CHAPTER 3
RESEARCH FRAMEWORK AND RESEARCH METHODOLOGY

This chapter explains the research objectives, research framework, sample selection and the time period considered for the study. It also provides a brief explanation of the statistical techniques applied to analyze the data collected to derive conclusions.

3.1 Research Objectives

The present study primarily attempts to identify the determinants of managerial remuneration and managerial remuneration disclosure practices being followed in Indian companies. The specific objectives set for the present study are as follows.

1) To analyze the managerial remuneration disclosure practices
2) To study the determinants of managerial remuneration disclosure
3) To examine the growth of managerial remuneration
4) To study the determinants of managerial remuneration
5) To examine the impact of predicted ‘excess’ managerial remuneration on the future corporate performance

3.2 Time-Period of the Study

The present study covers a period of 10 years ranging from 2002-03 to 2011-12, because clause 49 of the listing agreement was first introduced in 2000 and was made applicable to the companies as per the schedule of implementation. Companies, listed in the year 2000 with paid up capital of ₹30 million and above were required to comply with the clause 49 during the financial year 2002-03. Companies seeking listing after the year 2000 came under the purview of clause 49 at the time of listing only. Some amendments were made in this clause vide circulars dated March 9 and September 12, 2000 and January 22, March 16 and December 31, 2001. However, a master circular dated October 29, 2004 superseded all earlier circulars issued by SEBI about Clause 49 of the Listing Agreement and stated that companies complying with the provisions of the existing
clause 49 would continue to do so till the revised Clause 49 of the listing agreement is complied with or till March 31, 2005 whichever is earlier. Thus, for the analysis of the managerial remuneration of listed Indian companies, this study covers the period from 2002-03 to 2011-12.

3.3 Sample Selection

All companies listed on the Bombay Stock Exchange are taken as the universe of the present study. Top 500 companies, ranked by the Business Today magazine (Layak, 2012) on the basis of average market capitalisation for the first half of the financial year 2012-13 were considered for this study. Top performing companies are considered to be the trend setters which are likely to set examples for other companies in every field and compliance with statutory requirements is not an exception. Thus, the extent of disclosure about managerial remuneration practices in most valuable companies would give an idea about disclosure of managerial remuneration practices by the corporate sector in India. As mentioned above, top 500 companies ranked on the basis of their average market capitalization were considered for the present study but the following were excluded in the final selection.

- Banks, financial institutions and government companies were excluded for the meaningful comparison of the private sector companies.
- Companies which do not come under the purview of clause 49 by the end of March 31, 2003 were omitted.
- Companies which had year ending other than March 31 have been excluded.
- Companies for which corporate governance reports were not available for the specified period of 10 years were also excluded.

Finally, a sample of 150 private sector companies which includes well known entities like ITC, Hero MotoCorp, Infosys, Reliance Industries, Tata Motors etc. drawn from 15 industrial sectors (Table 3.1), were selected for 1st and 3rd objectives, i.e. for examining the disclosure practices and growth rate of managerial remuneration in India respectively.
for the 2nd, 4th and 5th objectives, some companies were removed from the sample due to the non-availability of the data regarding few variables for 10 years, such as the data on lagged corporate performance and number of independent directors on the board. Finally, sample consisting of 134 private sector companies from 12 industries was selected for a period of 10 years (2003 to 2012).

### 3.4 Data Collection

Corporate governance reports were accessed through the Prowess database, maintained by the Centre for Monitoring Indian Economy. Some reports were accessed through the database ‘Ace-Equity’. However, some missing reports were downloaded from the websites of the companies. All the financial information required for the study was extracted from the Prowess database. Information regarding the governance structure of the companies such as board size, board independence, and the existence of remuneration
committee on the boards was manually collected from corporate governance reports of companies.

3.5 Research Framework and Statistical Techniques Used

A research framework for each objective has been developed and appropriate statistical techniques are used to analyze the data to accomplish the objectives of the present study. These are explained one by one in the text following.

3.5.1 Managerial Remuneration Disclosure Practices

A content analysis was performed on the corporate governance reports in order to measure the level of disclosure of the managerial remuneration in selected Indian companies. The following research questions were developed to assess the compliance with mandatory requirements of disclosure of managerial remuneration. Each statement is coded as “1” if the compliance with the respective statement is made and “0” otherwise.

A. Disclosure of the remuneration of the executive directors
   (i) Disclosure of the bifurcated details of the remuneration of the executive directors
   (ii) Number of classes to represent the components of the remuneration of the executive directors
   (iii) Details of the fixed and performance linked incentives of the executive directors
   (iv) Disclosure of the performance criteria for determining the remuneration of the executive directors

B. Disclosure of the components of the remuneration of the executive directors

C. Disclosure of the remuneration of the non-executive directors

D. Disclosure of the performance criteria for determining the remuneration of the non-executive directors

E. Disclosure of the stock options details

Compliance with the non-mandatory requirements of the remuneration disclosure is analysed through the following points:

F. Presence of the remuneration committee
G. Description of the terms of reference

H. Presence of the remuneration policy

I. Composition of the remuneration committees
   (i) Proportion of the companies having at least three directors on their remuneration committees
   (ii) Proportion of the companies having at least three non-executive directors on their remuneration committees
   (iii) Proportion of the companies having promoter directors on their remuneration committees

J. Proportion of companies having an independent non-executive director as the chairman of the remuneration committees

K. Presence of promoter director as the chairman of the remuneration committee

L. Proportion of companies conducting at least one remuneration committee meeting in a year

M. Presence of all members of the remuneration committee in the meeting

N. Presence of chairman of the remuneration committee in the annual general meeting

The reported compliance with the corresponding requirement was checked by rating each statement as “yes” or “no”. To represent the disclosure scores, Disclosure and Compliance Index (D&C index) is developed on the basis of compliance with mandatory and non-mandatory disclosure requirements of the clause 49. For calculating mandatory D&C index, statements B (i) (a), B (ii) (b), B (iii) (b), B (iv) (b), C (i) (a), and C (ii) (a) (as mentioned in annexure 2) have been excluded. Statements B (vi) and C (iii) are given one point only. The maximum possible managerial remuneration disclosure score in any given year is 14 for companies that grant stock options to its executive and/or non-executive directors and 13 for those that do not. The total assigned disclosure score to a particular company on the basis of statements complied is divided by maximum available disclosure score for that respective company in order to calculate the mandatory D&C index. For calculating non-mandatory D&C index, statements I (iii) and K are excluded.
maximum possible disclosure score in any given year is 9 for companies that conducted at least one remuneration committee meeting in a year and 8 for those that did not.

The Null Hypothesis to test whether the proportion of the companies complying with each requirement remained same or changed during the period of study, has been set as follows.

\( H_{01} \): The proportion of companies complying with disclosure of managerial remuneration over the period of study remained same.

Mandatory D&C index has been examined to know whether it varies across years and industries. The Null Hypothesis to test whether there are any differences in mean mandatory disclosure scores across ten years (2003-2012) has been stated as follows.

\( H_{02} \): There is no significant difference in the mean mandatory D&C index at all time points.

The Null Hypothesis to test whether there are any differences in mean mandatory disclosure scores across the industries (12) has been stated as follows.

\( H_{03} \): There is no significant difference in the mean mandatory D&C index across the industries.

Non-mandatory D&C index has been examined to know whether it varies across years and industries. The Null Hypothesis to test whether there are any differences in mean non-mandatory disclosure scores across ten years (2003-2012) has been stated as follows.

\( H_{04} \): There is no significant difference in the mean non-mandatory D&C index at all time points.

The Null Hypothesis to test whether there are any differences in mean non-mandatory disclosure scores across the industries (12) has been stated as follows.

\( H_{05} \): There is no significant difference in the mean non-mandatory D&C index across the industries.

**Statistical Analysis**

Cochran’s q test, repeated measures ANOVA, and Welch ANOVA have been carried out using softwares SPSS 18 and STATA 11.
Content Analysis

Content analysis as a research method has been used in the literature of managerial remuneration disclosure (Clarkson et al., 2006; Laksmana, 2008). For the present study, corporate governance reports of 150 companies from 2002-03 to 2011-12 have been content analysed. The proportion of companies complying with the disclosure requirements each year is calculated.

Cochran’s q Test

Cochran (1950) stated that chi-square test for comparing the percentages of successes in a number of independent samples was extended to the situation in which each member of any sample was matched in some way with a member of every other sample. In such cases, the outcomes are listed as either “0” or “1” (Conover, 2013). This test is used for analysing whether the proportion of the companies complying with each requirement remained same or changed during the period of study.

Repeated Measures ANOVA

When the same individuals are appraised on a number of occasions corresponding to each treatment level, the design of the investigation is characterized as repeated measures or randomized block design (Girden, 1992). An important assumption of repeated measures ANOVA is sphericity. It implies homogeneity among variances of differences between pairs of scores. In case this assumption is violated, then the degrees of freedom are adjusted in view of Greenhouse-Geisser, Huynh-Feldt, and Lower-bound corrections. Repeated measures ANOVA is used to test whether there are any differences in mean disclosure scores across ten years.

Welch ANOVA

The basic assumption of ANOVA is the homogeneity of variances. Levene’s statistic tests the null hypothesis that the variances of different industries are equal. In case of a significant p value of levene statistic, the assumption of homogeneity of variances for ANOVA is violated. So, Welch ANOVA is applied to test whether D&C index differs across industrial sectors.
3.5.2 Determinants of Disclosure of Managerial Remuneration


Only two studies (Clarkson et al., 2006; Laksmana, 2008) developed the disclosure index for the remuneration of the executives. Clarkson et al. (2006) developed disclosure index for the CEO remuneration in Australia for a period of 7 years (1998 to 2004) and examined the impact of company characteristics on disclosure index. Laksmana (2008) developed disclosure index, consisting of 23 compensation related items for a sample of 218 and 232 firms in 1993 and 2002 respectively in US, and investigated the role played by board governance in the disclosure of executive compensation practices. The present study examines the impact of corporate performance, foreign institutional shareholding, Indian institutional shareholding, promoters’ shareholding, frequency of board meetings, the presence of remuneration committee on board, board size, board independence,
company size, leverage, investment opportunities, and company experience on the disclosure of managerial remuneration in India.

**Corporate Performance and Disclosure of Managerial Remuneration**

According to signalling theory, disclosure of detailed information works as an incentive to reduce information asymmetry between investors and managers. It also suggests that in order to resolve ‘lemons’ problem, managers are required to fully reveal their private information, which implies that if a company is performing well, its superiority can be signalled through better disclosure of information (Healy and Palepu, 2001). A company’s profitability is highly influenced by the strategies framed by the board of directors. Companies paying higher remuneration packages to its directors in order to retain and motivate them will tend to disclose more information regarding remuneration paid to directors. Thus, higher the profit of companies, more remuneration disclosure is expected from the companies in order to justify their hefty remuneration packages and their superior performance. Chizema (2008) and Laksmana (2008) reported that well performing companies are more likely to disclose managerial remuneration as compared to poor performing counterparts. Chizema (2008) found firm performance positively and significantly related with the disclosure of individual executive compensation in large 126 German firms from year 2003 to 2005. Laksmana (2008) found company performance insignificant in disclosing more details of compensation in 1993 in US. However, it became positive and significant in 2003.

