CHAPTER 4
RESEARCH METHODOLOGY

4.1 Objectives of the Study

1. To study corporate governance practices in India for automobile manufacturing companies listed on BSE for year 2006 to 2014.

2. To study the relationship between corporate governance practices disclosure index (CGPDI) score and financial performance of selected automobile manufacturing companies.
   a) To study relationship between CGPDI score and Asset Turnover Ratio (ASTR).
   b) To study the relationship between CGPDI score and Return on Capital Employed (ROCE).
   c) To study the relationship between CGPDI score and Return on Equity (ROE).
   d) To study the relationship between CGPDI score and Return on Assets (ROA).
   e) To study the relationship between CGPDI score and Tobin’s Q (TBQ).
   f) To study relationship between CGPDI score and Net Profit After Tax (NPAT).

3. To study the impact of corporate governance variables on CGPDI score of selected automobile manufacturing companies.
   a) To study the impact of Corporate Board Structure (CBS) on CGPDI score.
   b) To study the impact of Corporate Board Activity (CBA) on CGPDI score.
   c) To study the impact of Corporate Remuneration (CRM) on CGPDI score.
4. To study the impact of corporate governance variables on the Financial Performance of selected automobile manufacturing companies.
   a. To study the impact of Corporate Board Structure (CBS) on Financial Performance.
   b. To study the impact of Corporate Board Activity (CBA) on Financial Performance.
   c. To study the impact of Corporate Remuneration (CRM) on Financial Performance.
   d. To study the impact of Shareholding Pattern (SHP) on Financial Performance.

4.2 Type of Research: Causal Research

Zikmund (2010), “A research conducted to identify cause-and-effect relationship among variables when the research has already been narrowly defined”. The causal research attempts to establish that when we do one thing, another thing will follow.

4.3 Population of the Study

The study has been carried on Automobile Manufacturing Companies in India listed at Bombay Stock Exchange (BSE).

4.4 Sample of the Study

Under Non Probability sampling, convenience sampling technique was used for the study. The sample size was calculated on following basis:
a) The company must be an automobile manufacturing company in India having its presence in at least any one of the segment, i.e. Two-three wheeler, Cars, Commercial Vehicles and Tractor Segment.

b) Automobile company having listing agreement with BSE as per SEBI guidelines, more specifically company had disclosed information under clause 49 listing agreement relating to corporate governance.

Thus a sample of 14 automobile manufacturing companies has been considered for the study

4.5 Period of the Study

In this study the data analysis has been done for period 2006 to 2014, for a period of 9 years.

4.6 Data Source

Data has been collected from various sources like annual reports published by automobile companies on their websites, CMIE Data base, Library IIM-Indore, Central library DAVV and Library SVIM Indore were also referred for collecting secondary data.

4.7 Tools for Data Analysis

IBM Statistical Package for Social Sciences (SPSS) 20.0 student version is used for Descriptive Analysis, Calculation of Mean and Standard deviation, Correlation Analysis, Regression Analysis, Durbin-Watson test statistic, Independent t-test, F-test. Microsoft excel have been used for percentage calculation, bar and line graphs.

Correlation Analysis

According to Gupta, S. P. (2007), Correlation Analysis attempts to determine the degree of relationship between two variables. Correlation analysis helps us
in determining the degree of relationship between two or more variables. Of the several mathematical methods of measuring correlation, the Karl Pearson’s method popularly known as Pearson’s coefficient of correlation is most widely used in practice. The Pearson coefficient of correlation is denoted by symbol ‘r’.

The formula for computing ‘r’ is

$$ r = \frac{\Sigma x \cdot y}{N \cdot (S.D_x) \cdot (S.D_y)}. $$

where,

- $x = (X - X)$, $y = (Y - Y)$
- $S.D_x =$ Standard Deviation of Series X
- $S.D_y =$ Standard Deviation of Series Y
- $N =$ No. of Pairs of observations
- $r =$ the product moment correlation coefficient

**Regression Analysis**

Regression analysis is a mathematical determination of relationship between two or more variables. The variable whose value is influenced or is to be predicted is called dependent variable or regressed variable or explained variable and the variable which influences the values or is used for prediction is called Independent or regressors or predictor or explanatory variable. (Kothari, 2004). The regression analysis attempts to predict the value of a continuous, interval scale dependent variable $Y$ from specific values of independent variable $X$. The basic linear regression relationship between $X$ and $Y$ is given by

$$ Y = \alpha + \beta X $$

This equation is known as the regression equation of $Y$ on $X$ and also represent the regression line of $Y$ on $X$ when plot on a graph. In this equation $Y$ is the dependent variable, $X$ is the independent variable, $\alpha$ and $\beta$ are two constants to be estimated. The symbol $\alpha$ represents the $Y$ intercept and $\beta$ is slope.
coefficient. The slope \( \beta \) is change in \( Y \) due to a corresponding change of one unit in \( X \). The \( Y \) intercept; the point at which a regression line intersects the \( Y \)-axis. The inclination of a regression line as compared to a base line, rise (vertical distance) over run (horizontal difference) is called slope (Zikmund, 2010).

The line of regression is the line which gives the best estimate value of one variable for the any specific value of the other variable. The problem is to determine \( \alpha \) and \( \beta \) so that the line is the line of “best fit”. Thus the line of regression is the line of “best fit” and is obtained by the principle of least squares (Gupta and Kapoor, 2006). The least square is a technique of ensuring that the regression line will best represent the liner relationship between the \( X \) and \( Y \). No straight line can completely represents every dot in the scatter diagram. Unless there is a perfect correlation between the variables. There remains the errors. The procedure used in the least squares method generates straight line, which minimizes the sum of squared deviations of the actual values from the predicted regression line. The general equation of a straight line equals \( Y = \alpha + \beta X \). but a more appropriate equation includes an allowance for error:

\[ Y = \alpha + \beta X + e \]

Where

- \( Y \) is dependent variable
- \( \alpha \) represents the \( Y \) intercept
- \( \beta \) is slope coefficient
- \( e_i \) is the error term (residual error)

**Multiple Regressions**

Multiple regression analysis is an extension of the simple liner regression analysis. A multiple regression model has more than one independent variable. Multiple regression also allows to determine the overall fit (variance explained)
of the model and the relative contribution of each variable to the variance explained. The typical multiple regression model is expressed by

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X + \beta_4 X_4 + \ldots \]

Where, \( Y \) is the value of dependent variable, \( \beta_0, \beta_1, \beta_2 \ldots \) are the slope coefficients/parameters/regression coefficients, \( \beta_0 \) is also called constant/intercept term, \( X_i \) is the value of independent variable in the \( i^{th} \) trial and \( \mu \) is the random error term.

The error term has a zero mean and constant variance and it is normally distributed. The random error terms are uncorrelated. This method is called Ordinary Least Square (OLS) (Arora and Arora, 2003).

According to Shajahan(2004), the Utility of a Regression Equation / Model is judged based on:

- The Overall F-Statistic of the Model. If it is significant at say, 95% confidence level or 5% level of Significance, it indicates that the Model is good overall and linear also. This shows up as p-value of less than 0.05 on the ANOVA table in the regression output.

- To decide which variables in the model are good explanatory variables of the dependent, the individual t-test for each variable needs to be looked. If this variable is significant (less than 0.05), it indicates that the concerned variable is significant in the Model.

- The value of \( R^2 \) (coefficient of determination) explains what percentage of the variation in the dependent variable is explained by all the independent variables in the Model.

**Adjusted \( R^2 \)**

Adjusted \( R^2 \) is an modification that adjusts the phenomenon \( R^2 \) automatically and spuriously increasing when extra independent variables are added to the
model. $R^2$ tends to overestimate the strength of the association, especially when there are more than one independent variables. Therefore in multiple regression modeling Adjusted $R^2$ is preferred over the $R^2$. t is better to use. The adjusted $R^2$ can be negative, and its value will always be less than or equal to that of $R^2$. Statistically the adjust $R^2$ is expressed as

$$R^2 = 1 - \frac{RSS}{TSS}$$

Where, $RSS = $ Residual Sum of Squares
$TSS = $ Total Sum of Squares

$$\text{Adjusted } R^2 = 1 - \frac{RSS/(n-k)}{TSS/(n-1)}$$

Here, $n =$ number of observations, $k =$ number of independent variables including intercept term.

**Binary or Dummy Variables**

There are many times when we believe a qualitative variable rather than a quantitative variable would be helpful in predicting the dependent variable $Y$. In such situation a special variable is used called a dummy variable (or a binary variable or an indicator variable) would be used. A dummy variable is assigned a value of 1 if a particular condition is met and a value of 0 otherwise. The number of dummy variables must be equal one less than the number of categories of a qualitative variable.

**Model Building**

In developing a good regression model, possible independent variables are selected and the best ones are selected to be used in model. The best model is statistically significant model with a high $R^2$ and few variables. As more variables are added to a regression model, $R^2$ will usually increase and it can
decrease. The adjusted $R^2$ may decrease when more variables are added to the model.

**Durbin-Watson Statistic (d-test)**

In regression studies involving data collected over time, a special type of correlation among the error terms can cause problems; it is called serial correlation or autocorrelation. Durbin Watson test can be used to detect significant autocorrelation (Anderson, Sweeney and Williams, 2008). Durbin–Watson statistic is a test used to detect the presence of autocorrelation in the residuals (prediction errors) from a regression analysis. It is named after James Durbin and Geoffrey Watson. Autocorrelation is a relationship between values separated from each other by a given time lag.

The Durbin-Watson test uses the following statistic:

$$d = \frac{\sum_{i=2}^{n}(e_i - e_{i-1})^2}{\sum_{i=1}^{n}e_i^2}$$

where the $e_i = y_i - \hat{y}_i$ are the residuals, $n = $ the number elements in the sample and $k = $ the number of dependent variables.

Durbin Watson test statistics ranges in value from zero to four, with a value of two indicating no autocorrelation is present.

**Autocorrelation**

Autocorrelation refers to the correlation of a times series with its own past and future values. Autocorrelation may also be defined as “correlation between members of series of observations ordered in time (as in time series data) or space (as in cross-sectional data). In other word autocorrelation is a linear correlation between the error term for one observation and the next. Autocorrelation is also sometimes called as “lagged correlation” or “serial correlation”. In the regression context, the classical linear regression model...
assumes that such auto correlation does not exist in the disturbances \( \mu_i \), symbolically,

\[
E = (\mu_i, \mu_j) = 0, i \neq j
\]

Put simply, the classical model assumes that the disturbance term relating to any observation is not influenced by the disturbance term relating to any other observation (Gujrati and Sangeetha, 2007).

**Test of Statistical Significance of Model**

To see if there is any linear relationship between X and Y, a statistical hypothesis test is performed. The null hypothesis is that there is no linear relationship between two variables and the alternate hypothesis is that there is a linear relationship. If the null hypothesis can be rejected, then it is proven that a linear relationship does exist.

