CHAPTER 3

RESEARCH METHODOLOGY

In this chapter the theoretical structure and methodology adopted has been discussed. It outlines the procedures and various dimensions followed to collect the data and selection of the sample. The tools and techniques followed to analyzing the research data for the study are also deal in this chapter. Further the limitations of the study have also been highlighted.

3.1 RESEARCH DESIGN

This research is based on analytical and descriptive in nature. In analytical research the researcher has to use cash dividend information already available and analyses to make critical evaluation on the value of share price. Descriptive research attempts to describe the behavior of investor towards movement of market and dividend policy of the firm.

3.2 SOURCES OF DATA

3.2.1 Primary Data

Questionnaire was the important element and mechanism used for collecting the primary and fresh information from the respondents. Hence, more important and attention was given to frame the questionnaire. The questionnaire was constructing with the pilot study observation and suggestion from research guide and opinion from subject and field experts. The descriptive type questions were constructed in a simple manner, able of being answered easily and progressively by the respondents. The respondent
can easily response to every question by selecting the set of given option wherever it applicable. In some places, interview method was applied due to language problem faced by the respondents (Appendix 6).

### 3.2.2 Secondary Data

The study is mainly relies on CNX Bank index that was registered in National Stock Exchange. The share prices and financial variables are obtained from the NSE website and prowess database of the Centre of Monitoring Indian Economy (CMIE), Official websites of particular companies, annual report and Journals. The data used for accomplishing each objective was made apt for analysis as per the research methodology. Thus, the data collected from Prowess database has been organized and utilized with due care and caution as per the necessity of the study.

The analysis has been based on panel data depending on the necessities of the techniques used in this research study. A Panel data is one that based on individuals sample over period, and thus provides number of observations on every individual in the particular sample. Panel data used in finance and economic research for analyze the variable in conventional cross sectional or time series data sets. Longitudinal data also allow a researcher to analyze a number of important economic questions that cannot be addressed using cross sectional or time series data sets alone. The analysis of first research objective has been done using Panel data.

### 3.3 SAMPLING METHODS

This study mainly relies on secondary data based on share price of CNX bank index, which is actively traded and registered in National Stock Exchange. In order to have a good benchmark in the market performance of Indian bank sector, India Index services and Product Ltd. (IISL) has
developed the CNX Bank sector index. IISL is a joint venture between NSE and credit rating agency CRISIL Ltd. CNX BANK INDEX is recognized as an index comprised of the most liquid and large capitalized Indian banking stocks.

The Index has 12 stocks from the banking sectors (Appendix 2: Inclusion and Exclusion of Bank Script) which enclosed in CNX Bank Index is calculated using free float market capitalization method with effect from the collection of date of Jan 1, 2000 indexed to base value of 1000.

From the NSE authorized sources (2012) indicate that CNX Bank index represents about 15.08% of the free float market capitalization of the stock listed, 87.63% of the free float market capitalization of the stocks forming part of the banking sector universe as on June 29, 2012. Traded value for the last six month ending June 2012 of an the index constituents is approximate of 15.58% of the traded value of all stock on the NSE.

The sample selected for this study consists with the indication of continues profit and corresponding to declared final cash dividend. Companies either have not declared any dividend, incurred loss and stock dividend have been eliminated in this study. Time to time revision and replacement of stock in bank indices are taken into consideration for this study.

The companies constituted in list for more than five years are selected as sample for event studies. List to sample companies has been appended (Appendix 3: Banks Constituted in Event Studies).

The analysis of fifth research objective has been done using questionnaire (Appendix 6). The sample size selected for the study is 500 respondents in five cities (Bangalore, Chennai, Coimbatore, Erode and...
Trichy). The respondents are selected by the method of non probability convenience sampling. More importance is given for this section to find out the investor attitude during the study period.

### 3.4 TIMELINE

The period of data collected, covered by the study is ten years from 1st January 2002 to 31st December 2012. Bank sectors are selected based on bank index which is registered in National Stock Exchange.

### 3.5 STATISTICAL TOOLS USED

Parametric and Non parametric tests are used to analyze the behavior of share prices and investor attitude.