Research Framework and Research Methodology

for the years 2000 and 2002. Clarkson et al. (2006) found insignificant impact of company performance on CEO remuneration disclosure index in Australia for a period of 7 years (1998 to 2004). Nelson et al. (2010) revealed company performance insignificant in explaining the disclosure of statutory executive stock options by 115 Australian listed companies from 2001 to 2004. Schiehll et al. (2013) found company performance insignificant in explaining the voluntary executive stock option disclosure in 68 companies with active Executive Stock Option plan in 2007 in Brazil. Malak (2015) also found company performance insignificant in explaining the disclosure of individual executive director’s remuneration in 200 Malaysian companies from 2000 to 2008. Akhtaruddin (2005) found no significant impact of profitability on corporate mandatory disclosure practices in Bangladesh. As the relationship between corporate performance and disclosure of managerial remuneration is not well established till date, the following null hypothesis is developed and tested.

\[ H_{06}: \text{Corporate performance has no significant impact on the disclosure and compliance index of managerial remuneration.} \]

Ownership Structure and Disclosure of Managerial Remuneration

Ownership structure is represented through three variables; foreign institutional shareholding, Indian institutional shareholding, and promoters’ shareholding.

Institutional Shareholding and Disclosure of Managerial Remuneration

Institutional investors have an important role in improving the corporate governance. They invest in companies with good corporate governance records (Mohanty, 2003) and are in a better position to safeguard the interest of the shareholders. Thus, the growing dominance of institutional investors makes a company aware for complying with all the domestic regulations (Gillan and Starks, 2003). The presence of the institutional investors puts ‘soft’ coercion on a company for improving their governance standards, otherwise they would sell their shares (Chizema, 2008). Chizema (2008) found institutional ownership positively and significantly related with the disclosure of individual executive compensation in large 126 German firms from year 2003 to 2005. It implies that institutional investors seem to perform the monitoring role well and make the company aware to disclose more details of remuneration paid to its board of directors. Even, Li
(1994) stated that big investors demand international standards of accounting disclosure and clarity. However, Sarkar (2010) concluded that potential for institutional activism across Indian companies when measured by the extent to which institutional investors can act as a countervailing force against promoters through their block holdings is at best weak. This perspective suggests a passive role of institutional investors in corporate governance in India. Laksmana (2008) found institutional ownership insignificantly related with board compensation disclosure score in 2002, whereas it was negatively related in 1993. In the absence of any clear direction of relationship between institutional investors’ shareholdings and disclosure of managerial remuneration, the following null hypotheses are tested:

\[ H_{07}: \text{Foreign institutional shareholding has no significant impact on the disclosure and compliance index of managerial remuneration.} \]

\[ H_{08}: \text{Indian institutional shareholding has no significant impact on the disclosure and compliance index of managerial remuneration.} \]

**Promoters’ Shareholding and Disclosure of Managerial Remuneration**

Companies with higher promoters’ shareholdings are more likely to have promoters’ representatives on the board. In such companies, promoters influence the board decisions and get their decisions approved in general body meetings. Sarkar (2010) found strong presence of promoters in Indian companies in 2006, irrespective of the level of block holdings. Chakrabarti et al. (2008) stated that significant tunnelling and pyramiding exist among Indian business groups. The presence of the promoter directors on the board is more likely to maintain secrecy in the board practices and would resist the changes demanding disclosure of governance practices of companies. This might lead to lack of transparency when it comes to the disclosure of managerial remuneration. It is expected that dominant promoters’ shareholding prevent complete disclosure of managerial remuneration.

Another viewpoint suggests that as the promoters’ shareholding increased, there is more convergence of their interest with their companies and thus, they are expected to promote good governance practices. Kumar and Singh (2013) suggests that interests of promoters are aligned with their companies where promoters’ shareholding is greater than 40
percent and results in positive impact on firm value. Mann and Kohli (2009) found that where promoters’ shareholding is highest, acquiring and target companies earned positive abnormal returns for within-group stock offers. This perspective suggests a positive impact of dominant promoters on the disclosure of managerial remuneration. Following null hypothesis is developed and tested.

\[ H_{09} : \text{Promoters’ shareholding has no significant impact on the disclosure and compliance index of managerial remuneration.} \]

**Governance Structure and Disclosure of Managerial Remuneration**

Companies with strong governance structure are more likely to engage in voluntary disclosure of executive compensation (Conyon et al., 2002; Clarkson et al., 2006; Schiehl et al., 2013). In the present objective, governance structure is represented through four variables; board meetings frequency, the presence of remuneration committee on board, board size, and board independence.

**Board Meetings Frequency and Disclosure of Managerial Remuneration**

Board meetings frequency has been used as a metric of board activity by Vafeas (1999) and Brick and Chidambaram (2010). Xie et al. (2003) found that board meeting frequency was associated with reduced levels of discretionary current accruals. Greater degree of board diligence would give opportunity to board members to have detailed discussion on company matters. This perspective can positively influence the remuneration disclosure practices of a company. However, Laksmana (2008) and Nelson et al. (2010) suggested that board meeting frequency does not play any significant role in the disclosure of compensation practices. Laksmana (2008) found board meeting frequency insignificant in disclosing more details of compensation in 1993 in US. However, it became positive and significant in 2003. Nelson et al. (2010) represented board activity through the frequency of board meetings and found it insignificant in providing executive stock option disclosure in Australia during 2001-2004. In the absence of any clear relation between board meetings frequency and disclosure of managerial remuneration, the following null hypothesis is tested.

\[ H_{010} : \text{Board meetings frequency has no significant impact on the disclosure and compliance index of managerial remuneration.} \]
Remuneration Committee and Disclosure of Managerial Remuneration

The existence of remuneration committee on a company’s board represents stronger corporate governance promoting more transparent remuneration practices (Nelson and Percy, 2005). The presence of remuneration committee makes board of directors more responsive to investors’ demands for greater disclosure of remuneration policies (Schiehll et al., 2013). Nelson and Percy (2005) and Schiehll et al. (2013) suggest that companies having remuneration committees on their boards are more likely to disclose the details of remuneration paid to their board members. Nelson and Percy (2005) found the presence of compensation committee significant and positive in increasing the executive stock option disclosure in 197 Australian listed companies for the years 2000 and 2002. Schiehll et al. (2013) found the presence of formal compensation committee positive and significant in explaining the voluntary executive stock option disclosure in 68 companies with active Executive Stock Option plan in 2007 in Brazil. However, Liu and Taylor (2008) found remuneration committee insignificant in explaining the disclosure of top executives’ share rights, options and termination benefits in 191 Australian listed companies for the years 2003 and 2004. As the evidence in favour of positive or negative relationship between presence of remuneration committee and disclosure of managerial remuneration is not sufficient, the following null hypothesis is tested.

\[ H_{0\text{II}}: \text{The presence of remuneration committee on the board has no significant impact on the disclosure and compliance index of managerial remuneration.} \]

Board Size and Disclosure of Managerial Remuneration

Board size is one of the widely used variables for representing the governance structure of companies. Based on the resource dependency theory, board of directors bring advice and counsel, channels of information flow, preferential access to resources, and legitimacy (Hillman et al., 2009; Jackling and Johl, 2009). It implies that larger boards would be more effective for greater disclosure of remuneration (Laksmana, 2008; Schiehll et al., 2013). Laksmana (2008) found board size positive and significant in disclosing more details of compensation in 1993 in US. However, it became insignificant in 2003. Schiehll et al. (2013) found board size positive and significant in explaining the voluntary executive stock option disclosure in 68 companies with active Executive Stock Option plan in 2007 in Brazil.
Adequate board size results in better distribution of responsibilities amongst the board members, leading to more effective board decisions (Laksmana, 2008). However, increase in number of directors on a company’s board beyond limit may also deteriorate communication and coordination levels of board. Smaller boards might be found to have greater levels of cohesion as compared to larger boards (Hearn, 2013). This perspective proposes that larger the size of board, more likely they are to make less disclosure of managerial remuneration. Disclosure of managerial remuneration might negatively affect their own interests. This leads to a negative impact of board size on the disclosure of managerial remuneration (Conyon et al., 2002; Chizema, 2008; Hearn, 2013). Conyon et al. (2002) revealed that increase in the board size of companies decreased the likelihood of disclosing information regarding the share options granted to directors in a sample of 287 companies in UK during 1994-95. The study stated that increase in the number of directors on board might increase the proprietary costs on company in the form of greater political visibility, which ultimately hampered the disclosure of share options. Chizema (2008) found size of the supervisory board negatively and significantly related with the disclosure of individual executive compensation in large 126 German firms from year 2003 to 2005. Hearn (2013) found the impact of board size negative and significant on the likelihood of individual executive pay disclosure in 69 North-African IPO firms during 2000-2010. Due to competing explanations about the impact of board size on managerial remuneration disclosure, the following null hypothesis is tested.

\[ H_{02}: \text{Board size has no significant impact on the disclosure and compliance index of managerial remuneration.} \]

**Board Independence and Disclosure of Managerial Remuneration**

An independent board is expected to make decisions in the best interest of all stakeholders. Non-executive directors are seen as check and balance mechanism in enhancing board effectiveness (Haniffa and Cooke, 2002). Liu and Taylor (2008) suggested that independent directors are concerned for their own reputation with shareholders and thus, ensure transparency in the disclosure of remuneration of the directors. Conyon at al. (2002) favoured the monitoring function of non-executives and found that an increase in number of non-executive directors increased the likelihood of
disclosing exercise price information for share options in UK in 1994 and 1995. Laksmana (2008) found board independence to be positively related to disclosure of compensation practices in 1993, whereas it became insignificant in 2002 in US. Malak (2015) found board independence significantly and positively related with the disclosure of individual executive director’s remuneration in 200 Malaysian companies from 2000 to 2008. It is expected that independent directors would improve the remuneration disclosure practices in order to comply with high governance standards.

Nelson et al. (2010) represented board independence through chairman independence and the proportion of non-executives on the board and found a negative relationship between board independence and executive stock option disclosure, suggesting that agency problems arising due to lack of independence were mitigated by providing more ESO disclosure. Eng and Mak (2003) reported ‘substitution effect’ as the reason of reduction in voluntary disclosure with an increase in outside directors. Independent directors may be able to obtain information directly and thus, act as a substitute for monitoring through public disclosure. However, an insignificant impact of independent non-executive directors has been found on the disclosure of remuneration in Clarkson et al. (2006), Hearn (2013) and Schiehll et al. (2013). Clarkson et al. (2006) revealed an insignificant impact of governance factor constructed using the proportion of independent directors, independent audit committee members, independent remuneration committee members, and whether the CEO was also the chairman of the board, on CEO remuneration disclosure index in Australia for a period of 7 years (1998 to 2004). Hearn (2013) found the impact of board independence insignificant on the likelihood of individual executive salary disclosure in 69 North-African IPO firms during 2000-2010. Schiehll et al. (2013) also found board independence insignificant in explaining the voluntary executive stock option disclosure in 68 companies with active Executive Stock Option plan in 2007 in Brazil. As nature of relationship between board independence and disclosure of managerial remuneration is not clear, the following null hypothesis is tested.

\[ H_{013}: \text{Board independence has no significant impact on the disclosure and compliance index of managerial remuneration.} \]
Company Characteristics and Disclosure of Managerial Remuneration

Company characteristics are represented through four variables; company size, leverage, investment opportunities, and company experience.