F-test or an analysis of a variance is a procedure used to determine whether there is more variability in the scores of sample than in scores of other sample. Whereas F-statistic is a test statistic that measures the ratio of one sample variance to another sample variance such as the variance between groups to variance within groups. The F test determines whether or not there is a relationship between the variables. However the best measure of the strength of relationship is the coefficient of determination. There a good regression model should have low significance level for the F-test and a high (close to 1) \( R^2 \) (Render, Stair and Hanna, 2009).

**t-Test**

If the F test shows that multiple regression relationship is significant, a t-test can be conducted to determine the significance of each of the individual parameters (Anderson, Sweeney and Williams, 2008). Test was developed by Irish Statistician William S.Gosset in 1908. Gosset adopted the pen name ‘student’ and thereafter t-distribution is commonly called students’ t-distribution or t-test. The t-statistic is defined as
\[ t = \frac{\text{Sample Mean - population Mean}}{\text{Standard Error of Mean}} \]

\[
\text{Standard Error of Mean= } \sqrt{\frac{S^2}{n-1}},
\]

where, \(S\) = Standard deviation of the sample  
\(n\) = Sample size

The t-test for individual significance follows:

Let the Equation of the Regression Model is

\[ Y_i = \beta_0 + \beta_i X_i + \mu_i \]

**Step 1:** For any parameter \( \beta_i \), construct hypothesis.

\[ H_0: \beta_i = 0 \]
\[ H_a: \beta_i \neq 0 \]

Null: There is no significant impact of independent variable \( X_i \) on dependent variable  
Alternative: There is significant impact of independent variable \( X_i \) on dependent variable \( Y_i \)

**Step 2:** Construct the t-statistic

\[ t = \frac{\hat{\beta}_i - \beta_i}{\text{Standard Error of } (\hat{\beta}_i)} \]

Where, \( \hat{\beta}_i \) is the estimator and \( \beta_i \) is the parameter  
Under \( H_0 \), it has a t-distribution with \( n-k \) d.f.

**Step 3:** Looking to the t-table, the entry corresponding to \( n-k \) d.f. and find the value of \( t \) at \( \alpha \) or \( \alpha/2 \) level of significance (two-tailed test).
**Step 4:** If the calculated value of $|t|$ is greater than the table value at $\alpha$ or $\alpha/2$ level of significance, then reject the null hypothesis and accept the alternative hypothesis. However, if the calculated value of $|t|$ is less than the table value at $\alpha$ or $\alpha/2$ level of significance, then do not reject the null hypothesis (Gujrati and Sangeetha, 2007).

**Validity**

Validity is the most fundamental and important criterion of a test which indicates the degree to which instrument measures what is claims to measure. Three types of validity commonly used are content validity, criterion-related validity, construct validity.

Face (content) validity refers to the subjective agreement among professionals that a scale logically reflects the concept being measured. (Zikmund, 2007)

Content validity refers to the extent to which the items on a instrument are representative of the universe i.e. measuring instrument provides adequate coverage of the topic under the study. Determination of such type of validity is primarily judgmental and qualitative in nature. This can be determined by using panel of experts who have exposure of subject and can judge how well the measuring instrument meets the standard. (Kothari, 2012)

Criterion-related validity is demonstrated when a test is shown to be effective in estimating an examinees performance on some outcome or estimate measure. The concern criterion must possess the qualities such as relevance, freedom form bias, availability. The criterion validity in broader sense refers to Predictive validity and Concurrent validity. The predictive validity refers to the usefulness of a test in predicting some future performance whereas the concurrent validity refers to the usefulness of a test in closely relating to other measures of validity. (Kothari, 2010)
Construct Validity, a instrument is said to possess construct validity to the degree that it confirms to predicted correlations with other theoretical propositions. The construct validity is the degree to which scores on a test can be accounted for by the explanatory construct of a sound theory. If measurements on devised scale correlate in a predicted way with the other propositions, it can be said that there is some construct validity (Kothari, 2010). Construct validity exists when a measure reliably measures and truthfully represents a unique concept. It includes several components including face validity, content validity, convergent, criterion, and discriminant validity (Zikmund, 2007)

To check the adequacy of the instrument (Face (Content) Validity), the coverage of the topic by the instrument is checked. Items used by the instrument used in the seminal studies are crossed checked with the items used in the instrument of the present study. The exercise of cross checking and validating of the items revels that almost all items covered by the seminal studies are covered by the present instrument used in the study. Thereafter the robustness of evidence on content validity is determined by administrating the instrument to the people such as chartered accountants, lawyers, managers and industry experts having exposure to corporate governance subject. To get a standard measuring instrument, suggestions and opinion of experts are well incorporated in the instrument resulting in the development of strong content of the instrument measuring the corporate governance practices. To check the relevance and availability of information (Criterion-related validity) on the items covered by the instrument, score for each parameter has been checked, none of the parameter has scored zero and it was found every item in the index is valid and has relevance. This gave the robust evidence on the criterion validity of the instrument that instrument contains the relevant items and information on such items are available.
4.7 Hypotheses of the Study

For Objective -1
No hypotheses is formulated

For Objective -2
H$_{01}$: There is no significant difference between financial performance of selected automobile manufacturing companies and CGDPI scores.

H$_{01(1)}$: There is no significant difference between ASTR of Low CGDPI Score companies and High CGDPI score Companies.

H$_{01(2)}$: There is no significance difference between ROCE of Low CGDPI Score companies and High CGDPI score Companies.

H$_{01(3)}$: There is no significance difference between ROE of Low CGDPI Score companies and High CGDPI score Companies.

H$_{01(4)}$: There is no significance difference between ROA of Low CGDPI Score companies and High CGDPI score Companies.

H$_{01(5)}$: There is no significance difference between Tobin’s Q of Low CGDPI Score companies and High CGDPI score Companies.

H$_{01(6)}$: There is no significance difference between NPAT of Low CGDPI Score companies and High CGDPI score Companies.

For Objective no.3

H$_{02}$: There is no significant impact of corporate governance variables on the CGPDI score of selected automobile manufacturing companies.

H$_{02(1)}$: There is no significant impact of Corporate Board Structure (CBS) on CGPDI score.

H$_{02(2)}$: There is no significant impact of Corporate Board Activity (CBA) on CGPDI score.

H$_{02(3)}$: There is no significant impact of Corporate Remuneration (CRM) on CGPDI score.
H_{02(4)}: There is no significant impact of Shareholding Pattern (SHP) on CGPDI score.

**For Objective no. 4**

H_{03}: There is no significant impact of corporate governance variables on the financial performance of selected automobile manufacturing companies.

H_{03(1)}: There is no significant impact of Corporate Board Structure on ASTR.

H_{03(2)}: There is no significant impact of Corporate Board Structure on ROCE.

H_{03(3)}: There is no significant impact of Corporate Board Structure on ROE.

H_{03(4)}: There is no significant impact of Corporate Board Structure on ROA.

H_{03(5)}: There is no significant impact of Corporate Board Structure on TBQ.

H_{03(6)}: There is no significant impact of Corporate Board Structure on NPAT.

H_{03(7)}: There is no significant impact of Corporate Board Activities on ASTR.

H_{03(8)}: There is no significant impact of Corporate Board Activities on ROCE.

H_{03(9)}: There is no significant impact of Corporate Board Activities on ROE.

H_{03(10)}: There is no significant impact of Corporate Board Activities on ROA.

H_{03(11)}: There is no significant impact of Corporate Board Activities on TBQ.
H₀³(12): There is no significant impact of Corporate Board Activities on NPAT
H₀³(13): There is no significant impact of Corporate Remuneration on ASTR.
H₀³(14): There is no significant impact of Corporate Remuneration on ROCE.
H₀³(15): There is no significant impact of Corporate Remuneration on ROE.
H₀³(16): There is no significant impact of Corporate Remuneration on ROA.
H₀³(17): There is no significant impact of Corporate Remuneration on TBQ.
H₀³(18): There is no significant impact of Corporate Remuneration on NPAT.
H₀³(19): There is no significant impact of Shareholding Pattern (SHP) on ASTR.
H₀³(20): There is no significant impact of Shareholding Pattern (SHP) on ROCE.
H₀³(21): There is no significant impact of Shareholding Pattern (SHP) on ROE.
H₀³(22): There is no significant impact of Shareholding Pattern (SHP) on ROA.
H₀³(23): There is no significant impact of Shareholding Pattern (SHP) on TBQ.
H₀³(24): There is no significant impact of Shareholding Pattern (SHP) on NPAT.

4.8 Development of Index, Econometric Models and Description of Variables

For Objective 1
4.8.1 Development of Corporate Governance Practices Disclosure Index

For gathering information and evaluating the state of corporate governance practices adopted by the sample companies, a model “Corporate Governance Practices Disclosure Index” (CGPDI) has been developed. This model is developed by including various parameters of the corporate governance. The parameters used for model development are gathered from various sources such as, (i) the provision relating to corporate governance given in Clause 49 of listing agreement, (ii) Corporate governance related provisions contained in the Companies Act 1956, (iii) Corporate Governance Voluntary Guidelines led down by Ministry of Corporate Affairs and by other organization such as CII, OECD, ICSI, ICAI, and other for good governance, (iv) Detail analysis of the past researches conducted in India and abroad on the subject. In all 100 questions were developed for 100 items included in the index under 12 major heads. A brief description of all the item included in index are as under:-

4.8.1.1 Company’s Philosophy on Corporate Governance

As per Oxford’s dictionary Philosophy means: A theory or attitude that acts as a guiding principle for behavior. May be keeping this meaning in mind or may be because of the suggested list of items to be included in the report on corporate governance in the annual report of companies given in Annexure IC of clause 49 of listing agreement, which suggested to include, a brief statement on company’s philosophy on code of governance most of the listed companies has included this parameter in their corporate governance report section of annual report. This item is not a mandatory item to be disclosed as per the provision of clause 49 of the listing agreement therefore it depends on the choice of the company to disclose their philosophy on corporate governance or not. In general practice companies who have disclosed their Philosophy on corporate governance has disclosed it by including it as the first item in the
report of corporate governance section of annual report. Being a guiding principle and the important item of the index, this item has been included as the first item in the CGPDI. Moreover as it is also evident from review of literature related on corporate governance that almost all the study wherein the study on corporate governance disclosure index has been constructed (Das, S.C., 2007), this item has been included in it. Therefore to ascertain the state of corporate governance practices in the selected automobile companies in the present study, the parameter “Company’s philosophy on the code of corporate governance” has been included and the question for extracting information is framed and included in the CGPDI as question number 1(Q1) as displayed in Table 4.1.1

<table>
<thead>
<tr>
<th>Q. No.</th>
<th>Particulars of items included in CGPDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>Does the company has any statement on company’s philosophy on code of corporate governance?</td>
</tr>
</tbody>
</table>