#### 3.5.1 Event Studies

To analysis the first objective event studies method was adopted. Event study has been adopted to analyze the market efficiency and behavior of firm’s stock price in the nature of corporate announcement. Debasish Maitra (2012) explains the step wise in event study method is to identify the event occurred and the relevant event time over which to evaluate stock returns. This step is more complicated in analysing the process because it is often difficult to split up one event from all the other events that may be occurred during the research sample period

After the appropriate event is resolute, firms that might be affected by the event is identified. The event day may or may not be the same for all the selected sample firms. Once the event days are recognized and affected firms are selected, the next process is to evaluate the normal change in share prices for those affected firms. Several methods are available for estimating returns including mean-adjusted model, market adjusted model and the
market model. The mean adjusted method uses the mean daily returns on each individual firm’s stock over predetermined estimation period. Market model is a more sophisticated model that incorporates a risk adjustment component to the estimate of returns. This method is used to identify and estimate beta for each stock. In this study, the researcher used market model to find out the abnormal return and expected return from the event.

The intercept and slope are identified from regression by estimating the market daily and the firm’s daily stock returns during the event period. After the estimation is determined, both estimated and actual returns are obtained for each stock within the sample. The difference between the two returns is computed for each event day. These values are identified as unexpected or abnormal returns and are attributed to the effect of the event on stock returns.

Finally, the individual daily abnormal returns for the individual firms are aggregated across all firms in the sample for each day. These Standardized Abnormal Returns (SARs) are examined to determine whether, on average, the event produces returns (good or bad) that are different from the returns that would be expected. Cumulative Standardized Returns are calculated by summing daily SARs across time, and CSR are also standardized to determine if cumulative returns are statistically different from zero.

**Application of Event Studies Approach**

To analyze the impact of dividend announcements on firms value in the selected banking sectors in India, Event study approach has been used. The following steps were followed to perform event study.
The first step was to find out the dividend announcement dates in each of the firms from 2002 to 2012.

Date of dividend announcement is defined as day 0 or event day. We have included 15 days as pre-announcement days and 15 days as post-announcement days. So, our event window consists of 31 days including day-0 and the estimation window contains 122 days. The index under study has 12 companies across the banking industry. The study is kept limited to only S&P CNX BANK index based companies.

To estimate the stock price response to dividend announcements, Returns \((R_{it})\) which is the time \(t\) return on security ‘i’ were calculated as \((P_{it} - P_{it-1})/P_{it}\) where \(P_{it}\) is the adjusted closing price of the stock ‘i’ on day \(t\). \(P_{it-1}\) is the adjusted closing price of stock \(i\) on day \(t-1\)

Daily returns are calculated as

\[
R_{it} = \frac{(P_{it} - P_{it-1})}{P_{it}}
\]

\(P_{it}\) = price of security on time ‘\(t\)’.

\(P_{it-1}\) = Price of security on time ‘\(t-1\)’.

The Market model of Sharpe (1964) has been used to estimate the expected returns on a stocks:

\[
R_{it} = \alpha_t + \beta_i R_{mt} + e_{it}
\]

where, \(\alpha\) and \(\beta\) are based on regression estimates, \(R_{mt}\) is the market return during period \(t\) and \(e_{it}\) is the unexpected element known as the random error term or abnormal return or residual.
The equation can be rearranged as,

\[ e_{it} = R_{it} - (\alpha + \beta_1 R_{mt}) \]

The abnormal return has been calculated for each stock for each day of a period receding, including and following the event

\[ AR_{it} = R_{it} - (\alpha + \beta_1 R_{mt}) \]

Average Abnormal return is computed as:

\[ AAR_t = \frac{1}{n} \sum AR_{it} \]

where, \( n = \text{Number of securities studies} \)

The cumulative effect of the event over a specified number of days is determined by calculating cumulative average abnormal returns or CAARs

\[ \text{CAAR} = \sum AAR_t \]

**3.5.2 Simple Regression Models**

For the second objective, we will try to estimate simple regression equation where cash payout ratio of 12 banks of India will be dependent variable and the independent variables will be each of the financial performance indicating variables in different phases. However, simple regression equation will be in the following format:

\[ Y = a + bX \]

where, \( Y = \text{Dependent variable} \)
\( A = \text{Y-intercept/constant} \)
\( B = \text{Slope} \)
\( X = \text{Independent variable} \)
Simple regression analysis has been performed for each of the 5 financial performance variables (Appendix 4: Dividend determinant variable) which are:

Dependent Variable = Cash Payout

Independent Variable are:

1. Revenue
2. EPS = Earnings per share
3. NI = Net income
4. CCE = Cash & Cash Equivalents
5. RE = Retained Earning

3.5.3 Quadratic Polynomial Model and Linear model

Impact of Various Ownership Groups on Dividend Payout Ratios

Apart from the above determinants of corporate dividend policy, influence of ownership groups on dividend payout has also been reported by the previous studies Sujata Kapoor (2009). The key ownership variables (Appendix 5: Shareholder Pattern for the year 2012) that can affect Dividend Payout (DP ratio) are as follows:

- Promoter holding (Percentage of equity shares held by promoters i.e. persons in overall control of the company)
- Institutional holding (Aggregate percentage of equity shares held by Insurance companies, Mutual funds, Financial Institutions, banks, Venture capital funds).
• Foreign institutional investment (Percentage of equity shares held by companies registered in country other than the country in which they are currently investing)

• Corporate holding (Percentage of equity shares held by corporate bodies.)