Company Size and Disclosure of Managerial Remuneration

Size of a company is a symbol of prestige and reputation of a company. Larger the size of a company, more likely it is to innovate board governance practices and adopt the practices of disclosure of managerial remuneration (Chizema, 2008). Larger companies can have larger agency and political costs and information disclosure may be used to reduce these costs and information asymmetries (Inchausti, 1997; Liu and Taylor, 2008). Larger companies are more visible to the government and better reporting may tend to avoid undesired pressures from the government (Buzby, 1975). This perspective suggests that company size should be positively related with the disclosure of managerial remuneration (Nelson and Percy, 2005; Clarkson et al., 2006; Chizema, 2008; Liu and Taylor, 2008; Malak, 2015). Nelson and Percy (2005) found company size significant and positive in promoting the transparency of executive stock option disclosure in 197 Australian listed companies for the years 2000 and 2002. Clarkson et al. (2006) disclosed positive and significant impact of company size on CEO remuneration disclosure index in Australia for a period of 7 years (1998 to 2004). Chizema (2008) found firm size positively and significantly related with the disclosure of individual executive compensation in large 126 German firms from year 2003 to 2005. Liu and Taylor (2008) found company size positive and significant in explaining the disclosure of top executives’ share rights, options and termination benefits in 191 Australian listed companies for the years 2003 and 2004. Malak (2015) also found company size significantly and positively related with the disclosure of individual executive director’s remuneration in 200 Malaysian companies from 2000 to 2008.

Conyon et al. (2002) suggested that large firms might be unwilling to reveal information about share options granted to their directors due to propriety costs in the form of adverse media attention and disclosure of valuable reward strategies to the competitors. The study found that company size was negatively and significantly related with the disclosure of exercise prices of share options in a sample of 287 UK companies in 1994 and 1995. Company size was found to be insignificant in determining the disclosure of earliest
exercise price and expiry dates of the share options granted to the directors. However, company size was found to have a negative and significant impact in disclosing the performance criteria to which share options are subject. Another perspective can be that larger companies are seen to be less risky by investors due to their long market standing. In such a scenario, detailed disclosure of managerial remuneration by smaller companies would reduce market uncertainty regarding them and thus, would generate larger incentives to them in terms of improved market confidence. These perspectives suggest a negative impact of company size on disclosure of managerial remuneration.

However, few studies (Laksmana, 2008; Nelson et al., 2010; Hearn, 2013; Schiehl et al., 2013) suggest that company size plays no significant role in shaping the disclosure of managerial remuneration. Laksmana (2008) found company size insignificant in disclosing more details of compensation in 1993 and 2003. Nelson et al. (2010) found firm size insignificant in explaining the disclosure of statutory executive stock options by 115 Australian listed companies from 2001 to 2004. Hearn (2013) found company size insignificant in determining the disclosure of individual executive pay in 69 North-African IPO firms. Schiehl et al. (2013) found company size insignificant in explaining the voluntary executive stock option disclosure in 68 companies with active Executive Stock Option plan in 2007 in Brazil. Due to mixed results about the relationship between company size and managerial remuneration in the past, the following null hypothesis is tested.

\[ H_{04}: \text{Company size has no significant impact on the disclosure and compliance index of managerial remuneration.} \]

**Leverage and Disclosure of Managerial Remuneration**

Leverage explains the level of dominance of debt holders in proportion to total assets of a company. The increase in leverage implies an increase in the risk of a company. It makes board of directors to avoid conveying any wrong signals in market. Board practices of controversial nature which can bring negative media attention, are not completely disclosed in statements of companies. The increase in leverage ratio may increase the proprietary cost in the form of increased likelihood of bank renegotiation of loan terms in high leveraged firms and thus, negatively related with the disclosure of remuneration (Conyon et al., 2002; Clarkson et al., 2006). Conyon et al. (2002) found negative impact
of borrowing ratio of companies in UK on the disclosure of information regarding share options granted to the directors. Clarkson et al. (2006) found negative and significant impact of company leverage on CEO remuneration disclosure index in Australia for a period of 7 years (1998 to 2004).

However, the relationship between leverage and disclosure of managerial remuneration can also be examined from the agency theory perspective. When a company has large proportion of debt, then conflict of interest between equity and debt investors give rise to agency costs (Berger and Di Patti, 2006). Thus, high-levered companies have an incentive to increase disclosure of managerial remuneration in order to reduce the agency costs, which suggests a positive relationship between company leverage and disclosure levels. No significant impact of leverage has been found on the disclosure of executive stock options by Nelson and Percy (2005), Nelson et al. (2010), Schiehll et al. (2013), and Malak (2015). Nelson and Percy (2005) found leverage insignificant in determining the executive stock option disclosure in 197 Australian listed companies for the years 2000 and 2002. Nelson et al. (2010) found firm leverage insignificant in explaining the disclosure of statutory executive stock options by 115 Australian listed companies from 2001 to 2004. Schiehll et al. (2013) found company leverage insignificant in explaining the voluntary executive stock option disclosure in 68 companies with active Executive Stock Option plan in 2007 in Brazil. Malak (2015) also found it insignificant in explaining the disclosure of individual executive director’s remuneration in 200 Malaysian companies from 2000 to 2008. Following null hypothesis is tested.

\( H_{015}: \text{Company leverage has no significant impact on the disclosure and compliance index of managerial remuneration.} \)

**Investment Opportunities and Disclosure of Managerial Remuneration**

Companies having investment opportunities are also more likely to be concerned for their market reputation. Thus, such companies focus more on complying with all governance norms in order to avoid any negative publicity. Companies with more growth options, face greater information asymmetry (Smith and Watts, 1992) and disclosure is considered as means of mitigating such asymmetries. Eng and Mak (2003) opined that growing firms are more likely to disclose more information. However, the study found an insignificant impact of growth on corporate governance disclosure. Clarkson et al. (2006) stated that
growth of a company did not play any significant role in determining CEO remuneration disclosure index in Australia for a period of 7 years (1998 to 2004). Malak (2015) also found market to book ratio insignificant in explaining the disclosure of individual executive director’s remuneration in 200 Malaysian companies from 2000 to 2008. Bamber and Cheon (1998) advocated that companies facing more growth opportunities faced higher proprietary information costs and thus, managers are more reluctant to disclose information that could dissolve the value of these opportunities. In the absence of sufficient evidence regarding the nature of relationship between investment opportunities and disclosure of managerial remuneration, following null hypothesis is tested.

\[ H_{016}: \text{Investment opportunities of a company have no significant impact on the disclosure and compliance index of managerial remuneration.} \]

**Company Experience and Disclosure of Managerial Remuneration**

Older companies are expected to have rich disclosures as they have track record of disclosures in the past with which they need to standardise and improve their current disclosure practices. Moreover, older firms are more likely to be concerned for their market reputation and standing and this makes them to appear as role model for other companies in complying governance norms of the country. This suggests a positive impact of company age on the disclosure of managerial remuneration. Chizema (2008) opined that with an increase in age, companies are more expected to resist change and in adapting new governance norms of the regulatory authorities. This led to the negative impact of age on the disclosure of individual executive compensation in large 126 German firms from year 2003 to 2005. It may also happen that younger companies may like to disclose more in order to reduce market skepticism and to have reliable image in the eyes of investors. This perspective would support the negative impact of company age on remuneration disclosure. Soliman (2013) found firm age to have insignificant association with voluntary disclosures in annual reports in a sample of 50 Egyptian companies during 2007-2010. Considering age as a proxy of company experience, the following null hypothesis is tested.

\[ H_{017}: \text{Company experience has no significant impact on the disclosure and compliance index of managerial remuneration.} \]
Proposed Research Model

On the basis of the literature on the disclosure of managerial remuneration, following research model is proposed:

![Proposed Research Model Diagram]

**Corporate Performance**
- Return on Assets
- Return on Equity

**Ownership Structure**
- Foreign Institutional Shareholding
- Indian Institutional Shareholding
- Promoters’ Shareholding

**Governance Structure**
- Board Meetings Frequency
- Presence of Remuneration Committee
- Board Size
- Board Independence

**Company Characteristics**
- Company Size
- Leverage
- Investment Opportunities
- Company Experience

Managerial Remuneration Disclosure

Figure 3.1
Framework for Examining the Determinants of Managerial Remuneration Disclosure

The figure 3.1 displays the proposed research model where corporate performance, ownership structure, governance structure and other company characteristics would influence the disclosure of managerial remuneration.

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Statistical Analysis

The value of the disclosure index lies between “0” and “1” with some observations having values at the boundaries. These boundary values of 0 and 1 exist by definition and not as a result of censoring. Papke and Wooldridge (2008) approach is adopted to estimate fractional response models for panel data with a large cross-sectional dimension and relatively few time periods. Baum (2008) and Eickelpasch and Vogel (2011) also suggested considering fractional probit approach while handling proportions data with zero and one, with binomial distribution and logit link function. Fractional Probit model is estimated using the Generalized Estimating Equation (GEE) approach on the statistical software STATA 11. Both models are estimated with standard errors robust to general heteroscedasticity and serial correlation.

GEE requires a specification of a working correlation structure such as independence, exchangeable, autoregressive, stationary, non-stationary or unstructured specification. Cui (2007) proposed a criterion which can be used for selecting the best working correlation structure in GEE, through the stata program qic. This program calculates the QIC values for a GEE model and the correlation structure having the smallest QIC is considered to be the preferred correlation structure.

In order to summarize and describe the data, descriptive statistics and Pearson’s correlation coefficients have been computed.

3.5.3 Growth of Managerial Remuneration

Print media and remuneration activists have raised voice against the hefty pay packages of Indian executives. With each passing year, more and more executives have entered the one-crore remuneration club. Various surveys have highlighted the increase in the remuneration provided to directors. It further necessitates the study to examine the growth of remuneration of the whole managerial class and for the said purpose, the period from 2002-03 to 2011-12 is covered. To know whether the slowdown period of 2008-09 to 2011-12 has any effect on the managerial remuneration, the following null hypothesis has been developed and tested:

\[ H_{018} \] There is no significant difference in the managerial remuneration in the slowdown period as compared to the pre-slowdown period.
It has also been examined whether there are any differences in mean managerial remuneration across industries (12) and the null hypothesis stated is as follows.

\( H_{019}: \text{There is no significant difference in the mean managerial remuneration across industries.} \)

**Statistical Analysis**

In order to examine the growth of managerial remuneration over a period of 10 years, annual growth rate and compound annual growth rate (CAGR) have been calculated. Annual growth rate is calculated by dividing the difference between the current year and previous year managerial remuneration by the previous year managerial remuneration.

To estimate the compound annual growth rate of managerial remuneration, following model was used:

\[ y = \alpha + \beta t + u \]

Where \( y \) is the natural logarithm of managerial remuneration and \( t \) is the time variable. The compound annual growth rate is calculated with the following formula:

\[ g = (\text{antilog} \hat{\beta} - 1) * 100 \]

where \( \hat{\beta} \) is the slope coefficient of \( \beta \) in the above model. In this formula, exponential of the slope coefficient of \( \beta \) was taken. After deducting one from this value, the resultant figure was multiplied with 100 in order to get the compound annual growth rate of managerial remuneration.