**Table 4.1.1**

CGPDI items relating to company’s philosophy on corporate governance

4.8.1.2 Board of Directors
The second parameter in CGPDI is Board of Directors. This parameter is the largest as it include 25 items. The information relating to board of directors such as its composition, compensation, disclosure, code of conduct and other provision relating to board are included in this head. The items which are included in this parameter are extracted from the mandatory list, suggestive list, non-mandatory requirement of clause 49 of listing agreement, voluntary discloser practices and from the past researches. The importance of this parameter and all the items included in it are evident from the review of literature (Chapter 2) that almost every study on corporate governance has used one or the other items included in this parameter. The 25 items which were included in the CGPDI numbered as Q1 to Q26 under this head are given in Table 4.1.2
Table 4.1.2
CGPDI Items Relating to Board of Directors

<table>
<thead>
<tr>
<th>Q. No.</th>
<th>Particulars of items included in CGPDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q2</td>
<td>Does the company has disclosed the Composition and Category of all the directors of the company?</td>
</tr>
<tr>
<td>Q3</td>
<td>Does the board of directors comprising of not less than fifty percent of non-executive directors?</td>
</tr>
<tr>
<td>Q4</td>
<td>If Chairman of the Board is a non-executive director, does the board comprise of at least one-third of independent directors AND If the Chairman is an executive director, OR If the non-executive chairman is a promoter of the company or is related to any promoter or person occupying management position at board level or at one level below the Board, Does at least one-half of the board comprises of independent director?</td>
</tr>
<tr>
<td>Q5</td>
<td>Does the Chairman/MD/CEO is the same person?</td>
</tr>
<tr>
<td>Q6</td>
<td>Is there any institutional nominee is on the board?</td>
</tr>
<tr>
<td>Q7</td>
<td>Is there any female member is on the board?</td>
</tr>
<tr>
<td>Q8</td>
<td>Does the Information about Total number of Board meeting held, dates on which held is disclosed?</td>
</tr>
<tr>
<td>Q9</td>
<td>Does the company has disclosed the Attendance of each director at the board meeting held during the year?</td>
</tr>
<tr>
<td>Q10</td>
<td>Does the information relating to each director having attended or not attended Last AGM has been disclosed?</td>
</tr>
<tr>
<td>Q11</td>
<td>Does the company has disclosed for All the directors on the board about the Number of Committee Memberships held?</td>
</tr>
<tr>
<td>Q12</td>
<td>Does the company has disclosed for All the directors on the board about the Number of Committee Chairmanships held?</td>
</tr>
<tr>
<td>Q13</td>
<td>Does the company has disclosed for All the directors on the board about the Number of Outside Directorship held?</td>
</tr>
<tr>
<td>Q14</td>
<td>Does the company has disclosed for All the directors on the board about the Number of Other companies Chairmanship held?</td>
</tr>
<tr>
<td>Q15</td>
<td>Does the age of all the director on the board is disclosed by the company?</td>
</tr>
<tr>
<td>Q16</td>
<td>Does the date of appointment of all the director on the board is disclosed by the company?</td>
</tr>
<tr>
<td>Q17</td>
<td>Does the Date of Resignation during the year if any has been disclosed?</td>
</tr>
<tr>
<td>Q18</td>
<td>Does the Qualification of Director has been disclosed?</td>
</tr>
<tr>
<td>Q19</td>
<td>Does the Information relating to reimbursement of expenses incurred by the Non-executive Chairman in performance of his duties?</td>
</tr>
<tr>
<td>Q20</td>
<td>Is the information relating to the tenure of Independent director exceeds in aggregate, a period of nine years is disclosed?</td>
</tr>
<tr>
<td>Q21</td>
<td>Does the company ensures that the person who is being appointed as independent director has the requisite experience and expertise which would be of use to the company?</td>
</tr>
</tbody>
</table>
Q22 Does the information relating to obtaining prior approval of shareholder in general meeting before payment of fees/compensation to be paid to non-executive directors including independent directors has been disclosed. (Compensation and Disclosures)?

Q23 Does the information relating to the mandatory requirement of meeting of board at least four times in a year with a maximum time gap of four month between any two meeting has been disclosed?

Q24 Does the information relating to the mandatory compliance of Director not to be a member in more than 10 committees or act as Chairman of more than five committees across all companies in which he is a director has been disclosed?

Q25 Does the information relating to the mandatory requirement of periodically review of compliance report and Instances if any non-compliance of the law applicable to company has been disclosed?

4.8.1.3 Code of Conduct

The third parameter in CGPDI is code of conduct. In all three questions relating to the code of conduct are included under this parameter. All these three questions are extracted from the clause 49(1)(D) of the listing agreement. The importance of this parameter and the items included in it, are evident from the fact that it is mandatory provision to be complied by every listed company. Moreover from the review of literature it is clear that code of conduct has been made mandatory by developed countries and same is followed by the India and is included in the mandatory list of disclosure. The questions related to code of conduct included in the CGPDI as Q27,Q28 and Q29 under the head code of conduct is given in Table 4.1.3

<table>
<thead>
<tr>
<th>Q. No.</th>
<th>Particulars of items included in CGPDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q 27</td>
<td>Does the company have a code of conduct exclusively for its board members and other senior management team members?</td>
</tr>
<tr>
<td>Q 28</td>
<td>Does the code of conduct is posted on the website of the company?</td>
</tr>
<tr>
<td>Q 29</td>
<td>Does the compliance of the code of conduct is affirm by the board members and senior management and a declaration to this effect signed by CEO is included in Annual Report of the company?</td>
</tr>
</tbody>
</table>

Table 4.1.3

CGPDI Items Relating to Code of Conduct
**4.8.1.4 Audit Committee**

The fourth parameter in CGPDI is audit committee. Audit committee is a mandatory committee, being a mandatory committee it is necessary for all listed company to form audit committee as per clause 49(II). Various provision relating to Qualification, Independence, composition, transparency, meetings, powers, role, function, and the disclosure of report are given from clause 49(II)(A) to (E). In CGPDI Question 30 to 41 captures these provision. Table 4.1.4 contains the questions are framed as per the provision of clause 49(II) listing agreement for gathering information on the status of the audit committee disclosure and compliance by the sample companies.

<table>
<thead>
<tr>
<th>Q.No.</th>
<th>Particulars of items included in CGPDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.30</td>
<td>Composition, Name of members and Chairperson</td>
</tr>
<tr>
<td>Q.31</td>
<td>Does the Audit Committee have Minimum 3 directors as member and out of these, Two-third are independent?</td>
</tr>
<tr>
<td>Q.32</td>
<td>Does the Committee have at least one member having accounting or related financial management knowledge and all the member are financially literate?</td>
</tr>
<tr>
<td>Q.33</td>
<td>Is the Chairman of the Audit Committee is an independent director?</td>
</tr>
<tr>
<td>Q.34</td>
<td>Is the Chairman of the Audit Committee and was present in Annual General Meeting to answer shareholder queries?</td>
</tr>
<tr>
<td>Q.35</td>
<td>Does the Head of the finance, Finance director, head of internal audit and a representative of the statutory auditor present as invitees for the meeting of the audit committee?</td>
</tr>
<tr>
<td>Q.36</td>
<td>Does the company secretary act as the secretary to the audit committee?</td>
</tr>
<tr>
<td>Q.37</td>
<td>Does the Compliance of at least 4 meeting with the time gap of not more than 4 month in a year has been disclosed?</td>
</tr>
<tr>
<td>Q.38</td>
<td>Does the Power of the Audit committee has been disclosed?</td>
</tr>
<tr>
<td>Q.39</td>
<td>Does the Role of the Audit committee has been disclosed?</td>
</tr>
<tr>
<td>Q.40</td>
<td>Does the information relating to mandatory review of information as per clause 49(IIE) by Audit committee has been disclosed?</td>
</tr>
<tr>
<td>Q.41</td>
<td>Does the company publish Audit committee report?</td>
</tr>
</tbody>
</table>

**4.8.1.5 Remuneration Committee**

The next parameter after audit committee is remuneration committee. It is another very important committee given in suggested list of items to be
included in the report of corporate governance in the annual report of companies. Moreover from the review of literature it is clear that a good corporate governance practice requires that there should be proper disclosure of details of remuneration or compensation paid to all the directors and the members of the board. In the light of the literature review and the suggested list, question no. 42 to 50 are framed in CGPDI to extract information relating to the composition, term of reference, remuneration paid, independence of director and chairman of committee, meetings, attendance and disclosure. Table 4.1.5 displays questions relating to remuneration/compensation committee used in CGPDI.

### Table 4.1.5

**CGPDI Items Relating to Remuneration Committee**

<table>
<thead>
<tr>
<th>Q.No.</th>
<th>Particulars of items included in CGPDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.42</td>
<td>Brief description of term of reference</td>
</tr>
<tr>
<td>Q.43</td>
<td>Composition, Name of members and Chairperson</td>
</tr>
<tr>
<td>Q.44</td>
<td>Number of Meetings held during the year</td>
</tr>
<tr>
<td>Q.45</td>
<td>Does the remuneration committee have at least 3 non-executive directors?</td>
</tr>
<tr>
<td>Q.46</td>
<td>Does the Chairman of the remuneration Committee is an independent director?</td>
</tr>
<tr>
<td>Q.47</td>
<td>Is the attendance of all the members during the year has been disclosed?</td>
</tr>
<tr>
<td>Q.48</td>
<td>Is chairman of remuneration committee present at the annual general meeting?</td>
</tr>
<tr>
<td>Q.49</td>
<td>Does the Company have Remuneration Policy</td>
</tr>
<tr>
<td>Q.50</td>
<td>Is the Details of remuneration to all the directors as per format in main report is disclosed?</td>
</tr>
</tbody>
</table>

#### 4.8.1.6 Shareholder Grievances Committee

Sub point iii of clause 49 (IV G) mandates that a board committee under the chairmanship of a non-executive director shall be formed to specifically look in the redressal of shareholders and investors complaints like transfer of share, non-receipt of declared dividends etc. This committee shall be designated as “Shareholders/Investors Grievance Committee”. Moreover, shareholders committee is also included in suggested list of items to be included in the report on corporate governance in annual report of companies as given under
annexure I C of clause 49 listing agreement. Shareholder are the real owner of the companies who invest money in shares, grievance of shareholder should be solved on priority basis. As per literature review it is very important for a company to solve the grievances of the shareholder to their utmost satisfaction. Good corporate governance practice requires that a fair transparent and independent committee should be framed and a compliance officer must be designated who can take care of shareholder grievances. It is also expected from companies who follow good corporate governance practices that at least information relating to composition, compliance officer, status of complaint receive/decided/pending must be disclosed. Therefore, in CGPDI question number 51 to 58 relating to disclosure of composition of committee, name of compliance officer, status of complaint receive/decided/pending are included to gather information on this parameter. Table 4.1.6 displays the questions framed for extracting information on this count.