• Debt equity ratio (Ratio of total debt to equity capital, measure of leverage. It is used to address debt holders and shareholders conflicts)

The logic behind using of a quadratic polynomial regression is that the association is supposed to have only one knot i.e. impact increasing up to the threshold and decreasing thereafter or vice versa. Few studies have hypothesized and identified that the ownership control would have non-linear relationship i.e. optimistic up to a threshold level and pessimistic thereafter due to shift in importance and benefits to owners.

For the analysis the square of the variables namely, (FII)$^2$, (promoters)$^2$, (institutional)$^2$, (foreign)$^2$ and (corporate)$^2$ to inspect the occurrence of non-linearity in ownership effect certain threshold has been incorporated. The squared of values have been considered in the model to test the hypothesized relation between dividend payout and ownership groups. A negative coefficient value of ownership variables and a positive coefficient are calculated in the bases of squared the ownership variables to find the postulated relation. This model is integrated in third research objective to analyzing the relationship between ownership and dividend payout. The technique of quadratic polynomial regression analysis has been used for data analysis.

Dividend payout $Y_{it} = \alpha_i + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + u_{it} + \lambda_i + \varepsilon_{it}$
Y = Dividend payout ratio of firm ‘i’ during time period of ‘t’.

X_{1it} = FII and group holding of firm ‘i’ during time period of ‘t’.

X_{2it} = Promoter and group holding of firm ‘i’ during time period of ‘t’.

X_{3it} = Foreign holding of the firm ‘i’ during time period of ‘t’.

X_{4it} = Institutions holding of the firm ‘i’ during time period of ‘t’.

X_{5it} = Non institutions holding of the firm ‘i’ during time period of ‘t’.

X_{6it} = ADR's/GDR's & Others holding of the firm ‘i’ during time period of ‘t’.

X_{7it} = Debt Equity ratio of firm ‘i’ during time period of ‘t’.

### 3.5.4 Walter's Dividend Model (1963)

Walter's model (1963) supports the principle that dividends are relevant to determine the cost and return of the firm. The investment policy of a firm cannot be separated from its dividend policy and both are inter-related. The suitable dividend policy may have chance to affects the value of banking sector in the capital market. To identified the relationship between cost and return this model is applied with the individual opinion of the researcher.

**Assumptions of this Walter Model (1963)**

1. Retained earnings are the only source of finance. This means that the company does not rely upon external funds like debt or new equity capital.

2. The firm's business risk does not change with additional investments undertaken. It implies that r (internal rate of return) and k (cost of capital) are constant.

3. There is no change in the key variables, namely, beginning earnings per share (E), and dividends per share (D). The
values of D and E may be changed in the model to determine results, but any given value of E and D are assumed to remain constant in determining a given value.

4. The firm has an indefinite life.

**Formula: Walter's model**

\[
P = \frac{D}{K_e - g}
\]

Where
- \( P \) = Price of equity Shares
- \( D \) = Dividend rate on the announcement date
- \( K_e \) = Cost of equity capital
- \( G \) = Growth rate expected

After accounting for retained earnings, the model would be:

\[
P = \frac{D}{K_e - rb}
\]

where
- \( R \) = Expected rate of return on firm’s investments
- \( B = (E - D)/E \)

Equation showing the value of a share (as present value of all dividends plus the present value of all capital gains) – Walter's model:

\[
P = \frac{D + r}{K_e(E - D)}
\]

where
- \( D \) = Dividend per share and
- \( E \) = Earnings per share
Conclusions of Walter's Model (1963)

1. When $r > k_e$, the value of shares is inversely related to the D/P ratio. As the D/P ratio increases, the market value of shares decline. It’s value is the highest when D/P ratio is 0.

2. When $r < k_e$, the D/P ratio and the value of shares are positively correlated. As the D/P ratio increases, the market price of the shares also increases. The optimum payout ratio is 100%.