Fixed-effects panel regression has been employed to examine the impact of time on the managerial remuneration. Two models have been developed where in the first model, the year 2003 is taken as the base year and the impact of time over the year 2003 has been examined. In the second model, a dummy variable has been inserted as an independent variable which takes the value 1 for years 2009 to 2012 and 0 otherwise, in order to examine the impact of slowdown period on the managerial remuneration.

Welch ANOVA has been applied to examine the managerial remuneration across industries. The basic assumption of ANOVA is the homogeneity of variances. Levene’s
statistic tests the null hypothesis that the variances of different industries are equal. In case of a significant p value of Levene statistic, the assumption of homogeneity of variances for ANOVA is violated. So, Welch ANOVA is applied to test whether remuneration differs across industrial sectors. These statistical techniques have been carried out using the softwares SPSS 18 and STATA 11.

3.5.4 Determinants of Managerial Remuneration

Remuneration of the directors is generally determined by the remuneration committees of the board. A remuneration committee considers the factors affecting the volume and structure of the managerial remuneration in the light of the changing commercial, competitive and regulatory environment of the country (Bender and Porter, 2003). In the literature, different factors have been examined as the determinants of the managerial remuneration. However, corporate performance, company size, and corporate governance are some widely researched determinants of the managerial remuneration. The present study examines the impact of corporate performance, foreign institutional shareholding, Indian institutional shareholding, promoters’ shareholding, the presence of remuneration committee on board, board size, board independence, company size, leverage, investment opportunities, and stock return volatility on the managerial remuneration in India.

Corporate Performance and Managerial Remuneration

Agency theory states that investors motivate directors to maximise shareholders’ wealth by linking the remuneration of directors with the company’s performance (Bender, 2007). Thus, a significant positive relationship is expected between managerial remuneration and corporate performance. Corporate performance has been extensively explored in order to determine its impact on the managerial remuneration. Some studies have found positive pay-performance relationship such as Kraft and Niederprum (1999), Fatemi et al. (2003), Ghosh (2006), Andreas et al. (2012), and Scholtz and Smit (2012). Kraft and Niederprum (1999) found positive relationship between compensation of executive board members with the firm performance in a sample of 170 firms in Germany. Fatemi et al. (2003) indicated a positive relationship between the components of the compensation of the company executives and broad measures of firm performance such as return on assets
and market value added. Ghosh (2006) stated that compensation of corporate boards in India significantly depends on current and previous year firm performance, especially for group affiliated firms. Andreas et al. (2012) found corporate performance to be related with the director compensation in Germany. Scholtz and Smit (2012) indicated strong relationship between cash remuneration of the executive directors and company performance in listed companies in South Africa. Few studies have revealed negative impact of corporate performance on the managerial remuneration such as Kubo (2005) and Duffhues and Kabir (2008). Kubo (2005) found that the proportion of firms with negative pay-performance sensitivity was large in Japan, showing a weak link between pay and performance. Duffhues and Kabir (2008) found a negative relationship of the compensation paid to the executive directors with the company performance in a sample of listed Dutch companies from the year 1998 to 2001. The study supported the proposition that the executive directors assume the powerful positions of setting their own pay when there is less corporate governance pressure. Negative pay performance relationship indicates that the executive directors in Dutch companies are paid remuneration for the non-performance related activities. The study also questioned the ability of the supervisory board members in designing an appropriate pay policy. However, the study also stated that company’s objective of providing remuneration in spite of the lower firm performance might be to retain the talented executive directors and maintaining a long term relationship with them.

Amongst the various reasons of having different results regarding the impact of corporate performance on managerial remuneration such as different methodology used, different techniques of analysis, corporate governance differences etc., use of different measures of corporate performance has been considered as the main reason of assorted results. In the literature, corporate performance has been measured using accounting based variables as well as market based values. Generally, accounting based measures have been adopted in the research studies due to the ease of its availability. However, studies which have used both types of data, have arrived at different findings (Dogan and Smyth, 2002; Ryan and Wiggins, 2004; Andreas et al., 2012; Cordeiro et al., 2013). Dogan and Smyth (2002) stated that the nature of the relationship between
board remuneration and company performance in Malaysia was ambiguous and depends on the measure of the performance. The study found the relationship positive for stock market performance measures, but negative for accounting measures. Ryan and Wiggins (2004) also found the different impact of different measures of the performance on the outside directors’ remuneration in a sample of S&P 500 in 1997. The study found negative impact of the accounting performance on the total compensation and equity based compensation as a percentage of the total compensation of the outside directors whereas stock market performance was found to be unrelated to the outside directors’ compensation. The study concluded that directors of firms where CEOs achieved superior accounting performance were given fewer incentives to monitor. Andreas et al. (2012) found corporate performance to be related with the director compensation in Germany. The study also stated that the measure used to represent the performance affects the results. Positive and significant relationship for accounting based criteria and insignificant result for the stock return measure were reproduced in this study. Cordeiro et al. (2013) stated that accounting returns were weighted more heavily in general than stock returns in determining the average compensation of top executives. Firms located in high marketization regions and firms with better internal governance quality relied more on stock returns to reward executives, whereas state owned enterprises (SOEs) relied significantly less on stock market returns than do non-SOEs. Thus, it is clear that the use of different measures of the corporate performance significantly affects the results.

Cladera and Gispert (2003) found that the positive relationship between board remuneration and company performance was stronger for accounting measures than for capital market measures. The authors argued that risk averse board members preferred to focus on profit figures for calculating board remuneration, as they were less volatile than stock market returns. It revealed that the use of different measures of the corporate performance give different results. Moreover, it was not appropriate to combine accounting and market measures into a single financial performance measure (Gentry and Shen, 2010). The present study has used both accounting as well as market based measures of corporate performance to examine their impact on managerial remuneration.
Accounting Performance and Managerial Remuneration

Return on assets (ROA) has been widely used as a variable representing the accounting performance of companies (Dogan and Smyth, 2002; Cladera and Gispert, 2003; Fatemi et al., 2003; Ryan and Wiggins, 2004; Abdullah, 2006; Brick et al., 2006; Ghosh, 2006; Duffhues and Kabir, 2008; Fernandes, 2008; Su et al., 2010; Barontini and Bozzi, 2011; Andreas et al., 2012; Theeravanich, 2013; Wu, 2013; Chen et al., 2014). Most of the studies in this area (Cladera and Gispert, 2003; Fatemi et al., 2003; Brick et al., 2006; Ghosh, 2006; Su et al., 2010; Barontini and Bozzi, 2011; Andreas et al., 2012; Cordeiro et al., 2013; Wu, 2013; Chen et al., 2014) have found that ROA is positively related to managerial remuneration. Cladera and Gispert (2003) found positive and significant impact of the ROA on the total board remuneration in a sample of 113 Spanish listed companies during the period 1990-95. ROA, lagged one period, has been found more powerful in explaining board remuneration than current accounting measure. It was also found that accounting measures presented a stronger relationship than capital market measure (roughly 10 times greater). Fatemi et al. (2003) found positive and significant impact of the ROA on the salary, bonus, and total direct compensation of the executives in US, covering 1965 firm-year observations from 1992 to 1995. Brick et al. (2006) revealed the 3 years average return on assets a positive and significant determinant of the outside directors’ total compensation in US from 1992 to 2001. Ghosh (2006) found that ROA of current year as well as previous year have positive and significant effect on the total board compensation, level of salary, and commission in a sample of 463 firms in Indian manufacturing sector from 1997 to 2002. Su et al. (2010) found ROA positively and significantly related with the average compensation of top managers in a sample of 967 firms in China. Positive and significant impact of the one year lagged ROA was found on the board compensation in a sample of companies listed on the Milan Stock Exchange in Italy, covering the time period 1995-2002 by Barontini and Bozzi (2011). Andreas et al. (2012) found ROA positively and significantly related with the director compensation in Germany, taking data for the years 2005-2008. Cordeiro et al. (2013) used industry adjusted ROA, calculated as net profits divided by the book value of assets, and then deduct industry average ROA from the resultant figure. The study found it positively and significantly related with the average top executive compensation in 1378 listed firms in China during 2001-2007. Wu (2013) found one year lagged ROA to be
positively and significantly related with the excess pay in terms of board compensation compared to that of the industry average in Taiwanese family firms from 2007 to 2010. Chen et al. (2014) found positive impact of lagged firm performance on the proportion of variable compensation in a sample of listed companies in Taiwan from 2005 to 2010.

However, a minority of researchers, like Dogan and Smyth (2002), Ryan and Wiggins (2004), Abdullah (2006), and Duffhues and Kabir (2008) have documented that ROA is negatively associated with managerial remuneration. Dogan and Smyth (2002) found ROA negative and significant in explaining the board cash remuneration in Malaysia over the period 1989-2000. They argue that this negative relationship may be due to concentrated ownership and the focus of executives in such companies on those projects enhancing long term returns. Ryan and Wiggins (2004) found adjusted three year cash flow ROA negatively related with the total compensation and equity based compensation as a percentage of the total compensation of the outside directors in a sample of Standard and Poor’s 500 for the years 1995-97. Duffhues and Kabir (2008) found a negative impact of current year as well as one year lagged value of ROA on the cash compensation of the executive directors in a sample of listed Dutch companies from the year 1998 to 2001. Brick et al. (2006), Duffhues and Kabir (2008), Fernandes (2008), Barontini and Bozzi (2011), Theeravanich (2013), and Deschenes et al. (2015) have found that ROA is insignificant in explaining managerial remuneration. Brick et al. (2006) found that the three years average return on assets did not affect the outside directors’ cash compensation. However, one year lagged ROA did not affect the outside directors’ cash compensation and total compensation. Duffhues and Kabir (2008) also revealed an insignificant impact of the current as well as one year lagged value of ROA on the total compensation of the Dutch executives. Fernandes (2008) found insignificant impact of ROA on the average compensation of the board members, compensation of the executive directors and compensation of the non-executive directors in a sample of 51 companies listed in Euronext Lisbon in Portugal from 2002 to 2004. Barontini and Bozzi (2011) revealed current year ROA to be insignificant in explaining the board compensation in a sample of the companies listed on the Milan Stock Exchange in Italy, covering the time period 1995-2002. Theeravanich (2013) found ROA as an insignificant determinant of the total director cash compensation in Thailand. Thus, mixed results are found regarding the impact of ROA on the managerial remuneration. Deschenes et al. (2015) found ROA
insignificant in explaining the top management remuneration in a sample of 291 firm-year observations of Canadian companies from 2005 to 2010.