Table 4.1.6
CGPDI Items Relating to Shareholder Grievances Committee

<table>
<thead>
<tr>
<th>Q.No.</th>
<th>Particulars of items included in CGPDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.51</td>
<td>Does the company has disclosed the Composition, Name of all the members of the committee?</td>
</tr>
<tr>
<td>Q.52</td>
<td>Is the information about the number of Meetings held during the year has been disclosed?</td>
</tr>
<tr>
<td>Q.53</td>
<td>Does the name of non-executive director heading the committee is disclosed?</td>
</tr>
<tr>
<td>Q.54</td>
<td>Is company appoints the compliance officer if yes does the name and the designation of the compliance officer been disclosed?</td>
</tr>
<tr>
<td>Q.55</td>
<td>Does the total Number of complaint received been disclosed?</td>
</tr>
<tr>
<td>Q.56</td>
<td>Does the nature of the complaint and queries received and disclosed item wise?</td>
</tr>
<tr>
<td>Q.57</td>
<td>Does the number of complaint solved is disclosed?</td>
</tr>
<tr>
<td>Q.58</td>
<td>Does the number of Complaints Pending till date has been disclosed?</td>
</tr>
</tbody>
</table>

4.8.1.7 Other Committees
Under the head “Other Committee” in all ten committees are included. These committee are non-mandatory committees but these committee are suggested
or included in the previous studies done by the various researchers on the different point of corporate governance. Therefore these committee are included in CGPDI. Table 4.1.7 displays the name of the committee included in the CGPDI.

<table>
<thead>
<tr>
<th>Particulars of items included in CGPDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOMINATION COMMITTEE</td>
</tr>
<tr>
<td>HEALTH AND SAFETY COMMITTEE</td>
</tr>
<tr>
<td>ENVIRONMENT COMMITTEE</td>
</tr>
<tr>
<td>ETHICS AND COMPLIANCE COMMITTEE</td>
</tr>
<tr>
<td>INVESTMENT COMMITTEE</td>
</tr>
<tr>
<td>SHARE TRANSFER COMMITTEE</td>
</tr>
<tr>
<td>HUMAN RESOURCE TRAINING AND DEVELOPMENT COMMITTEE</td>
</tr>
<tr>
<td>INDUSTRIAL RELATION COMMITTEE</td>
</tr>
<tr>
<td>COMMITTEE FOR CORPORATE SOCIAL RESPONSIBILITY</td>
</tr>
<tr>
<td>COMMITTEE OF DIRECTORS</td>
</tr>
</tbody>
</table>

4.8.1.8 Transparency and Disclosure

The soul of corporate governance lies in the transparency and disclosure. The good and effective corporate governance practices should include strong internal monitoring and control system. The internal procedure adopted for accounting, auditing, risk management, management discussion, appointment and reappointment of directors, director responsibility and other vital information must be disclosed to maintain transparency. The information to be disclosed by the listed companies are included in clause 49 of listing agreement under the head “Disclosure” in mandatory provision and also under the head “Disclosure” in suggestive list. Literature review suggests that disclosure and transparency is the uppermost cornerstone of corporate governance of any company. Effectiveness of corporate governance largely depends on adequate and fair information disclosed by the company. Therefore in CGPDI question number 69 to 81 are framed to extract the information disclosed by the companies under this parameter. It is important
here to note that the entire CGPDI is constructed for extracting information disclosed by the companies. The information which are related to a particular parameter and important to disclosed are included under that particular head in CGPDI. The information which are mandatory and suggested by the clause 49 of listing agreement under the head disclosure (not included under any other head in CGPDI) are included under this head. As per the review of related literature (Chapter 2) questions are also framed for the information which are found vital for extracting information on disclosure and transparency as suggested by the past researchers. Table 4.1.8 displays detail questions relating to Disclosure and Transparency.

Table 4.1.8

CGPDI Items Relating to Transparency and Disclosure

<table>
<thead>
<tr>
<th>Q.No.</th>
<th>Particulars of items included in CGPDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.69</td>
<td>Does the Company disclose the significant related-party transaction having potential conflicts with the interest of company at large?</td>
</tr>
<tr>
<td>Q.70</td>
<td>Does the Non-compliance by company, penalties, strictures imposed on company by stock exchange or SEBI or any statutory authority on any matter related to capital markets, during last three year has been disclosed?</td>
</tr>
<tr>
<td>Q.71</td>
<td>Does the company follow standard accounting policies and practices?</td>
</tr>
<tr>
<td>Q.72</td>
<td>Are the Board Members informed about the risk management issues?</td>
</tr>
<tr>
<td>Q.73</td>
<td>Does the company publish risk management report?</td>
</tr>
<tr>
<td>Q.74</td>
<td>Does the Management Discussion and Analysis has been disclosed?</td>
</tr>
<tr>
<td>Q.75</td>
<td>Does the company has published director’s responsibility statement?</td>
</tr>
<tr>
<td>Q.76</td>
<td>Do the shareholder have right to appoint new director or reappoint a retiring directors?</td>
</tr>
<tr>
<td>Q.77</td>
<td>Does company provide training to its board members for improving the efficiency and effectiveness in discharging their duties as board members?</td>
</tr>
<tr>
<td>Q.78</td>
<td>Does the company have any mechanism for evaluating performance of Non-executive Board Members?</td>
</tr>
<tr>
<td>Q.79</td>
<td>Is at least last 3 years Annual Report are available on the company’s website?</td>
</tr>
<tr>
<td>Q.80</td>
<td>Does the official news releases, quarterly results are available on company’s website?</td>
</tr>
<tr>
<td>Q.81</td>
<td>Does the information relating to subsidiary companies as per clause 49(III) been disclosed?</td>
</tr>
</tbody>
</table>
4.8.1.9 Compliance Certification

Compliance certification is a mandatory provision for every listed company. A company must have to obtain a compliance certificate from its CEO, i.e. the Managing Director or Manager appointed as per provision of companies Act 1956 and the CFO i.e. the whole-time Finance Director or any other person heading the finance function. Being a mandatory provision questions framed under this head for extracting information is, one relating to certification by CEO /CFO and two relating to clean certification from auditor. The questions framed are displayed in table 4.1.9.

<table>
<thead>
<tr>
<th>Q.No.</th>
<th>Particulars of items included in CGPDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q. 82</td>
<td>Does the CEO/CFO has certify to the board as per the Clause 49(V) of listing agreement</td>
</tr>
<tr>
<td>Q. 83</td>
<td>Does the company has clean certificate from auditor on the Compliance of Corporate governance and other related issues.</td>
</tr>
</tbody>
</table>

4.8.1.10 Whistle Blower Policy

The studies conducted outside India more specifically in western countries has given much weightage to whistle blower policy of the company. In Indian reference relating to whistle blower policy is given in sub point iii of item number seven “Disclosures” of suggested list and also in item number seven of Non-Mandatory Requirements given in annexure I D of listing agreement. Therefore this parameter is included in the CGPDI to know the status of disclosure of items under this head by the Indian listed companies. The question framed to extract information on this parameter is given in table 4.1.10
Table 4.1.10

CGPDI Items Relating to Whistle Blower Policy

<table>
<thead>
<tr>
<th>Q.No.</th>
<th>Particulars of items included in CGPDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q. 84</td>
<td>Does the company have Whistle Blower Policy?</td>
</tr>
<tr>
<td>Q. 85</td>
<td>Does the Whistle Blower Policy provide for adequate safeguards against victimization of employee who avail of the mechanism of Whistle Blower?</td>
</tr>
</tbody>
</table>

4.8.1.11 General Body Meetings

The companies Act, 1956, mandate for statutory, Annual General Meeting and other type of meetings. It also mandates about which type of resolution can be passed in which type of meeting. Though no direct head is given in the mandatory provision of clause 49 of listing agreement yet it is included in the sub clauses as and where it is required to furnished information on the meetings. However the suggested list annexure I C of clause 49 listing agreement include such head. Therefore this parameter has been included to extract information on the disclosure of the information relating to the general body meetings by the companies. Table 4.1.11 displays question framed and included in CGPDI to extract information under this head.

Table 4.1.11

CGPDI Items Relating to General Body Meetings

<table>
<thead>
<tr>
<th>Q.No.</th>
<th>Particulars of items included in CGPDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q. 86</td>
<td>Is the Location and time, where the last three AGMs held were disclosed by the company?</td>
</tr>
<tr>
<td>Q. 87</td>
<td>Whether any special resolutions passed in the previous 3 AGMs were disclosed?</td>
</tr>
<tr>
<td>Q. 88</td>
<td>Details of resolution passed last year through postal ballot including the name of person who conducted the postal ballot exercise</td>
</tr>
<tr>
<td>Q. 89</td>
<td>Is there any special resolution is proposed to be conducted through postal ballot?</td>
</tr>
</tbody>
</table>

4.8.1.12 Shareholder Right and other Information

Shareholder right and other information vital for shareholder is described in clause 49 (IV) (G) and also in point number 9 of suggested list of items to be
included in the report on corporate governance in the annual report of companies as given in annexure IC of clause 49 listing agreement. Shareholder rights are also given in point number 3 of Non-Mandatory Requirements as given in annexure ID of clause 49 listing agreement. Moreover review of related literature also suggests the importance of information for shareholder and its disclosure. Therefore this parameter is included in CGPDI and question number 90 to 100 are framed as displayed in table 4.1.12 for extracting the information disclosed by sample companies which are vital for shareholders/Investors.

**Table 4.1.12**

<table>
<thead>
<tr>
<th>Q.No.</th>
<th>Particulars of items included in CGPDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.90</td>
<td>Do shareholders get information on quarterly results?</td>
</tr>
<tr>
<td>Q.91</td>
<td>Does the shareholder get information on half year performance of the company?</td>
</tr>
<tr>
<td>Q.92</td>
<td>Are the shareholder informed about the share transfer procedure?</td>
</tr>
<tr>
<td>Q.93</td>
<td>Does the company publishes Market price data (High, Low) during each month in last financial year?</td>
</tr>
<tr>
<td>Q.94</td>
<td>Does the best practices recognition / award for CG if any last three year disclosed?</td>
</tr>
<tr>
<td>Q.95</td>
<td>Does the company vision and mission statement is disclosed and are publicly available?</td>
</tr>
<tr>
<td>Q.96</td>
<td>Do the ownership / shareholding structure/ pattern have been disclosed?</td>
</tr>
<tr>
<td>Q.97</td>
<td>Does the EVA (Economic Value Added) Statement is published?</td>
</tr>
<tr>
<td>Q.98</td>
<td>Does the Rating by Various agencies such as CRISAL or other have been disclosed?</td>
</tr>
<tr>
<td>Q.99</td>
<td>Does the information relating to the Name of Stock Exchange and Company Code wherein the company is listed in India is disclosed?</td>
</tr>
<tr>
<td>Q.100</td>
<td>Does the Date of listing on such stock exchange has been disclosed?</td>
</tr>
</tbody>
</table>

After development of index, data has been extracted from annual reports and other secondary sources and a composite score was calculated, thereafter on the basis of score sample companies were segregated on the basis of High and low score companies by calculating mean score. The detail analysis of the model developed for the accomplishment of this objective is discussed in chapter 5 of the thesis.
For Objective 2
In order to study the difference between the financial performance of high scorer and low scorer CGPDI companies, Pearson Correlation Test and t-test for independent sample has been carried out with the help of SPSS. The companies whose score is higher than the overall mean are grouped under high scorer CGDPI companies and companies having lower score than the overall mean are grouped under low scorer CGPDI companies. In order to study the relationship of financial performance variable- Asset Turnover Ratio (ASTR), Return on Capital Employed (ROCE), Return on Equity (ROE), Return on Assets (ROA), Tobin’s Q (TBQ), Net Profit After Tax (NPAT) with High CGPDI and Low CGPDI companies Pearson Correlation Test is used. The detail analysis of this model is discussed in chapter 5 Data Analysis, Result and Interpretation.

