLE REGRESSION:

$$Y_{it} = \alpha_{it} + \alpha_1 D_{it} + U_{it} \qquad \text{Eq (1)}$$

EMPIRICAL MODEL FOR MULTI-VARIANT REGRESSION:

$$Y_{it}=\alpha_1+\alpha_2 D_{2it}+\alpha_3 D_{3it}+\alpha_4 D_{4it}+\alpha_5 D_{5it}+\alpha_6 D_{6it}+\alpha_7 D_{7it}+ \alpha_8 D_{8it} + U_{it} \qquad \text{Eq (2)}$$

Where,

Y_{it} =	Performance of i^{th} firm in the i^{th} year
i =	no. of firms 1 to 50
t =	no. of year 1 and 2
α_1 =	Intercept
α_2 to α_8 =	Coefficients of Dummy variables
D_{2it} to D_{8it} =	Dummy Variables
U_{it} =	Stochastic Error

Dummy variables are defined as follows:		
D_{2it}	= 1	if there is an Optimum representation of Non-Executive Directors & =0, if otherwise
D_{3it}	=1	if Audit Committee is present & =0, if otherwise
D_{4it}	=1	if there is a Key Executive Director in Audit Committee & =0 , if otherwise
D_{5it}	=1	if Remuneration Committee is present & =0, if otherwise
D_{6it}	=1	if Directors' Remuneration is included in Annual Report & =0 , if otherwise
D_{7it}	=1	if Annual Reports are certified by CEO/ CFO & =0 , if otherwise
D_{8it}	=1	if Compliance Report is included in the Annual Reports & =0 , if otherwise

Equation (1) has seven sets that includes individually seven dummy variables as defined above and the comparison of the mean performance is analyzed as follows:

3.3.1.1. Mean Performance with the Optimum Representation of Non-Executive Directors (CG1) is

$$\mathbf{E\ (Y_{it}\ |\ D_{2it} = 1)\ = \alpha_1 + \alpha_2}$$

Mean Performance without Optimum Representation of Non-Executive Directors (CG1) is

$$\mathbf{E\ (Y_{it}\ |\ D_{2it} = 1)\ = \alpha_1}$$

The difference is of α_2. There is a hypothesis such that $\alpha_2 \neq 0$ and positive.

$$\mathbf{H_{11} : \alpha_2 \neq 0 \text{ and } +ve}$$

If α_2 is +ve and significant (determined through applying t-test), the hypothesis is accepted and there will be difference between mean performance of the presence of optimum representation of non-executive directors and its absence.

If α_2 is positive but not significant, the hypothesis is rejected and it may be considered that there will be no difference between mean performance of the two types.

Similarly, estimation of mean performance of each attribute can be analyzed and conclusions can be derived accordingly.

3.3.1.2. $E\,(Y_{it} \mid D_{3it} = 1) = \alpha_1 + \alpha_3$

$= \alpha_1$

$H_{12} : \alpha_3 \neq 0$ and positive

3.3.1.3. $E\,(Y_{it} \mid D_{4it} = 1) = \alpha_1 + \alpha_4$

$= \alpha_1$

$H_{13} : \alpha_4 \neq 0$ and positive

3.3.1.4. $E\,(Y_{it} \mid D_{5it} = 1) = \alpha_1 + \alpha_5$

$= \alpha_1$

$H_{14} : \alpha_5 \neq 0$ and positive

3.3.1.5. $E\,(Y_{it} \mid D_{6it} = 1) = \alpha_1 + \alpha_6$

$= \alpha_1$

$H_{15} : \alpha_6 \neq 0$ and positive

3.3.1.6. $E\,(Y_{it} \mid D_{7it} = 1) = \alpha_1 + \alpha_7$

$= \alpha_1$

$H_{16} : \alpha_7 \neq 0$ and positive

3.3.1.7. $E\,(Y_{it} \mid D_{8it} = 1) = \alpha_1 + \alpha_8$

$= \alpha_1$

$H_{17} : \alpha_8 \neq 0$ and positive

For the estimation of Equation No.2 that included all the seven dummy variables together, there were **128** combinations of mean performances, the equations for which can be written as:

Mean performance with the presence of all the dummy variables:

$\mathbf{E\ (Y_{it}\,|\,D_{2it}=1,\ D_{3it}=1,\ D_{4it}=1,\ D_{5it}=1,\ D_{6it}=1,\ D_{7it}=1,\ D8_{it}=1)}$

$\mathbf{= \alpha_1 + \alpha_2 + \alpha_3 + \alpha_4 + \alpha_5 + \alpha_6 + \alpha_7 + \alpha_8}$

Mean performance with the absence of all the dummy variables:

$\mathbf{E\ (Y_{it}\,|\,D_{2it}=0,\ D_{3it}=0,\ D_{4it}=0,\ D_{5it}=0,\ D_{6it}=0,\ D_{7it}=0,\ D8_{it}=0)}$

$\mathbf{= \alpha_1}$

Similarly, equations for various combinations with presence and absence of dummy variables can be written and results be observed.

If α_2 becomes positive, the mean performance is likely to increase by presence of that factor and if α_2 becomes negative, the mean performance is likely to decrease by the presence of that factor. Likewise, inferences can be drawn for each dummy variable. However, apart from such managerial significance, the statistical significance of all α's is also important for analysis.

The rankings of the 128 combinations has been done on the basis of managerial significance only. The managerial significance with positive/ negative signs and magnitudes of α's are also important with reference to the ranking of the performances. The statistical significance will however limit the combinations of the rankings upto certain groups.