Another variable which has been widely researched as the determinant of the managerial remuneration is the return on equity. It was used to represent the corporate performance in Kraft and Niederprum (1999), Fatemi et al. (2003), Cheng and Firth (2005), and Fernandes (2008). Kraft and Niederprum (1999) found a positive impact of ROE on the compensation of the executive board members in a sample of 170 firms in Germany. The study also stated that an increase in the variance of profits should lead to a higher share of the fixed part in the remuneration of the executive board members. Fatemi et al. (2003) found that only bonus paid to the executives was positively and significantly related to ROE. Salary and total direct compensation of executives were not linked with ROE of the firms. Cheng and Firth (2005) found it positive and significant in explaining average executive directors’ total compensation (excluding stock options), bonus as a percentage of total pay of executive directors, and average executive directors’ bonus in a sample of listed companies, comprising 2016 firm-year observations for the years 1994-1999 in Hong Kong. Fernandes (2008) found an insignificant impact of ROE on the average compensation of the board members, compensation of the executive directors and compensation of the non-executive directors in a sample of 51 companies listed in Euronext Lisbon from 2002 to 2004 in Portugal.

Cash flow risk, book to market ratio, sales, sales growth, return on sales, total assets, earnings before interest, tax, depreciation and amortisation (EBITDA), share price, ratio of total debt to total assets, ratio of a firm’s plant, property and equipment to total assets, ratio of capital expenditure to total assets, ratio of total cash and equivalent items to total assets, and ratio of total cash dividend to total assets are some other variables which have been used in the literature to determine the impact of corporate performance on managerial remuneration (Cheng and Firth, 2005; Brick et al., 2006; Dong and Ozkan, 2008; Duffhues and Kabir, 2008; Ertugrul and Hegde, 2008; Fernandes, 2008; Scholtz and Smit, 2012).
Different measures of accounting performance, different analytical techniques and variations in country or sample sizes have been put forward as reasons to explain the assorted results. Due to a lack of clarity about the relationship between accounting performance and managerial remuneration in the literature, the following hypothesis is tested.

\[ H_{020} \]: Accounting performance has no significant impact on the managerial remuneration.

**Market Performance and Managerial Remuneration**

Market based measures of the corporate performance have also been investigated in the literature as the determinant of the managerial remuneration. Tobin’s Q has been used to represent the market performance of companies by Ghosh (2006), Dong and Ozkan (2008), Duffhues and Kabir (2008), Barontini and Bozzi (2011), and Theeravanich (2013); these studies have documented mixed results regarding its relationship with managerial remuneration. Studies such as Barontini and Bozzi (2011) and Theeravanich (2013) suggest that managerial remuneration increases as a result of increase in tobin’s q. Barontini and Bozzi (2011) discovered that it was positively and significantly related with the board compensation in a sample of companies listed on the Milan Stock Exchange in Italy, for the time period 1995-2002. Theeravanich (2013) noted that one-year lagged Tobin’s Q was positively and significantly related with the total director cash compensation in Thailand.

Duffhues and Kabir (2008) documented a negative and significant impact of current as well as the one-year lagged value of Q on the cash compensation and total compensation of executive directors for a sample of Dutch listed companies over the period 1998 to 2001. Whereas Ghosh (2006) has taken current as well as previous year’s Adjusted Tobin’s Q (ADJQ) as the factor determining the total board remuneration in India. According to their results, current and previous year ADJQ had no significant effect on board compensation, commission, perquisites and the sitting fee of boards. However, executive levels of salary increased with a rise in the current year as well as the previous year’s adjusted Tobin’s Q values. By contrast, Dong and Ozkan (2008) found this
measure to be insignificant in explaining directors’ pay in the UK for a sample of 563 listed companies over the period 2000-2004.

The impact of stock return has been examined by Ryan and Wiggins (2004), Cheng and Firth (2005), Duffhues and Kabir (2008), Fernandes (2008), and Cordeiro et al. (2013). Cordeiro et al. (2013) used industry adjusted stock return, calculated as the annualized stock returns then minus industry average returns. The study found it positively and significantly related with the average top executive compensation in listed firms in China during 2001-2007. Duffhues and Kabir (2008) found a negative impact of current year stock return on cash compensation of the executive directors in a sample of listed Dutch companies from the year 1998 to 2001. One year lagged stock return was found to be insignificant in explaining the cash compensation of the executive directors. Current as well as one year lagged stock return were also found to be insignificant in explaining the total compensation of the executive directors. Ryan and Wiggins (2004), Cheng and Firth (2005), and Fernandes (2008) found that stock return did not play any significant role in determining the managerial remuneration. Ryan and Wiggins (2004) found adjusted three year cash flow stock return insignificantly related with the total compensation and equity based compensation as a percentage of the total compensation of the outside directors in a sample of S & P 500 for the years 1995-97. Cheng and Firth (2005) found it insignificant in explaining average executive directors’ bonus and total compensation (excluding stock options) pay in Hong Kong. However, the study found it positive and significant in explaining bonus as a percentage of total pay of executive directors. Using a sample of 51 Portuguese companies from 2002 to 2004, Fernandes (2008) found that the average compensation of the board members, compensation of the executive directors and compensation of the non-executive directors was not significantly related to shareholders’ performance. However, the changes in shareholders’ wealth were found to be a significant determinant of the variable component of the executive directors’ compensation.

Shareholders’ return has been examined by Cladera and Gispert (2003) and Andreas et al. (2012). Cladera and Gispert (2003) found that capital market performance has significant impact on the board remuneration in a sample of 113 Spanish listed companies during the period 1990-95. However, the market measure, lagged two periods, has been found more
powerful than lagged by one period. This indicated the time gap when the increases (decreases) in performance resulted into increases (decreases) in board remuneration. Andreas et al. (2012) calculated total shareholder return as the sum of capital gains plus dividends and found it insignificantly related with the director compensation in Germany, taking data for the years 2005-2008. Share performance, stock return volatility, dividend yield, and market to book assets ratio are few other variables which have been investigated in the literature for determining the managerial remuneration (Main et al., 1996; Dogan and Smyth, 2002; Brick et al., 2006; Ghosh, 2006; Feng et al., 2007; Andreas et al., 2012). The impact of the economic value added (EVA) and market value added (MVA) are investigated on the compensation components of the executives of the firms in Fatemi et al. (2003). In the absence of a clear relationship between market performance and managerial remuneration, following hypothesis is tested.

\( H_{021}: \text{Market performance has no significant impact on the managerial remuneration.} \)

Ownership Structure and Managerial Remuneration

The influence of ownership structure (foreign institutional shareholdings, Indian institutional shareholdings and the representation of promoters on boards) on managerial remuneration is discussed to set appropriate hypotheses for testing in the present study.

Institutional Shareholding and Managerial Remuneration

Institutional theory suggests that organisations respond strategically to institutional pressures on the basis of how far they depend on other institutions for the resources they need (Oliver, 1991). Institutional investors are in a better position to safeguard the interest of shareholders and make a company aware for complying with all the domestic regulations (Gillan and Starks 2003; Dwivedhi and Jain, 2005; Patibandla, 2006). The presence of institutional investors may put pressure on a company to improve their governance standards; otherwise they may sell their shares (Chizema, 2008). Cheng and Firth (2005) have suggested that executive directors are less likely to ask for higher remuneration when outside investors have a substantial stake in their firm. Thus, in their empirical investigation, a negative relationship was documented between institutional ownership and executive directors’ total compensation. This finding is consistent with the
supervising and monitoring role played by the institutional investors. However, it has been found insignificant in explaining bonus as a percentage of total pay of executive directors and average executive directors’ bonus in Hong Kong. But, Wu (2013) discovered that institutional ownership was positively and significantly related to excess pay in terms of board compensation compared to that of the industry average in Taiwanese family firms. However, institutional investors have been found to be passive and ineffective in terms of restraining managerial remuneration according to Feng et al. (2007), Dong and Ozkan (2008), Ertugrul and Hegde (2008), and Andreas et al. (2012). Feng et al. (2007) found institutional ownership insignificant in explaining the board equity based compensation in a sample of 136 REITs in US for 2001. Dong and Ozkan (2008) found that the presence of the institutional investors did not restrain the pay level of the directors in a sample of 563 listed companies in UK from the year 2000-2004. They were considered passive and ineffective in performing their monitoring role. However, dedicated investors with long investment horizon kept a check on the directors’ pay level as well as strengthen the pay-performance relationship. Thus, the study indicated that executive directors’ pay was found to be related with the company performance when the dedicated institutional ownership was greater. Ertugrul and Hegde (2008) found institutional ownership insignificant in explaining the stock and option compensation of outside directors in a sample of 360 firms for three years from 2000 to 2002 in US. Andreas et al. (2012) used voting power weighted dummy variable measuring the relative share of institutional investors if the voting share exceeds 10 percent and found it insignificantly related with the director compensation in Germany, taking data for the years 2005-2008. For the present study, institutional shareholding is classified into two categories; Indian institutional shareholding and foreign institutional shareholding. The available literature is unclear about the relationship between institutional shareholding and managerial remuneration. For this reason, the hypotheses to be tested are as follows:

\[ H_{022}: \text{Foreign institutional shareholding has no significant impact on the managerial remuneration.} \]

\[ H_{023}: \text{Indian institutional shareholding has no significant impact on the managerial remuneration.} \]
**Promoters’ Shareholding and Managerial Remuneration**

Sarkar (2010) reported that the presence of promoters dominates Indian companies in 2006, irrespective of their level of block holdings. In most cases, chief executives were chosen from the promoter groups; in other cases, non-promoter CEOs were appointed and held positions due to their relations with promoters. Dominant owners monitor the activities of managers (Dogan and Smyth, 2002; Cladera and Gispert, 2003), and thus, influence the board decisions and get their decisions approved in general meetings. Promoter directors on the board are more likely to approve of sizeable remuneration packages for themselves and other board members. Ghosh (2006) revealed that total board compensation and board salary increased as a result of increase in foreign promoters’ shareholding. Foreign promoters’ shareholding was not found to have any significant impact on commission and sitting fees earned by board members. Indian promoters’ shareholding also had no significant impact on salary, commission, sitting fees, and total compensation of board members.

Companies where promoters have dominant shareholdings are more likely to have promoters’ representatives on the board. Parthasarathy et al. (2006) disclosed that CEOs who belonged to promoter groups earned higher incentive pay and total compensation in a sample of 409 listed companies in India for the financial year ending 2005. It is expected that promoter-CEOs who are themselves paid sizeable amounts would grant generous remuneration packages to the directors also. This implies a positive impact of dominant promoters on managerial remuneration. The more dominant the position of promoters, the higher the remuneration granted to promoter as well as other directors. This perspective supports the ‘rent extraction hypothesis’ where dominant executives compensate themselves with much higher remuneration than the market and company performance would allow. This relationship is being examined in the present study through the following hypothesis.

\[ H_{24}: \text{Promoters’ shareholding has positive and significant impact on the managerial remuneration.} \]
Governance Structure and Managerial Remuneration

Enron, WorldCom, Tyco scandals in US raised the need of efficient corporate governance practices across the globe. Few other corporate and stock market scandals fuelled the demand of regulations regarding board’s responsibilities and governance practices. This growing demand for the higher level of corporate governance would have a significant influence on the level and structure of the managerial remuneration (Zong, 2004). Practices which ensure the use of higher corporate governance in itself are a matter of varied opinions. One set of rules and principles does not fit all companies and countries (Clarke et al., 1998). Managerial remuneration policies should be framed keeping into consideration the local requirements and firm level assessment of the costs and benefits. This would promote the effective monitoring in the interest of the shareholders (Andreas et al., 2012). In general, the literature revealed evidences of negative impact of governance practices on the managerial remuneration. Ryan and Wiggins (2004) examined a sample of Standard and Poor’s 500 for the years 1995-97 and the results indicated significant agency problems in board governance when the CEO was entrenched and the board of directors lost their independence. Cheng and Firth (2005) stated that ownership and board composition of the Hong Kong firms did not appear to have much influence on whether the firms paid their top executives on the basis of profitability and stock returns. Brick et al. (2006) stated that excess director compensation was significantly positively related to those variables normally associated with poor governance in US. Fernandes (2008) raised doubts on the validity of the corporate governance ratings and rankings in Portugal. Board characteristics, like existence of remuneration committee, board size, and board independence are examined for their relationship with managerial remuneration in the text following.