Description of Variables used in model for Objective 2

Financial Performance Variables

1. Asset Turnover Ratio (ASTR)

The ratio of the value of a company’s sales or revenues generated relative to the value of its assets. The Asset Turnover ratio can often be used as an indicator of the efficiency with which a company is deploying its assets in generating revenue.

2. Return on Capital Employed (ROCE)

Return on capital employed is a financial ratio that measures a company's profitability and the efficiency with which its capital is employed.
3. Return on Equity (ROE)

The amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.

\[
\text{Return on Equity} = \frac{\text{Net Income}}{\text{Shareholder’s Equity}}
\]

4. Return on Assets (ROA)

Return on Assets is an indicator of how profitable a company is relative to its total assets. ROA gives an idea as to how efficient management is at using its assets to generate earnings. Calculated by dividing a company's annual earnings by its total assets, ROA is displayed as a percentage. Sometimes this is referred to as "return on investment".

\[
\text{Return on Assets} = \frac{\text{Net Income}}{\text{Total Assets}}
\]

5. Tobin’s Q (TBQ)

The Tobin’s Q is the ratio of the market value to replacement value of a firm’s assets. It is calculated as the ratio of market value to replacement value of a firm’s assets. The market value of firm’s assets is calculated as market value of equity + Book value of assets, minus book value of equity. Then this is divided by the book value of assets to get value of Tobin’s Q
6. Net Profit After Tax (NPAT)

A company's potential cash earnings if its capitalization were unleveraged (that is, if it had no debt).

For Objective 3

Models For Objective 3
In order to study the impact of corporate governance variables on the corporate governance disclosure practices index of sample automobile companies, Econometric Models 3 to 6 have been proposed. For the analysis CGDPI score for the period from 2006 to 2014 for all 14 companies i.e. 126 observations were considered. A Panel Data Regression Model is suitable for such a cause and effect relationship and hence it is used for the causal study. **Model 3** includes both quantitative and qualitative (Dummy) Variables. **Model 4 to 6** includes only quantitative data. **Model 3** studies the impact of Corporate Board Structure (CBS) i.e. (Board Size (BOS), Number of Independent Directors on Board (NIDB) dummy variable captures the presence or absence of duality, Chief Executive Officer Duality (CEO D), Number of other companies directorship held by chairman (COCD), Number of other companies chairman ship held by chairman (COCC), Number of other companies directorship held by managing director (MDOCD)) on corporate governance practices disclosure index score (CGPDI). **Model 4** studies the impact of Corporate Board Activities (CBA) i.e. (Number of meetings in a year (NOM), Chairman attending AGM (CAGM), Chairman number of committee position held (CNCP), Managing director attending meeting (MDMA), Number of board committees (NBC) on Corporate governance practices disclosure index score (CGPDI). **Model 5** studies the impact of Corporate Remuneration (CRM) i.e. (Log of remuneration received by managing director in a year (LMDR), Log of remuneration received by chairman in a year (LCR)) on Corporate governance practices disclosure index
score (CGPDI). **Model 6** studies the impact of Shareholding Pattern (SHP) i.e. (Promoter Shareholding (PSH), Domestic Institutional Investors Shareholding (DIISH), Foreign Institutional Investors Shareholding (FIISH), Corporate Investor Shareholding (CISH), Public Investor Shareholding (PISH), Other Investor Shareholding (OISH)) on Corporate governance practices disclosure index score (CGDPI).

**Description of Variables used for Objective 3**

**For Model 1 Corporate Board Structure (CBS)**

1. **Board Size (BOS)**
   A group of elected or appointed individuals who are collectively responsible for the governance and strategic direction of an organization is named as board. The board in general consists of the chairman, executive directors and non-executive independent directors. The board size is computed as the total number of directors sitting on the board at the end of the particular year.

2. **Number of Independent Directors on Board (NIDB)**
   Non-executive directors who should be independent of management and free from any business or other relationship, which could materially interfere with the exercise of their judgment. Cadbury report and Combine Code (1998) The clause 49 of listing agreement requires that one third of the board must consist of independent directors if chairman is non executive and if chairman is executive than at least half of the board must comprise of Independent directors. Hence, in this study, board independence is measured by the total number of independent non-executive directors on the board.

3. **Chief Executive Officer Duality (CEOD)**
   A single person holding both the Chairman and CEO role is called as duality which improves the value of a firm as the agency cost between the two is
eliminated. **Alexander, Fennell and Halpern, (1993)**. It is a dummy variable which captures “1” if single person holds both Chairman and CEO position and captures “0” otherwise.

**4. Number of other companies directorship held by chairman (COCD)**

In corporate board structure an executive elected by company’s board of directors for presiding over board of director as a chairman, holds independent directorship of the other company is considered as the variable for this model. It is calculated as number of other companies directorship held by chairman in a particular year as per annual report published by the company.

**5. Number of other companies chairmanship held by chairman (COCC)**

In corporate board structure an executive elected by company’s board of directors for presiding over board of director as a chairman, holds chairmanship of any other company is considered as the variable for this model. It is calculated as number of other companies chairmanship held by chairman in a particular year computed from annual report published by companies.

**6. Number of other companies directorship held by MD (MDOCD)**

Managing Directors who is responsible for managing affairs of the company as managing director as an employee and who is not an independent director or outside director but he/she is a director of other company is also considered as variable in this model and is computed as total number of directorship held in other companies by Managing director.

**7. Number of Board Meeting Held in a year (NOBM)**
The Oxford English dictionary defines a meeting as “an assembly of people for a particular purpose, especially for formal discussion.”

8. Chairman attended last AGM or Not: (CAGM)

The AGM is a primary meeting of shareholders where accounts are presented, resolutions are voted on and directors and auditors are elected or re-elected. For other companies who are not public companies the former AGM has now become a ‘general meeting’ and each company can therefore regulate as it sees fit. An organisation’s governing document may contain clauses in which it states how the general meeting will be run, how often it will occur, and presence of chairmen in the last meeting etc.

9 Number of Committees position held by chairman: (CNCP)

A committee of senior executives who are appointed, usually by the governing board(chairman), with authority to manage the day to day affairs of the organisation concerned is also considered as variable in the study.

10 Number of Meeting Attended by Managing Director (MDMA)

Directors who are also employees of the company and cannot be considered independent or outside directors is called as MD. The number of meeting attended by MD is also considered as an independent variable of corporate governance in this study.

11 Number of Board Committees (NBC)

A group of individuals who receive and consider reports from a third party and present the findings to a superior body is called as committee. The number of
committees is also considered as an independent variable of corporate governance in this study.

12 Log of Managing Director Remuneration (LMDR)

As managing director is considered as director who cannot be independent or outside directors, his/her log of remuneration is also considered as variable in the study.

13. Log of Chairman Remuneration (LCR)

Reward for employment in the form of pay, salary, or wage, including allowances, benefits (such as company car, medical plan, pension plan), bonuses, cash incentives, and monetary value of the noncash incentives is called as remuneration. Log of Chairman Remuneration is also considered as variable in the study.

14. Percentage of Promoter holding (PSH)

Promoter shareholding is measured by the percentage of shares held by all the directors together against the total number of outstanding shares.

15. Percentage of Domestic Institutional Investor holding (DIISH)

Domestic Institutional Investor holding is measured by the percentage of shares held by all domestic institutional investor together against the total number of outstanding shares. (Kumar, 2004)

16. Percentage of Foreign Institutional Investor holding (FIISH)
Foreign Institutional Investor holding is measured by the percentage of shares held by all foreign institutional investor together against the total number of outstanding shares.

17. Corporate Investors (CISH)

Corporate holding is measured by the percentage of shares held by all corporate together against the total number of outstanding shares. These include corporate bodies excluding those already covered. (Kumar, 2004)

18. Public Investors (PISH)

Public holding is measured by the percentage of shares held by public against the total number of outstanding shares.
Model 3: Impact of Corporate Board Structure on Corporate Governance Practices Disclosure Index for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[
\text{CGPDI}_{it} = \beta_0 + \beta_1 \text{BOS}_{1it} + \beta_2 \text{NIDB}_{2it} + \beta_3 \text{CEOD}_{3it} + \beta_4 \text{COCD}_{4it} + \beta_5 \text{COCC}_{5it} + \beta_6 \text{MDCOD}_{6it} + \mu_{it}
\]

\(\beta_0 = \) Intercept
\(\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 = \) Slope Coefficients of BOS, NIDB, CEOD, COCD, COCC and MDCOD.
\(\mu_{it} = \) Error term.

Dependent Variable = CGDPI
Independent Variable = BOS, NIDB, CEOD, COCD, COCC and MDCOD.
CGPDI = Corporate Governance Practices Disclosure Index
BOS = Board Size
NIDB = Number of Independent Directors on Board
CEOD = CEO Duality
COCD = Chairman Other Company Directorship Held
COCC = Chairman other Comp Chairmanship Held
MDCOD = MD Other Comp Directorship Held

i stands for ith cross – sectional unit i.e. Corporate Board Structure for Selected Automobile Manufacturing Companies in India.

\(t\) stands for the \(t^{th}\) time period (From year 2006 – 2014)
Model 4: Impact of Corporate Board Activity on Corporate Governance Practices Disclosure Index for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[
\text{CGPDI}_{it} = \beta_0 + \beta_1 \text{NOBM}_{1it} + \beta_2 \text{CAGM}_{2it} + \beta_3 \text{MDMA}_{3it} + \beta_4 \text{NBC}_{4it} + \beta_5 \text{CNCP}_{5it} + \mu_{it}
\]

- \( \beta_0 \) = Intercept
- \( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5 \) = Slope Coefficients of NOBM, CAGM, MDMA, NBC and CNCP.
- \( \mu_{it} \) = Error term.