3. When $r = k_e$, the market value of shares is constant irrespective of the D/P ratio. In this case, there is no optimum D/P ratio.

Limitations of this model

1. Walter's model assumes that the firm's investments are purely financed by retained earnings. So this model would be applicable only to all-equity firms.

2. The assumption of $r$ as constant is not realistic.

3. The assumption of a constant $k_e$ ignores the effect of risk on the value of the firm.

3.5.6 One Sample t test

The one-sample $t$-test method is utilized to identify whether research sample bring from a selected sample of population. In fact, we do know the whole population information available to use. For example, we may want to identified the particular sample of school students is same to or dissimilar from other school students for research purpose. The one-sample $t$-
test is helps to know the result tests of the sample mean. Thus, research hypothesis tests whether the average selected sample (M) mention that the students came from a population with a known mean (m) or whether it comes from a different population.

The statistical objective for one-sample $t$-tests follows the sequence of the unique forms, depending on the direct research hypothesis or in directional hypothesis. In the formula below $m_1$ represents to the select population from which the research study sample was drawn; $m$ is adjusted by the actual amount of the population mean. The statistical hypotheses result are matching to used for $Z$ tests.

The one-sample $t$-test represents the research design of study to analysis research hypothesis by using the tool of statistic. Researcher used one-sample $t$-test to evaluate the gather research data by sample of defined population. In this test design, one set of subjects is selected, gather data on these selected subjects and compare with the statistic (M) and the population parameter (m). The population parameter describe the expected sample came from that define population. Then selected one way t test used to conclude that selected sample are came from a various population. Again validating, the one-sample $t$-test, comparing the result of mean (M) calculated on a single group of scores (one sample) to a known population mean (m).

### 3.5.7 Chi-square Test

Chi square is a statistical test commonly used to identify the relationship between observed data and expected data to obtain the specified hypothesis.

1. Crosstabs are used in practically all areas of research.
2. A cross tabulation is a co frequency table of counts, where each row or column is a frequency table of one variable for observations falling within the same category of the other variable.

\[
\text{Formula } = \frac{(O_i - E_i)^2}{E_i}
\]

where: \( O_i \) = Observed value
\( E_i \) = Expected Value

3.5.8 One-way ANOVA

One-way analysis of variance (ANOVA) tests used to determine the result for various given factor, i.e., drug treatment, has a important effect on gene expression performance across from the groups of research study. A significant p-value identified from a one-way ANOVA test shall point to that a gene is differentially expressed in at least one of the groups analyzed. If there are more than two groups being analyzed, however, the 1-way ANOVA does not specifically indicate which pair of groups exhibits statistical differences. Post Hoc tests can be applied in this specific situation to determine which specific pair/pairs are differentially expressed.

ANOVA gets its name (analysis of variance) from the fact that it examines different kinds of variability in the data. It then uses this information to construct a hypothesis test.
3.6 DISCUSSIONS AND INFORMAL INTERVIEWS

Several interviews and discussion with experts like academicians, corporate manager, executive dealing with stock market, investors, intraday customer, financial consultant and analysts to identify the problematic area in volatility of share price. It encourages the researcher to take it as research study in the field of pattern and announcement of dividend.

3.7 LIMITATION

1. The major limitation of the study is that only bank index share prices are considered for calculation and other index are not considered in this study.

2. The study is based on the financial data obtained from Prowess data base of CMIE. Thus the study possesses all the inherent limitations of the secondary financial data. Non availability of the required financial data for the whole period of the study has restricted the size of the sample. Share prices of banking sectors listed in National Stock Exchange are taken and there are chances for errors in placing the prices of shares for ten years.

3. Particular financial variables are considered for analyzing the factor of dividend determinant, which are taken from the financial report. Companies usually give emphasis on the information that creates positive impression about the company and present the information on their own way.

4. In calculating the Walter model, particulars and structure are applied on the bases of researcher interest and opinion. There
are inadequate resources and references regarding the applicability and validity of model in Indian context.

5. Share holders structure and number of outstanding shares are calculated for the year of 2012, if banking sectors are increase the no. of outstanding share in future it will not applicable for the present study.

6. Questionnaire methods used to collect data for analyze the behavior of investor towards announcement of dividend, respondent’s view which may be bias in nature.

7. The suggestion and recommendation raised in this report should be suitable to bank index which are considered for this research and it should be used for particular point of time.

Thus, while using the findings of the study one should be careful and use it judiciously by taking the various limitations into consideration.