Presence of a Remuneration Committee and Managerial Remuneration

Remuneration committee is one of the most important sub-committees of the company’s boards which is delegated the responsibility of recommending the remuneration paid to the executive directors of companies. Setting up a remuneration committee was not mandatory under the Companies Act, 1956. Clause 49 of the listing agreement specified setting up of a remuneration committee a non-mandatory requirement. Companies Act,
2013 requires all companies to have remuneration committees on their boards. A remuneration committee considers the factors affecting the amount and structure of the managerial compensation package in light of the changing commercial, competitive and regulatory environment of the country (Bender and Porter, 2003). Jaafar et al. (2012) examined companies operating in Malaysia for the period 2007-2009 and found the existence of remuneration committee positively linked with directors’ cash remuneration. It has also been stated that the positive relationship between directors’ cash remuneration and the remuneration committee is less positive in family run firms. This is because of the influence of the directors belonging to family group on the decisions of the remuneration committee. Cordeiro et al. (2013) also found the existence of compensation committee positively related with the average top executive compensation in China for the period 2001-2007. There can be two perspectives behind the positive impact of remuneration committee on the managerial remuneration.

First, remuneration committees consider the importance of various factors related with the company, industry, and economy in determining the remuneration of directors. Directors’ qualifications and achievements are also minutely observed. If directors are under paid in the absence of remuneration committees, then their remuneration increases in the light of weights assigned to all factors by remuneration committees. Second, if members of the remuneration committees are not truly independent, then remuneration decisions taken by such committees would also be highly biased. The independence of the non-executive directors on remuneration committees might be compromised under the influence of dominant promoter directors, then this would lead to increase in the remuneration of all directors. The presence of true independent directors on remuneration committees would ensure that committees hire the services of true independent consultants having no link with the company (Sykes, 2002).

However, Conyon (1997) and Kuo and Yo (2014) have found no significant association between the presence of a remuneration committee and managerial remuneration. In countries where the formation of remuneration committees is either a new development or a non-mandatory requirement, remuneration committees are expected to have an insignificant impact on managerial remuneration. In India, the formation of remuneration committee was a non-mandatory requirement till 2013 but it is made mandatory to have a
nomination and remuneration committee in every listed company by the Companies Act 2013. Thus, a relationship between the presence of a remuneration committee in a company and managerial remuneration is investigated with the null hypothesis.

\[ H_{025} \]: The presence of remuneration committee has no significant impact on the managerial remuneration.

**Board Size and Managerial Remuneration**

Board size is one of the most widely used variables for representing the governance structure of a company. Based on resource dependency theory, boards of directors bring advice and counsel, channels of information, preferential access to resources, and legitimacy to a company (Hillman et al., 2009; Jackling and Johl, 2009). Thus, the greater the number of members on the board, the more advisory and counselling services are provided to an organisation and the greater their remuneration (Ghosh, 2006; Su et al., 2010; Cordeiro et al., 2013; Theeravanich, 2013). Ghosh (2006) found that as board size increased, the compensation of both executive and non-executive directors increased, for fixed as well as the performance based components. He stated that positive effect of board size on board compensation can be explained through two perspectives. The increase in board size may result in increase in the free rider problem which ultimately leads to decrease in monitoring. Thus, all executive directors increased their compensation, especially the fixed components of it. The second reason might be the increase in the monitoring level with the increase in the board size which resulted in the increase in the compensation. It was concluded that the increase in compensation was mainly due to an increase in firm performance. Su et al. (2010) found board size positively and significantly related with the average compensation of top managers in China. Cordeiro et al. (2013) found that board size was positively related with the average top executive compensation in China from 2001-2007. Theeravanich (2013) revealed board size to be positively and significantly related with the total director cash compensation in Thailand.

Tournament theory also states that all directors will compete for the post of CEO. The more players in the tournament, the larger the prize should be (O’Reilly III et al., 1988), and the larger the remuneration for the CEO and other board members. The literature
suggests that an appropriate board size results in a better distribution of responsibilities amongst the board members, leading to more effective board decisions (Laksmana, 2008). However, an increase in number of directors on a company’s board beyond a certain limit may also result in a deterioration of communication and coordination. Smaller boards may have a greater level of cohesion as compared to larger boards (Hearn, 2013). This perspective suggests that the larger the board size, the lower their efficiency and the smaller their remuneration. Ryan and Wiggins (2004), Feng et al. (2007), and Andreas et al. (2012) found board size to be negatively associated with managerial remuneration. Ryan and Wiggins (2004) found board size to be negatively related with the total compensation and equity based compensation as a percentage of the total compensation of the outside directors in a sample of S&P 500 firms for the years 1995-97. Feng et al. (2007) found it negatively related with board total compensation in a sample of 136 REITs in US for 2001, however it was found to be insignificant in explaining board equity based compensation. Andreas et al. (2012) found it negatively and significantly related with the director compensation in Germany, taking data for the years 2005-2008. However, Fernandes (2008) found an insignificant impact of board size on the total cash board compensation and executive directors’ remuneration (excluding stock options) in Portugal. Deschenes et al. (2015) also found board size insignificant in explaining the top management remuneration in a sample of 291 firm-year observations of Canadian companies from 2005 to 2010. The following null hypothesis is therefore tested:

\[ H_{026}: \text{Board size has no significant impact on the managerial remuneration.} \]

**Board Independence and Managerial Remuneration**

Shareholders’ economic interests are best fulfilled when the board remains independent in terms of board size, board composition, CEO entrenchment, and CEO/chair duality (Ryan and Wiggins, 2004). Non-executive directors are seen as a check on management and monitors of management performance (Haniffa and Cooke, 2002).

The results of different studies about the impact of independent directors on the level of managerial remuneration are in conflict. For instance, Abdullah (2006), Ghosh (2006) and Sapp (2008) reported that the proportion of independent directors on the board was
negatively associated with directors’ remuneration. Abdullah (2006) found that the proportion of independent directors on board was associated negatively with directors’ remuneration in Malaysia. Ghosh (2006) found that the proportion of nonexecutive directors on the board was negatively related with the board’s total compensation and board salary. It was positively related with the sitting fees. It was found to be insignificant in explaining commission and perquisites of the board. Sapp (2008) found significant negative impact of the percentage of independent directors on board on the compensation of executive directors in a sample of 416 Canadian public listed companies for the years 2000-2005.

By contrast, Cheng and Firth (2005), Ertugrul and Hegde (2008), Fernandes (2008), and Cordeiro et al. (2013) have concluded that an increase in the proportion of non-executive directors enhances the remuneration of the board. Cheng and Firth (2005) stated that nonexecutive directors owed their positions in organisation to the CEOs. So, they do not restrain the higher compensation of CEOs. Moreover, approving the higher compensation packages in general raises the benchmark or average compensation in the industry which might help them in getting higher pay in organisations where they hold executive positions. However, the study found it insignificant in explaining bonus as a percentage of total pay of executive directors, whereas a negative impact has been found on the average executive directors’ bonus in Hong Kong. Ertugrul and Hegde (2008) found board independence positively related to stock compensation and insignificant in explaining outside directors’ option compensation in a sample of 360 US firms for the years 2000-2002. It implies that independent boards are more efficient in aligning outside directors’ incentives with shareholders using stock compensation.

Fernandes (2008) found that nonexecutive board members played an important role in influencing pay levels. Compensation of the executive board members increased significantly when boards included a higher percentage of non-executive directors in Portugal. Firms with zero non-executive directors actually showed a stronger relationship between remuneration and firm performance. As the fraction of non-executive board members increased, the pay-performance relationship disappeared. Thus, the results of the study questioned the ‘watch-dog’ role played by the non-executive directors. The
reasons might be the lack of market for reputation and lack of incentives to challenge the managers. When the market for nonexecutive directors does not exist, then they do not pay serious attention towards building their reputation as watchdogs. Cordeiro et al. (2013) used a dummy variable if the percentage of independent directors on the board was larger than one third and found it positively related with the top executive compensation in China for the period 2001 to 2007. On the other side, Theeravanich (2013) reported that the presence of independent directors was insignificantly related with the total cash compensation paid to directors. Deschenes et al. (2015) also found board independence insignificant in explaining the top management remuneration in a sample of 291 firm-year observations of Canadian companies from 2005 to 2010. The hypothesis to be tested in this study is set as follows.

\[ H_{027}: \text{Board independence has no significant impact on the managerial remuneration.} \]

**Company Characteristics and Managerial Remuneration**

The influence of company characteristics (company size, leverage, investment opportunities, and stock return volatility) on managerial remuneration is discussed to set appropriate hypotheses for testing in the present study.

**Company Size and Managerial Remuneration**

Company size is one of the potential determinants of managerial remuneration as revealed in literature. Bigger the size of the company, more complex the management’s working, more skills the directors are supposed to have and higher are their expectations about their remuneration. The literature also revealed that larger companies pay their directors higher remuneration, whatever the measure of company size and remuneration are taken (Main et al., 1996; Kraft and Niederprum, 1999; Cladera and Gispert, 2003; Brick et al., 2006; Feng et al., 2007; Wu, 2013). Sometimes, increase in remuneration is more strongly related with size than the increase in the returns (Kraft and Niederprum, 1999; Theeravanich, 2013).

Sales and total assets as the measures of company size have been widely examined in the literature such as Main et al. (1996), Kraft and Niederprum (1999), Dogan and Smyth (2002), Cladera and Gispert (2003), Ryan and Wiggins (2004), Cheng and Firth (2005),
Abdullah (2006), Ghosh (2006), Feng et al. (2007), Dong and Ozkan (2008) etc. and revealed a positive and significant impact of company size on managerial remuneration. Number of employees, market value of equity, and market capitalisation are some other variables used for representing the company size.