Dependent Variable = CGPDI
Independent Variable = NOBM, CAGM, CNCP, MDMA, and NBC.
CGPDI = Corporate Governance Practices Disclosure Index
NOBM = Number of Board Meetings held in a year
CAGM = Chairman attended Annual General Meeting or Not
MDMA = Managing Director Meeting Attended
NBC = Number of Board Committee
CNCP = Chairman Number of Committee Position.
i stands for ith cross – sectional unit i.e. Corporate Board Activity for Selected Automobile Manufacturing Companies in India.
t stands for the \( t^{th} \) time period (From year 2006 – 2014)
Model 5: Impact of Corporate Remuneration on Corporate Governance Practices Disclosure Index for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ CGPDI_{it} = \beta_0 + \beta_1 LCR_{1it} + \beta_2 LMDR_{2it} + \mu_{it} \]

\( \beta_0 \) = Intercept  
\( \beta_1, \beta_2 \) = Slope Coefficients of LMDR and LCR.  
\( \mu_{it} \) = Error term.  
Dependent Variable = CGDPI  
Independent Variable = LMDR and LCR.  
CGPDI = Corporate Governance Practices Disclosure Index  
LMDR = Log of Managing Directors Remuneration  
LCR = Log of Chairman’s Remuneration  
i stands for ith cross-sectional unit i.e. Corporate Remuneration for Selected Automobile Manufacturing Companies in India.  
t stands for the \( t^{th} \) time period (From year 2006 – 2014)
Model 6: Impact of Share Holding Pattern on Corporate Governance Practices Disclosure Index for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ CGPDI_{it} = \beta_0 + \beta_1 PSH_{1it} + \beta_2 DIISH_{2it} + \beta_3 FIISH_{3it} + \beta_4 CISH_{4it} + \beta_5 PISH_{5it} + \beta_6 OISH_{6it} + \mu_{it} \]

\( \beta_0 \) = Intercept
\( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 = \) Slope Coefficients of PSH, DIISH, FIISH, CISH, PISH, and OISH.
\( \mu_{it} = \) Error term.

Dependent Variable = CGDPI
Independent Variable = PSH, DIISH, FIISH, CISH, PISH, and OISH.
PSH = Promoters Shareholding
DIISH = Domestic Institutional Shareholding
FIISH = Foreign Institutional Investor Shareholding
CISH = Corporate Investor Shareholding
PISH = Public Investor Shareholding
OISH = Other Investors Shareholding
i stands for ith cross – sectional unit i.e. Corporate Board Activity for Selected Automobile Manufacturing Companies in India.
t stands for the tth time period (From year 2006 – 2014)
Models For Objective 4

In order to study the impact of corporate governance variables on the financial performance of selected automobile manufacturing companies, **Econometric Models 7 to 10** have been developed. For the analysis period from 2006 to 2014 for all 14 companies i.e. 126 observations were considered. A Panel Data Regression Model is suitable for such a cause and effect relationship and hence it is used for the causal study. **Model 7 (1) to Model 7(6)** includes both quantitative and qualitative (Dummy) Variables. **Model 7(1) to Model 7(6)** studies the impact of Corporate Board Structure (CBS) i.e. (Board Size (BOS), Number of Independent Directors on Board (NIDB) dummy variable captures the presence or absence of duality, Chief Executive Officer Duality(CEOD), Number of other companies directorship held by chairman (COCD), Number of other companies chairman ship held by chairman(COCC), Number of other companies directorship held by managing director (MDOCD)) on Financial performance variables Asset Turnover Ratio (ASTR), Return on Capital Employed (ROCE), Return on Equity (ROE), Return on Assets (ROA), Tobin’s Q (TBQ) and Net Profit After Tax (NPAT) respectively.
Model 7(1): Impact of Corporate Board Structure (CBS) on financial performance variable Asset Turnover Ratio (ASTR) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ ASTR_{it} = \beta_0 + \beta_1 BOS_{1it} + \beta_2 NIDB_{2it} + \beta_3 CEOD_{3it} + \beta_4 COCD_{4it} + \beta_5 COCC_{5it} + \beta_6 MDCOD_{6it} + \mu_{it} \]

- \( \beta_0 \) = Intercept
- \( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 \) = Slope Coefficients of BOS, NIDB, CEOD, COCD, COCC and MDCOD.
- \( \mu_{it} \) = Error term.

Dependent Variable = ASTR
Independent Variable = BOS, NIDB, CEOD, COCD, COCC and MDCOD.
ASTR = Asset Turnover Ratio
BOS = Board Size
NIDB = Number of Independent Directors on Board
CEOD = CEO Duality
COCD = Chairman Other Company Directorship Held
COCC = Chairman other Comp Chairmanship Held
MDCOD = MD Other Comp Directorship Held

i stands for ith cross – sectional unit i.e. Corporate Board Structure for Selected Automobile Manufacturing Companies in India.

\( t \) stands for the \( t^{th} \) time period (From year 2006 – 2014)
Model 7(2): Impact of Corporate Board Structure (CBS) on financial performance variable Return on Capital Employed (ROCE) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ \text{ROCE}_{it} = \beta_0 + \beta_1 \text{BOS}_{1it} + \beta_2 \text{NIDB}_{2it} + \beta_3 \text{CEO}_{3it} + \beta_4 \text{COCD}_{4it} + \beta_5 \text{COC}_{5it} + \beta_6 \text{MDCOD}_{6it} + \mu_{it} \]

\( \beta_0 \) = Intercept
\( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 \) = Slope Coefficients of BOS, NIDB, CEO, COCD, COC and MDCOD.
\( \mu_{it} \) = Error term.

Dependent Variable = ROCE
Independent Variable = BOS, NIDB, CEO, COCD, COC and MDCOD.
ROCE = Return on Capital Employed
BOS = Board Size
NIDB = Number of Independent Directors on Board
CEO = CEO Duality
COCD = Chairman Other Company Directorship Held
COC = Chairman other Comp Chairmanship Held
MDCOD = MD Other Comp Directorship Held

i stands for ith cross – sectional unit i.e. Corporate Board Structure for Selected Automobile Manufacturing Companies in India.

i stands for the \( t^{th} \) time period (From year 2006 – 2014)
Model 7(3): Impact of Corporate Board Structure (CBS) on financial performance variable Return on Equity (ROE), for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[
\text{ROCE}_{it} = \beta_0 + \beta_1 \text{BOS}_{1it} + \beta_2 \text{NIDB}_{2it} + \beta_3 \text{CEOD}_{3it} + \beta_4 \text{COCD}_{4it} + \beta_5 \text{COCC}_{5it} + \beta_6 \text{MDCOD}_{6it} + \mu_{it}
\]

- \(\beta_0\) = Intercept
- \(\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6\) = Slope Coefficients of BOS, NIDB, CEOD, COCD, COCC and MDCOD.
- \(\mu_{it}\) = Error term.

Dependent Variable= ROCE
Independent Variable = BOS, NIDB, CEOD, COCD, COCC and MDCOD.
ROCE = Return on Capital Employed
BOS = Board Size
NIDB = Number of Independent Directors on Board
CEOD = CEO Duality
COCD = Chairman Other Company Directorship Held
COCC = Chairman other Comp Chairmanship Held
MDCOD = MD Other Comp Directorship Held

i stands for ith cross-sectional unit i.e. Corporate Board Structure for Selected Automobile Manufacturing Companies in India.
t stands for the t\textsuperscript{th} time period (From year 2006 – 2014)
Model 7(4): Impact of Corporate Board Structure (CBS) on financial performance variable, Return on Assets (ROA) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ \text{ROA}_{it} = \beta_0 + \beta_1 \text{BOS}_{1it} + \beta_2 \text{NIDB}_{2it} + \beta_3 \text{CEOD}_{3it} + \beta_4 \text{COCD}_{4it} + \beta_5 \text{COCC}_{5it} + \beta_6 \text{MDCOD}_{6it} + \mu_{it} \]

\( \beta_0 \) = Intercept
\( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 \) = Slope Coefficients of BOS, NIDB, CEOD, COCD, COCC and MDCOD.
\( \mu_{it} \) = Error term.

Dependent Variable = ROA
Independent Variable = BOS, NIDB, CEOD, COCD, COCC and MDCOD.
ROCE = Return on Assets
BOS = Board Size
NIDB = Number of Independent Directors on Board
CEOD = CEO Duality
COCD = Chairman Other Company Directorship Held
COCC = Chairman other Comp Chairmanship Held
MDCOD = MD Other Comp Directorship Held
i stands for ith cross-sectional unit i.e. Corporate Board Structure for Selected Automobile Manufacturing Companies in India.
t stands for the \( t^{th} \) time period (From year 2006 – 2014)
Model 7(5): Impact of Corporate Board Structure (CBS) on financial performance variable Tobin’s Q (TBQ) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ TBQ_{it} = \beta_0 + \beta_1 BOS_{1it} + \beta_2 NIDB_{2it} + \beta_3 CEOD_{3it} + \beta_4 COCD_{4it} + \beta_5 COCC_{5it} + \beta_6 MDCOD_{6it} + \mu_{it} \]

\( \beta_0 \) = Intercept
\( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 \) = Slope Coefficients of BOS, NIDB, CEOD, COCD, COCC and MDCOD.
\( \mu_{it} \) = Error term.

Dependent Variable= TBQ
Independent Variable = BOS, NIDB, CEOD, COCD, COCC and MDCOD.
TBQ = Tobin’s Q
BOS = Board Size
NIDB = Number of Independent Directors on Board
CEOD = CEO Duality
COCD = Chairman Other Company Directorship Held
COCC = Chairman other Comp Chairmanship Held
MDCOD = MD Other Comp Directorship Held

i stands for ith cross – sectional unit i.e. Corporate Board Structure for Selected Automobile Manufacturing Companies in India.

\( t \) stands for the \( t^{th} \) time period (From year 2006 – 2014)
Model 7(6): Impact of Corporate Board Structure (CBS) on financial performance variable Net Profit After Tax (NPAT) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ NPAT_{it} = \beta_0 + \beta_1 BOS_{1it} + \beta_2 NIDB_{2it} + \beta_3 CEOD_{3it} + \beta_4 COCD_{4it} + \beta_5 COCC_{5it} + \beta_6 MDCOD_{6it} + \mu_{it} \]

\( \beta_0 = \) Intercept
\( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 = \) Slope Coefficients of BOS, NIDB, CEOD, COCD, COCC and MDCOD.
\( \mu_{it} = \) Error term.
Dependent Variable = NPAT
Independent Variable = BOS, NIDB, CEOD, COCD, COCC and MDCOD.
ROCE = Net Profit After Tax
BOS = Board Size
NIDB = Number of Independent Directors on Board
CEOD = CEO Duality
COCD = Chairman Other Company Directorship Held
COCC = Chairman other Comp Chairmanship Held
MDCOD = MD Other Comp Directorship Held

i stands for ith cross-sectional unit i.e. Corporate Board Structure for Selected Automobile Manufacturing Companies in India.
t stands for the t\(^{th}\) time period (From year 2006 – 2014)
Model 8(1) to Model 8(6) studies the impact of Corporate Board Activities (CBA) i.e. (Number of meetings in a year(NOM), Chairman attending AGM (CAGM), Chairman number of committee position held(CNCP), Managing director attending meeting(MDMA), Number of board committees(NBC) on Financial performance variables Asset Turnover Ratio (ASTR), Return on Capital Employed (ROCE), Return on Equity (ROE), Return on Assets (ROA), Tobin’s Q (TBQ) and Net Profit After Tax (NPAT) respectively.