Sales as a measure of company size has been used by Main et al. (1996), Kraft and Niederprum (1999), Dogan and Smyth (2002), Cladera and Gispert (2003), Cheng and Firth (2005), Brick et al. (2006), Ghosh (2006), Fernandes (2008), Sapp (2008), Cordeiro et al. (2013), and Deschenes et al. (2015). Main et al. (1996) found sales to be positively associated with cash compensation of the entire board of 51 companies of Britain for the years 1981-89, but found insignificant impact of sales on the total remuneration (including stock options) of the entire board of these companies. Kraft and Niederprum (1999) found positive impact of sales on the compensation of executive board members for a sample of 170 firms of Germany. The study also stated that increasing sales volumes had a more dominating impact on the salaries of the executive board members as compared to the increase in returns. Thus, the compensation policy was framed in such a way that the expanding sales was proved to be a useful strategy for maximising the personal income of the executive board members. Dogan and Smyth (2002) found sales positive and highly significant in explaining cash board remuneration in a sample of companies listed on the KLSE over the period 1989-2000 in Malaysia. Cladera and Gispert (2003) found sales significant and positively related to board remuneration in a sample of Spanish listed companies for the period 1990-95 but exerted a weak influence over the remuneration-performance relationship. Cheng and Firth (2005) found sales a significant determinant of explaining average executive directors’ pay (excluding stock options) for a sample of listed companies for the period 1994-1999 in Hong Kong. However, it was found to be insignificant in explaining average executive directors’ bonus and bonus as a percentage of total pay of executive directors in Hong Kong. Brick et al. (2006) found that one year lagged sales was significantly related with the outside directors’ cash compensation and total compensation during the period 1992 to 2001 in US. With regard to a sample of 462 firms in the Indian manufacturing sector during the period 1997-2002, Ghosh (2006) found the positive and significant impact of sales on the total cash board remuneration, salary, perquisites, commission and sitting fees. For a sample of 51 companies listed on the Euronext Lisbon during the period 2002-2004 in
Portugal, Fernandes (2008) found sales insignificant in explaining average compensation of the board members, compensation of the executive directors and compensation of the non-executive directors in Portugal. Sapp (2008) found sales positively related with the remuneration of the executive directors for a sample of 416 Canadian public listed companies for the period 2000 to 2005. However, the sensitivity of the executive directors’ remuneration to firm size was lower as compared to the sensitivity of the CEO compensation to the firm size. The results were found to be consistent with the tournament theory which suggests that CEO compensation should be much higher as compared to other directors and employees so that they struggle for the post of the CEO. Cordeiro et al. (2013) discovered company size in terms of sales positively related with the average top executive compensation in case of listed firms of China. Deschenes et al. (2015) found sales insignificant in explaining the top management remuneration in a sample of 291 firm-year observations of Canadian companies from 2005 to 2010.

data for the years 2005-2008. Jaafar et al. (2012) used total assets to represent the company size and found it positively related with the directors’ cash remuneration in Malaysia. Theeravanich (2013) discovered total assets to be positively and significantly related with the total director cash compensation in Thailand. Wu (2013) found total assets to be positively and significantly related with the excess pay in terms of board compensation compared to that of industry average in Taiwanese family firms. Baixauli-Soler and Sanchez-Marin (2015) found it positively and significantly related with the average percentage of variable pay of top management team. Chen et al. (2014) used total assets to represent company size and noted it positively and significantly related with the proportion of variable compensation and cash bonus of top management. Deschenes et al. (2015) found total assets positively related with the top management remuneration in a sample of 291 firm-year observations of Canadian companies from 2005 to 2010.

In addition, Brick et al. (2006) used number of employees to represent company size and found that one year lagged values of the number of employees were positively and significantly related with the outside directors’ cash compensation and total compensation. Duffhues and Kabir (2008) used market value of equity as a measure of firm size and discovered a positive and significant impact of current as well as one year lagged values on the cash and total compensation of the executive directors with the company performance in a sample of listed Dutch companies from the year 1998 to 2001. Su et al. (2010) used logarithm of employee number to represent company size in China and found it positively related with the average compensation of top managers. On the other hand, using a sample of 51 companies listed in the Euronext Lisbon during the period 2002-2004 in Portugal, Fernandes (2008) used book to market ratio to represent the company size. Book to market ratio was used as an inverse proxy of the growth opportunities. The study found it insignificant in explaining average compensation of the board members, compensation of the executive directors and compensation of the non-executive directors in Portugal. Thus, the literature reveals that the company size plays an influential role in determining the managerial remuneration and for examining the impact of company size on managerial remuneration in India; the following null hypothesis is developed and tested.

\( H_{028}: \text{Company size has no significant impact on the managerial remuneration.} \)
Leverage and Managerial Remuneration

Company leverage is to be considered as proxy for intensity of creditor supervision and free cash flow availability (Cladera and Gispert, 2003). According to Feng et al. (2007), mandatory interest payment on debt helped to discipline management by reducing access to free cash flow. Companies with more debt require less monitoring by board of directors and thus, they are paid less in high levered companies. Feng et al. (2007), Theeravanich (2013), and Chen et al. (2014) supported this view by revealing a negative impact of leverage on managerial remuneration. Feng et al. (2007) found a negative impact of debt ratio on directors’ equity-based compensation in a sample of 136 real estate investment trusts in US for 2001. Theeravanich (2013) noted leverage to be negatively and significantly related with the total director cash compensation in a sample of listed firms of Thailand from 2002 to 2008. Chen et al. (2014) also found negative impact of leverage on the proportion of variable compensation in a sample of listed companies in Taiwan from 2005 to 2010.

Studies such as Cheng and Firth (2005) and Duffhues and Kabir (2008) found positive impact of leverage on managerial remuneration. Cheng and Firth (2005) found leverage positively and significantly related with average executive directors’ total Compensation (excluding stock options) for a sample of listed companies, comprising 2016 firm-year observations for the years 1994-1999 in Hong Kong. However, it was found to be insignificant in explaining the average executive directors’ bonus and bonus as a percentage of total pay of executive directors. Duffhues and Kabir (2008) discovered a significant and positive impact of leverage on executive pay in a sample of listed firms in Netherlands from 1998 to 2001. The study stated that higher leverage increases firm risk and thus, companies pay higher amount of remuneration to executives.

and Ozkan (2008) found leverage insignificant in explaining average executive directors’ pay in a sample of UK listed companies for 2000-2005. Ertugrul and Hegde (2008) found that leverage was not significantly related to outside directors’ equity-based compensation in a sample of 360 firms for 2000-2002. Andreas et al. (2012) discovered leverage insignificant in determining the director compensation in Germany, taking data for the years 2005-2008. Jaafar et al. (2012) found company leverage insignificantly linked with directors’ cash remuneration in Malaysia for the period 2007-2009. Theeravanich (2013) found leverage insignificantly related with the total director cash compensation in case of family firms of Thailand from 2002 to 2008. Wu (2013) noted that leverage did not play any significant role in the determination of the excess pay in terms of board compensation compared to that of the industry average in Taiwanese family firms from 2007 to 2010. In order to examine the role of leverage in determining the managerial remuneration, the following null hypothesis is developed and tested.

**H029: Company leverage has no significant impact on the managerial remuneration.**

**Investment Opportunities and Managerial Remuneration**

Ghosh (2006) suggested that larger firms, with more growth opportunities, demand more competitive directors and thus, pay higher remuneration to them. Fernandes (2008) opined that growing companies are generally willing to pay more to managers in order to exploit the available growth opportunities. A positive relationship is found between investment opportunities of the company and managerial remuneration in Abdullah (2006), Feng et al. (2007), and Cordeiro et al. (2013). Abdullah (2006) represented firm’s growth through the annual compound growth in sales over a period of three years and found that firm’s growth was positively associated with total directors’ remuneration in Malaysia. Feng et al. (2007) represented company’s financial performance through market to book ratio and found it positively and significantly linked with directors’ equity-based compensation and total compensation in a sample of 136 real estate investment trusts in US for 2001. Cordeiro et al. (2013) found company growth represented through market-to-book ratio positively and significantly related with the average top executive compensation in listed firms in China during 2001-2007. However, Fernandes (2008) and Andreas et al. (2012) found investment opportunities insignificant in explaining managerial remuneration. Fernandes (2008) found an insignificant impact
of book-to-market ratio on the average compensation of the board members and compensation of the executive directors in a sample of 51 companies listed in Euronext Lisbon in Portugal from 2002 to 2004. Andreas et al. (2012) used market-to-book ratio to represent investment opportunities and found it insignificantly related with the director compensation in Germany, taking data for the years 2005-2008. The following null hypothesis is developed and tested.

\( H_{030} \): Investment opportunities of the company have no significant impact on the managerial remuneration.

**Stock Return Volatility and Managerial Remuneration**

Fatemi et al. (2003) and Chen et al. (2014) found positive relationship between the risk borne by a company and managerial remuneration. Fatemi et al. (2003) documented that executive compensation was positively related to the level of risk borne by the firm. Chen et al. (2014) found stock return volatility positively and significantly related with the proportion of variable compensation of top management in a sample of listed companies in Taiwan from 2005 to 2010. However, it had no significant impact on the proportion of cash bonus of top management. Andreas et al. (2012) found it insignificant in explaining director compensation in Germany. Brick et al. (2006), Fernandes (2008), and Barontini and Bozzi (2011) concluded that managerial remuneration was lower when the stock return volatility was higher. Brick et al. (2006) revealed that stock volatility was negatively and significantly related with the outside directors’ cash compensation in US from 1992 to 2001. The study found an insignificant impact of stock volatility on the outside directors’ total compensation. Fernandes (2008) discovered a negative and significant impact of stock return volatility on the average compensation of the board members and compensation of the executive directors in Portugal from 2002 to 2004. Barontini and Bozzi (2011) represented firm risk through the standard deviation of the stock returns over the previous 256 days and also found it negatively and significantly related with the board compensation in a sample of listed companies in Italy over the time period 1995-2002. However, Ghosh (2006) provided some interesting insight in this. The study found a negative impact of volatility of stock returns of last month of the financial year on board compensation in India. When volatility of stock returns for full
year is examined, and then it did not have any effect on board compensation. Thus, the following null hypothesis is developed and tested.

\[ \text{H}_{031}: \text{Stock return volatility has no significant impact on the managerial remuneration.} \]

**Proposed Research Model**

Detailed literature review leads to the following research model for the present study:

![Diagram of the proposed research model](image)

- **Corporate Performance**
  - Return on Assets
  - Tobin’s q

- **Ownership Structure**
  - Foreign Institutional Shareholding
  - Indian Institutional Shareholding
  - Promoters’ Shareholding

- **Board Characteristics**
  - Presence of Remuneration Committee
  - Board Size
  - Board Independence

- **Company Characteristics**
  - Company Size
  - Leverage
  - Investment Opportunities
  - Stock Return Volatility

**Figure 3.2**

**Framework for Examining the Determinants of Managerial Remuneration**

The figure 3.2 displays the proposed research model where the impact of corporate performance, ownership structure, governance structure and other company characteristics is examined on the managerial remuneration in India.
Statistical Analysis

For examining the determinants of managerial remuneration in India, panel data analytical techniques have been applied using the software STATA 11 and the same are explained below.

Panel Data Analysis

When the same units of observation in a cross-sectional sample are assessed two or more times, the resulting observations are described as forming a panel or longitudinal data set (Dougherty, 2007). Thus, the term ‘panel data’ refers to the situation where there is data on individual cross-section units over a period of time. Econometrically, this is described in the following equation:

\[ y_{it} = \alpha + \beta x_{it} + u_{it} \]  \hspace{1cm} \text{(3.1)}

where the variables \( y \) and \( x \) have both \( i \) and \( t \) subscripts for \( i = 1, 2, \ldots, n \) companies and \( t = 1, 2, \ldots, t \) time periods, \( \alpha \) is the intercept term, \( \beta \) is a \( k \times 1 \) vector of parameters to be estimated on the explanatory variables, and \( x_{it} \) is the \( i \) and \( t^{th} \) observation on \( K \) explanatory variables.

This kind of dataset provides following advantages (Hsiao, 1986; Dougherty, 2007; Brooks, 2008; Gujarati et al., 2014) over time series and cross section data.

1. Panel data comprises both cross-sectional and time series elements and results into very large number of observations. This makes it richer in content as compared to simple time series or cross section data.

2. Panel data estimation techniques offer solution to the problem caused by unobserved heterogeneity in data.

3. Panel data are more likely to reveal the dynamics of change that are difficult to detect with cross sectional data.

4. Omitted variable bias can be removed by structuring the panel data model in an appropriate way.
5. Panel data is suited to examine more complicated behavioural models that would not be possible to handle with pure cross section or time series data alone.

Data set having same number of time observations for every variable and every individual is known as balanced panel. A panel is described as unbalanced if some observations are missing. In this objective, a balanced panel of 134 companies for 10 years is being examined.

**Approaches for the Panel Data Analysis**

Broadly, there are two classes of panel estimator approaches, i.e. fixed effects regression and random effects regression.

**Fixed Effects Regression:** Considering equation (3.1), one way error component model for the disturbances segregates the error term in two sections:

\[ u_{it} = \mu_i + \nu_{it} \]  \hspace{1cm} ...(3.2)

Where \( \mu_i \) represents the unobservable company specific effects that do not vary over time and \( \nu_{it} \) denotes the remainder disturbance which varies with companies and years.

In case of one way error component fixed effect model, the \( \mu_i \) are assumed to be fixed parameters to be estimated and the remainder disturbances stochastic with \( \nu_{it} \) independent and identically distributed (I.I.D) (Baltagi, 2010). To take into account company specific fixed effect, dummy variables are used for each company. This model is estimated using the least squares dummy variable (LSDV) approach.

Considering equation (3.1), two way error component model for the disturbances segregates the error term in three sections:

\[ u_{it} = \mu_i + \lambda_t + \nu_{it} \]  \hspace{1cm} ...(3.3)

where \( \mu_i \) represents the unobservable company specific effect that do not vary over time, \( \lambda_t \) denotes the unobservable time effect that do not vary across companies and \( \nu_{it} \) denotes the remainder disturbance which varies with companies and years.
In case of two way error component fixed effect model, the $\mu_i$ and $\lambda_t$ are assumed to be fixed parameters to be estimated and the remainder disturbances stochastic with $\nu_{it}$ independent and identically distributed (I.I.D) (Baltagi, 2010). To take into account company and time effect, dummy variables are used for each company and year.

**Random Effects Regression:** Here, the $\mu_i$ are assumed to be random in nature in equation (3.2). In this case, both $\mu_i$ and $\nu_{it}$ are independent and identically distributed (I.I.D) and the $\mu_i$ are independent of the $\nu_{it}$ (Baltagi, 2010). In two-way random effects regression, $\mu_i$, $\lambda_t$, and $\nu_{it}$ are independent and identically distributed in equation (3.3) and are independent of each other (Baltagi, 2010).

**Hausman Test:** Hausman test tests the null hypothesis that random effects would be consistent and efficient. If the $p$ value of hausman test statistic is significant, then one must use fixed effects regression.

**Diagnostic Tests**

Diagnostic tests have been applied to test for the presence of autocorrelation, heteroscedasticity, and cross-sectional dependence.

**Heteroscedasticity**

Regression disturbances whose variances are not constant across observations are heteroscedastic (Greene, 2000). As suggested by Greene (2000), the likelihood ratio test is the most powerful consistent test for the group-wise heteroscedasticity model. In such model, $n$ observations are grouped into $G$ groups, each with $n_g$ observations. Likelihood ratio tests the null hypothesis of homoscedasticity.

**Autocorrelation**

Autocorrelation implies serial correlation of the disturbances across periods. Drukker (2003) stated that serial correlation in linear panel data models biases the standard errors and causes the results to be less efficient. Wooldridge test for serial correlation in panel data is applied to test the null hypothesis that there is no serial correlation and if serial correlation is found, then clustering at the panel level would produce consistent estimates of the standard errors.
Cross Sectional Dependence

Cross sections in a panel data might response in similar manner to common shocks or common unobserved factors. Pesaran’s cross-sectional dependence (CD) test is used for testing cross-sectional dependence when cross sections are large and time period is small (De Hoyos and Sarafidis, 2006). This statistic tests the null hypothesis of no cross-sectional dependence.

Descriptive Statistics

In order to summarize and describe the given data, descriptive statistics such as mean, median, standard deviation, minimum, and maximum were computed.

Correlation Analysis

Correlation analysis has been used to examine the direction and strength of the relationship between different variables. Pearson’s correlation coefficient matrix is prepared in order to know whether two variables are positively correlated with each other or negatively.

Analysis of Endogenous Nature of Corporate Performance Measures

In the regression model for the determinants of managerial remuneration, company performance is suspected to be an endogenous variable. Thus, in addition to the panel data analysis discussed above, endogeneity checks have been applied for assessing the true nature of the variables representing the corporate performance and are discussed below.

Endogeneity

An endogenous variable is the one which is correlated with the disturbance term in a regression equation. According to Wooldridge (2002), Endogeneity usually arises in one of three ways; omitted variables, measurement error, and simultaneity. Omitted variable endogeneity refers to a situation where a variable $q$ is not included in a regression equation, usually because of unavailability of the data and this variable happens to be correlated with the explanatory variable $x_j$. In this case, the effect of the
omitted variable $q$ is absorbed by the error term and the explanatory variable $x_j$ becomes correlated with the error term. As a result, $x_j$ becomes endogenous. In case of measurement error endogeneity, a wrong measure of the variable $x_j$ would add measurement error in the error term. Simultaneity endogeneity arises when a variable $x_j$ is determined partly by the dependant variable $y$, then $x_j$ and $u$ are generally correlated. The method of instrumental variables (IV) provides a general solution to the problem of an endogenous explanatory variable. Instrumental variables must satisfy two conditions:

1. Instrument Exogeneity: Instrumental variable $z_i$ must be uncorrelated with the error term.
2. Instrument Relevance: Instrumental variable should be partially correlated with the endogenous explanatory variable $x_j$ once the other exogenous variables $x_1, \ldots, x_{j-1}$ have been netted out.

A regression model with a single endogenous variable is said to be over-identified when the number of instruments $M$ is more than one. In this case, there are $M - 1$ over-identifying restrictions. If the number of instruments is equal to the number of endogenous variables in a regression model, then the model is said to be just identified. A model is said to be under identified when the number of instruments is less than the number of endogenous variables in a regression model.

**Endogeneity Checks**

Endogeneity of the performance measures is checked through the endogeneity test employed using the ‘endogtest’ through ‘xtivreg2’ command in STATA 11. Under the null hypothesis that the specified endogenous regressor can actually be treated as exogenous, the test statistic is distributed as chi-squared with degrees of freedom equal to the number of regressors tested. Unlike the Durbin-Wu-Hausman test statistic, this test statistic is robust in the presence of heteroscedasticity in data. The validity of the instruments is examined through Kleinberg-Paap rk LM statistic, Kleinberg-Paap rk wald F statistic, and Hansen J statistic (Baum et al., 2007). Kleinberg-Paap rk LM statistic tests the null hypothesis that equation is under-identified. The under-
identification test is an LM test of whether the equation is identified, i.e. the excluded instruments are relevant, meaning correlated with the endogenous regressors. Kleibergen-Paap Wald F statistic tests the null hypothesis that the instruments are weak. As a rule of thumb, F statistic should be larger than 10. Hansen test is test of over-identifying restrictions which tests the null hypothesis that instruments are valid instruments, i.e. uncorrelated with error term.

### 3.5.5 Excess Managerial Remuneration and Future Corporate Performance

The relationship of excess managerial remuneration associated with certain governance and ownership characteristics can signal either rent extraction or omitted variable problem (Core et al., 1999). Hanlon et al. (2003) stated that rent extraction hypothesis means that ‘senior managers control the pay-setting process and compensate themselves in excess of the level optimal for shareholders’. In the absence of strong governance and monitoring mechanism, directors remunerate themselves more than they actually deserve and this excess remuneration paid to directors negatively affects the future company performance. In case of ‘excess’ remuneration having no association or positive association, it shows that directors are being paid for the hidden qualities not taken into account in the managerial remuneration equation. Such excess remuneration is considered as right premium for the unobserved qualities of directors and governance and ownership structure proxy for all those unobserved qualities. Considering the contradictory views behind the impact of excess managerial remuneration related with governance and ownership characteristics on future corporate performance, following null hypothesis is developed and tested.

\[ H_{032}: \text{Predicted ‘excess’ managerial remuneration has no significant impact on future corporate performance.} \]
**Proposed Research Model**

On the basis of research models tested in Core et al. (1999) and Basu et al. (2007), following research model is proposed:

![Diagram of Research Model](image)

**Control Variables**
- Past Year Corporate Performance
- Foreign Institutional Shareholding
- Indian Institutional Shareholding
- Board Size
- Board Independence
- Company Size
- Leverage
- Investment opportunities
- Stock Return Volatility
- Company Age

**Future Corporate Performance**

**Figure 3.3**

**Framework for Examining the Impact of ‘Excess Managerial Remuneration’ on the Future Corporate Performance**

In the proposed research model depicted in figure 3.3, the impact of predicted excess managerial remuneration on the future corporate performance is examined with past year corporate performance, foreign institutional shareholding, Indian institutional shareholding, board size, board independence, company size, leverage, investment opportunities, stock return volatility, and company age as control variables.

**Statistical Analysis**

For assessing the impact of predicted ‘excess’ managerial remuneration on the future corporate performance, lag of the corporate performance is included amongst the regressors on the right hand side of the regression equation. The presence of lagged dependent variable among the regressors makes it dynamic in nature (Baltagi, 2010).
Research Framework and Research Methodology

\[ y_{it} = \delta y_{i,t-1} + x'_{it}\beta + u_{it} \]

where \( \delta \) is a scalar, \( x'_{it} \) is a 1*K and \( \beta \) is K*1. Here, it is assumed that \( u_{it} \) follows a one-way error component model.

Fixed effects regression with clustered standard errors has been employed for determining the number of lags required to capture the impact of past on the current performance. In order to summarize and describe the data, descriptive statistics and Pearson’s correlation coefficients have been computed. Dynamic panel system Generalised Method of Moments (GMM) is employed in order to know the impact of excess managerial remuneration associated with ownership and governance structure on the future corporate performance using the software STATA 11. The main advantage of system GMM is that time-invariant regressors can be included which would disappear in difference GMM (Roodman, 2009). Hansen test for the joint validity of the instruments tests the null hypothesis that all instruments are valid.

3.6 Limitations of the Study

The findings of the present study need to be interpreted in view of some limitations of the study. These are described below.

- The study may be affected by variables that could not be taken due to lack of disclosure in the annual financial statements.
- This study has examined the disclosure of managerial remuneration in only corporate governance sections of annual reports. Remuneration related information in other sections of annual reports may influence the comprehensiveness of disclosure indices.
- Content analysis is always susceptible to researcher’s biasness. In order to limit this biasness, a random verification has been done by another researcher on the final scoring.