Model 8(1) : Impact of Corporate Board Activity (CBA) on Financial performance variables Asset Turnover Ratio (ASTR) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ \text{ASTR}_{it} = \beta_0 + \beta_1 \text{NOBM}_{1it} + \beta_2 \text{CAGM}_{2it} + \beta_3 \text{MDMA}_{3it} + \beta_4 \text{NBC}_{4it} + \beta_5 \text{CNCP}_{5it} + \mu_{it} \]

\( \beta_0 \) = Intercept
\( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5 \) = Slope Coefficients of NOBM, CAGM, MDMA, NBC and CNCP.
\( \mu_{it} \) = Error term.
Dependent Variable = ASTR
Independent Variable = NOBM, CAGM, MDMA, NBC and CNCP.
ASTR = Asset Turnover Ratio
NOBM = Number of Board Meetings held in a year
CAGM = Chairman attended Annual General Meeting or Not
MDMA = Managing Director Meeting Attended
NBC = Number of Board Committee
CNCP = Chairman Number of Committee Position.
i stands for ith cross – sectional unit i.e. Corporate Board Activity for Selected Automobile Manufacturing Companies in India.
t stands for the t\textsuperscript{th} time period (From year 2006 – 2014)

**Model 8(2) : Impact of Corporate Board Activity (CBA) on Financial performance variables Return on Capital Employed (ROCE) for selected automobile manufacturing companies**

**Panel Data Linear Regression Model**
*(Slope Coefficients and Intercept constant across automobile companies)*

\[
\text{ROCE}_{it} = \beta_0 + \beta_1 \text{NOBM}_{1it} + \beta_2 \text{CAGM}_{2it} + \beta_3 \text{MDMA}_{3it} + \beta_4 \text{NBC}_{4it} + \\
\beta_5 \text{CNCP}_{5it} + \mu_{it}
\]

\(\beta_0 = \text{Intercept}\)

\(\beta_1, \beta_2, \beta_3, \beta_4, \beta_5 = \text{Slope Coefficients of NOBM, CAGM, MDMA, NBC and CNCP}.\)

\(\mu_{it} = \text{Error term.}\)

Dependent Variable = ROCE

Independent Variable = NOBM, CAGM, MDMA, NBC and CNCP.

ROCE = Return on Capital Employed

NOBM = Number of Board Meetings held in a year

CAGM = Chairman attended Annual General Meeting or Not

MDMA = Managing Director Meeting Attended

NBC = Number of Board Committee

CNCP = Chairman Number of Committee Position

i stands for ith cross – sectional unit i.e. Corporate Board Activity for Selected Automobile Manufacturing Companies in India.
t stands for the t\textsuperscript{th} time period (From year 2006 – 2014)
Model 8(3): Impact of Corporate Board Activity (CBA) on Financial performance variable Return on Equity (ROE) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ \text{ROE}_{it} = \beta_0 + \beta_1 \text{NOBM}_{1it} + \beta_2 \text{CAGM}_{2it} + \beta_3 \text{MDMA}_{3it} + \beta_4 \text{NBC}_{4it} + \beta_5 \text{CNCP}_{5it} + \mu_{it} \]

\( \beta_0 \) = Intercept
\( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5 \) = Slope Coefficients of NOBM, CAGM, MDMA, NBC and CNCP.
\( \mu_{it} \) = Error term.

Dependent Variable = ROE
Independent Variable = NOBM, CAGM, MDMA, NBC and CNCP.

ROE = Return on Equity
NOBM = Number of Board Meetings held in a year
CAGM = Chairman attended Annual General Meeting or Not
MDMA = Managing Director Meeting Attended
NBC = Number of Board Committee
CNCP = Chairman Number of Committee Position

i stands for \( i \)th cross-sectional unit i.e. Corporate Board Activity for Selected Automobile Manufacturing Companies in India.

\( t \) stands for the \( t \)th time period (From year 2006 – 2014)
Model 8(4) : Impact of Corporate Board Activity (CBA) on Financial performance variable Return on Assets (ROA) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ \text{ROA}_{it} = \beta_0 + \beta_1 \text{NOBM}_{1it} + \beta_2 \text{CAGM}_{2it} + \beta_3 \text{MDMA}_{3it} + \beta_4 \text{NBC}_{4it} + \beta_5 \text{CNCP}_{5it} + \mu_{it} \]

\( \beta_0 \) = Intercept
\( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5 \) = Slope Coefficients of NOBM, CAGM, MDMA, NBC and CNCP.
\( \mu_{it} \) = Error term.

Dependent Variable = ROA
Independent Variable = NOBM, CAGM, MDMA, NBC and CNCP.

ROA = Return on Assets
NOBM = Number of Board Meetings held in a year
CAGM = Chairman attended Annual General Meeting or Not
MDMA = Managing Director Meeting Attended
NBC = Number of Board Committee
CNCP = Chairman Number of Committee Position

i stands for ith cross-sectional unit i.e. Corporate Board Activity for Selected Automobile Manufacturing Companies in India.

\( t \) stands for the t\(^{th}\) time period (From year 2006 – 2014)
Model 8(5): Impact of Corporate Board Activity (CBA) on Financial performance variable Tobin’s Q (TBQ) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ \text{TBQ}_{it} = \beta_0 + \beta_1 \text{NOBM}_{1it} + \beta_2 \text{CAGM}_{2it} + \beta_3 \text{MDMA}_{3it} + \beta_4 \text{NBC}_{4it} + \beta_5 \text{CNCP}_{5it} + \mu_{it} \]

\( \beta_0 \) = Intercept
\( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5 \) = Slope Coefficients of NOBM, CAGM, MDMA, NBC and CNCP.
\( \mu_{it} \) = Error term.

Dependent Variable = TQB
Independent Variable = NOBM, CAGM, MDMA, NBC and CNCP.
TBQ = Tobin’s Q
NOBM = Number of Board Meetings held in a year
CAGM = Chairman attended Annual General Meeting or Not
MDMA = Managing Director Meeting Attended
NBC = Number of Board Committee
CNCP = Chairman Number of Committee Position
i stands for ith cross – sectional unit i.e. Corporate Board Activity for Selected Automobile Manufacturing Companies in India.
t stands for the t\(^{th}\) time period (From year 2006 – 2014)
Model 8(6) : Impact of Corporate Board Activity (CBA) on Financial performance variable Net Profit After Tax (NPAT) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ NPAT_{it} = \beta_0 + \beta_1 NOBM_{1it} + \beta_2 CAGM_{2it} + \beta_3 MDMA_{3it} + \beta_4 NBC_{4it} + \beta_5 CNCP_{5it} + \mu_{it} \]

\( \beta_0 = \text{Intercept} \)
\( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5 = \text{Slope Coefficients of NOBM, CAGM, MDMA, NBC and CNCP.} \)
\( \mu_{it} = \text{Error term.} \)

Dependent Variable = NPAT
Independent Variable = NOBM, CAGM, MDMA, NBC and CNCP.
NPAT = Net Profit After Tax
NOBM = Number of Board Meetings held in a year
CAGM = Chairman attended Annual General Meeting or Not
MDMA = Managing Director Meeting Attended
NBC = Number of Board Committee
CNCP = Chairman Number of Committee Position
i stands for ith cross – sectional unit i.e. Corporate Board Activity for Selected Automobile Manufacturing Companies in India.
t stands for the t\textsuperscript{th} time period (From year 2006 – 2014)
Model 9(1) to Model 9(6) studies the impact of Corporate Remuneration (CRM) i.e. (Log of remuneration received by managing director in a year (LMDR), Log of remuneration received by chairman in a year(LCR)) on Financial performance variables Asset Turnover Ratio (ASTR), Return on Capital Employed (ROCE), Return on Equity (ROE), Return on Assets (ROA), Tobin’s Q (TBQ) and Net Profit After Tax (NPAT) respectively.

Model 9(1) : Impact of Corporate Remuneration (CRM) on Financial performance variables Asset Turnover Ratio (ASTR) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

$$\text{ASTR}_{it} = \beta_0 + \beta_1 \text{LCR}_{1it} + \beta_2 \text{LMDR}_{2it} + \mu_{it}$$

$\beta_0 =$ Intercept
$\beta_1, \beta_2, =$ Slope Coefficients of LMDR and LCR.
$\mu_{it} =$ Error term.
Dependent Variable= ASTR
Independent Variable = LMDR and LCR.
ASTR = Asset Turnover Ratio
LCR = Log of remuneration received by chairman in a year
LMDR = Log of remuneration received by managing director in a year
i stands for ith cross – sectional unit i.e. Corporate Board Activity for Selected Automobile Manufacturing Companies in India.
t stands for the $t^{th}$ time period (From year 2006 – 2014)
Model 9(2) : Impact of Corporate Remuneration (CRM) on Financial performance variables Return on Capital Employed (ROCE) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[
ROCE_{it} = \beta_0 + \beta_1 LCR_{1it} + \beta_2 LMDR_{2it} + \mu_{it}
\]

\(\beta_0\) = Intercept
\(\beta_1, \beta_2\) = Slope Coefficients of LMDR and LCR.
\(\mu_{it}\) = Error term.

Dependent Variable = ROCE
Independent Variable = LMDR and LCR.
ROCE = Return on Capital Employed

LCR = Log of remuneration received by chairman in a year
LMDR = Log of remuneration received by managing director in a year

i stands for ith cross-sectional unit i.e. Corporate Board Activity for Selected Automobile Manufacturing Companies in India.
t stands for the t\textsuperscript{th} time period (From year 2006 – 2014)
Model 9(3) : Impact of Corporate Remuneration (CRM) on Financial performance variables Return on Equity (ROE) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ \text{ROE}_{it} = \beta_0 + \beta_1 \text{LCR}_{1it} + \beta_2 \text{LMDR}_{2it} + \mu_{it} \]

\[ \beta_0 = \text{Intercept} \]
\[ \beta_1, \beta_2, = \text{Slope Coefficients of LMDR and LCR.} \]
\[ \mu_{it} = \text{Error term.} \]

Dependent Variable = ROE
Independent Variable = LMDR and LCR.
ROE = Return on Equity
LCR = Log of remuneration received by chairman in a year
LMDR = Log of remuneration received by managing director in a year
i stands for ith cross – sectional unit i.e. Corporate Board Activity for Selected Automobile Manufacturing Companies in India.
t stands for the tth time period (From year 2006 – 2014)
Model 9(4) : Impact of Corporate Remuneration (CRM) on Financial performance variables Return on Assets (ROA) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ ROA_{it} = \beta_0 + \beta_1 LCR_{1it} + \beta_2 LMDR_{2it} + \mu_{it} \]

\( \beta_0 = \) Intercept
\( \beta_1, \beta_2, = \) Slope Coefficients of LMDR and LCR.
\( \mu_{it} = \) Error term.
Dependent Variable= ROA
Independent Variable = LMDR and LCR.
ROA = Return on Assets
LCR = Log of remuneration received by chairman in a year
LMDR = Log of remuneration received by managing director in a year
i stands for ith cross – sectional unit i.e. Corporate Board Activity for Selected Automobile Manufacturing Companies in India.
t stands for the tth time period (From year 2006 – 2014)
Model 9(5) : Impact of Corporate Remuneration (CRM) on Financial performance variables Tobin’s Q (TBQ) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ TBQ_{it} = \beta_0 + \beta_1 LCR_{1it} + \beta_2 LMDR_{2it} + \mu_{it} \]

\( \beta_0 \) = Intercept \\
\( \beta_1, \beta_2 \) = Slope Coefficients of LMDR and LCR. \\
\( \mu_{it} \) = Error term.

Dependent Variable = TBQ \\
Independent Variable = LMDR and LCR. \\
TBQ = Tobin’s Q \\
LCR = Log of remuneration received by chairman in a year \\
LMDR = Log of remuneration received by managing director in a year \\
i stands for ith cross – sectional unit i.e. Corporate Board Activity for Selected Automobile Manufacturing Companies in India. \\
t stands for the t\textsuperscript{th} time period (From year 2006 – 2014)
Model 9(6) : Impact of Corporate Remuneration (CRM) on Financial performance variables Net Profit After Tax (NPAT) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ \text{NPAT}_{it} = \beta_0 + \beta_1 \text{LCR}_{1it} + \beta_2 \text{LMDR}_{2it} + \mu_{it} \]

\( \beta_0 \) = Intercept
\( \beta_1, \beta_2 \) = Slope Coefficients of LMDR and LCR.
\( \mu_{it} \) = Error term.
Dependent Variable= NPAT
Independent Variable = LMDR and LCR.
NPAT = Net Profit After Tax
LCR = Log of remuneration received by chairman in a year
LMDR = Log of remuneration received by managing director in a year
i stands for ith cross – sectional unit i.e. Corporate Board Activity for Selected Automobile Manufacturing Companies in India.
t stands for the \( t \)th time period (From year 2006 – 2014)

Model 10(1) to Model 10(6) studies the impact of Shareholding Pattern (SHP) i.e. ( Promoter Shareholding (PSH), Domestic Institutional Investors Shareholding (DIISH), Foreign Institutional Investors Shareholding(FIISH), Corporate Investor Shareholding (CISH), Public Investor Shareholding (PISH), Other Investor Shareholding (OISH)) on Financial performance variables Asset Turnover Ratio (ASTR), Return on Capital Employed
(ROCE), Return on Equity (ROE), Return on Assets (ROA), Tobin’s Q (TBQ) and Net Profit After Tax (NPAT) respectively.

**Model 10(1): Impact of Shareholding Pattern (SHP) on Financial Performance variables Asset Turnover Ratio (ASTR) for selected automobile manufacturing companies**

**Panel Data Linear Regression Model**

(Slope Coefficients and Intercept constant across automobile companies)

\[
\text{ASTR}_{it} = \beta_0 + \beta_1 \text{PSH}_{1it} + \beta_2 \text{DIISH}_{2it} + \beta_3 \text{FIISH}_{3it} + \beta_4 \text{CISH}_{4it} + \beta_5 \text{PISH}_{5it} + \beta_6 \text{OISH}_{6it} + \mu_{it}
\]

\(\beta_0\) = Intercept
\(\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6\) = Slope Coefficients of PSH, DIISH, FIISH, CISH, PISH and OISH.

\(\mu_{it}\) = Error term.

Dependent Variable = ASTR
Independent Variable = PSH, DIISH, FIISH, CISH, PISH and OISH.

ASTR = Asset Turnover Ratio
PSH = Promoter Shareholding
DIISH = Domestic Institutional Investors Shareholding
FIISH = Foreign Institutional Investors Shareholding
CISH = Corporate Investor Shareholding
PISH = Public Investor Shareholding
OISH = Other Investor Shareholding

i stands for ith cross-sectional unit i.e. Shareholding Pattern for Selected Automobile Manufacturing Companies in India.
t stands for the t\(^{th}\) time period (From year 2006 – 2014)
Model 10(2): Impact of Shareholding Pattern (SHP) on Financial performance variable Return on Capital Employed (ROCE) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ \text{ROCE}_{it} = \beta_0 + \beta_1 \text{PSH}_{1it} + \beta_2 \text{DIISH}_{2it} + \beta_3 \text{FIISH}_{3it} + \beta_4 \text{CISH}_{4it} + \beta_5 \text{PISH}_{5it} + \beta_6 \text{OISH}_{6it} + \mu_{it} \]

\( \beta_0 \) = Intercept  
\( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 \) = Slope Coefficients of PSH, DIISH, FIISH, CISH, PISH and OISH.  
\( \mu_{it} \) = Error term.  
Dependent Variable = ROCE  
Independent Variable = PSH, DIISH, FIISH, CISH, PISH and OISH.  
ROCE = Return on Capital Employed  
PSH = Promoter Shareholding  
DIISH = Domestic Institutional Investors Shareholding  
FIISH = Foreign Institutional Investors Shareholding  
CISH = Corporate Investor Shareholding  
PISH = Public Investor Shareholding  
OISH = Other Investor Shareholding  
i stands for ith cross-sectional unit i.e. Shareholding Pattern for Selected Automobile Manufacturing Companies in India.  
t stands for the \( t^{th} \) time period (From year 2006 – 2014)
Model 10(3): Impact of Shareholding Pattern (SHP) on Financial Performance variable Return on Equity (ROE) for selected automobile manufacturing companies

Panel Data Linear Regression Model

(Slope Coefficients and Intercept constant across automobile companies)

\[ \text{ROE}_{it} = \beta_0 + \beta_1 \text{PSH}_{1it} + \beta_2 \text{DIISH}_{2it} + \beta_3 \text{FIISH}_{3it} + \beta_4 \text{CISH}_{4it} + \beta_5 \text{PISH}_{5it} + \beta_6 \text{OISH}_{6it} + \mu_{it} \]

\( \beta_0 \) = Intercept
\( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 \) = Slope Coefficients of PSH, DIISH, FIISH, CISH, PISH and OISH.
\( \mu_{it} \) = Error term.
Dependent Variable = ROE
Independent Variable = PSH, DIISH, FIISH, CISH, PISH and OISH.
ROE = Return on Equity
PSH = Promoter Shareholding
DIISH = Domestic Institutional Investors Shareholding
FIISH = Foreign Institutional Investors Shareholding
CISH = Corporate Investor Shareholding
PISH = Public Investor Shareholding
OISH = Other Investor Shareholding

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t stands for the tth time period (From year 2006 – 2014)
Model 10(4): Impact of Shareholding Pattern (SHP) on Financial Performance variable Return on Assets (ROA) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

$\text{ROA}_{it} = \beta_0 + \beta_1 \text{PSH}_{1it} + \beta_2 \text{DIISH}_{2it} + \beta_3 \text{FIISH}_{3it} + \beta_4 \text{CISH}_{4it} + \beta_5 \text{PISH}_{5it} + \beta_6 \text{OISH}_{6it} + \mu_{it}$

$\beta_0 =$ Intercept
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 =$Slope Coefficients of PSH, DIISH, FIISH, CISH, PISH and OISH.
$\mu_{it} =$ Error term.

Dependent Variable= ROA
Independent Variable = PSH, DIISH, FIISH, CISH, PISH and OISH.
ROA = Return on Assets
PSH = Promoter Shareholding
DIISH = Domestic Institutional Investors Shareholding
FIISH = Foreign Institutional Investors Shareholding
CISH = Corporate Investor Shareholding
PISH = Public Investor Shareholding
OISH = Other Investor Shareholding

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t stands for the $t^{th}$ time period (From year 2006 – 2014)
Model 10(5): Impact of Shareholding Pattern (SHP) on Financial Performance variable Tobin’s Q (TBQ) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

$$TBQ_{it} = \beta_0 + \beta_1 PSH_{1it} + \beta_2 DIISH_{2it} + \beta_3 FIISH_{3it} + \beta_4 CISH_{4it} + \beta_5 PISH_{5it} + \beta_6 OISH_{6it} + \mu_{it}$$

$\beta_0 =$ Intercept
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 =$Slope Coefficients of PSH, DIISH, FIISH, CISH, PISH and OISH.
$\mu_{it} =$ Error term.
Dependent Variable= TBQ
Independent Variable = PSH, DIISH, FIISH, CISH, PISH and OISH.
TBQ = Tobin’s Q
PSH = Promoter Shareholding
DIISH = Domestic Institutional Investors Shareholding
FIISH = Foreign Institutional Investors Shareholding
CISH = Corporate Investor Shareholding
PISH = Public Investor Shareholding
OISH= Other Investor Shareholding

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t stands for the $t^{th}$ time period (From year 2006 – 2014)
Model 10(6): Impact of Shareholding Pattern (SHP) on Financial performance variable Net Profit After Tax (NPAT) for selected automobile manufacturing companies

Panel Data Linear Regression Model
(Slope Coefficients and Intercept constant across automobile companies)

\[ NPAT_{it} = \beta_0 + \beta_1 PSH_{1it} + \beta_2 DIISH_{2it} + \beta_3 FIISH_{3it} + \beta_4 CISH_{4it} + \beta_5 PISH_{5it} + \beta_6 OISH_{6it} + \mu_{it} \]

\(\beta_0 = \) Intercept
\(\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 = \) Slope Coefficients of PSH, DIISH, FIISH, CISH, PISH and OISH.
\(\mu_{it} = \) Error term.

Dependent Variable= NPAT
Independent Variable = PSH, DIISH, FIISH, CISH, PISH and OISH.
NPAT = Net Profit After Tax
PSH = Promoter Shareholding
DIISH = Domestic Institutional Investors Shareholding
FIISH = Foreign Institutional Investors Shareholding
CISH = Corporate Investor Shareholding
PISH = Public Investor Shareholding
OISH= Other Investor Shareholding

i stands for ith cross-sectional unit i.e. Shareholding Pattern for Selected Automobile Manufacturing Companies in India.
t stands for the t^{th} time period (From year 2006 – 2014)