CHAPTER 3
RESEARCH DESIGN

3.1 INTRODUCTION
Stock market development has drawn attention of many countries including India. There is a high demand for capital by companies from global markets in the form of FDI or FII. Such foreign investments make the stock market development as a top priority for Indian companies, for gaining the investors’ confidence (Petkova, 2012). Loomba, (2012) observed that the liberalization of capital market has made the foreign capital as a crucial source of finance. Further, the consistent developments in the Indian stock markets over the past few years have put them at par with the developed markets. Saha (2009) also supported the fact that the Indian stock market stands at par with the developed markets. It has been empirically proved that the trend of foreign investment in any country is governed by companies’ financial performance, good corporate governance practices, and economic growth and development of the country (Badrinath et al., 1989; Del Guercio, 1996; Dahlquist & Robertsson, 2001; Chan et al., 2005; Giannetti & Simonov, 2006; Kho et al., 2009; Leuz et al., 2009). Over time, FII have earned a crucial position in the Indian stock market (Kulshrestha, 2014).

The present chapter has been divided into nine sections in which Sections 3.2 and 3.3 discuss need and objectives of the study, respectively. Section 3.4 presents the hypotheses of the study. Population and sample selection procedure and sources of data are given in Sections 3.5 and 3.6, respectively. An overview of the variables used in the study is provided in Section 3.7 by variables’ description. The framework of analysis is discussed in Section 3.8 and summary of the chapter is given in Section 3.9.

3.2 NEED OF THE STUDY
In emerging economies like India, foreign capital adds to the foreign exchange reserves that enable the country to face its current account scarcity during emergent situations. The increasing importance of new market engines, i.e., FIIs makes it valuable to investigate the factors that push such investments. It is required to empirically identify the factors that motivate the FII to pump in more money into the
Indian market and also the factors that make them withdraw their funds. Moreover, FIIs face more information asymmetry in developing markets, like India as compared to domestic investors. Present study has made an attempt to conduct a comprehensive analysis by including all key factors viz., macro-economic variables, firm performance, and corporate governance that may affect investment decisions of FIIs.

In India, the majority of foreign investment studies have given attention to FDI (e.g., Sethi et al., 2003; Kamath, 2011; Kumar, 2011; Sahni, 2012) which is perceived to be an important facet for economic growth as FDI invests comparatively for a longer period. Further, researchers find it convenient to study FDI as more comprehensive data is readily available in respect of FDI than FII. In international context, most of the studies related to FDI and FII have been conducted in developed countries such as USA and Swedish listed firms (e.g., Ferreira & Matos, 2006; Kim & Rhe, 2009; McCahery et al., 2010; Abdioglu et al., 2011; Mijiyawa, 2012; Gumus et al., 2013; Azam et al., 2014) than developing countries. However, the Indian studies on FII have mainly focused on stock market (e.g., Johri et al., 2012; Sarvanakrishnan, 2012; Sharma, 2014; Kulshrestha, 2014). There have been very few Indian studies based on analyzing the impact of firm performance on FII (e.g., Patnaik & Shah, 2008; Lakshmi, 2010; Deb et al., 2013). Hence, it is important to empirically analyze and prove the impact of firm specific characteristics for understanding the variations in FII, in the Indian context. Further, there have been foreign studies based on corporate governance as determinants of FII (e.g., Ferreira & Matos, 2006; Kim & Rhe, 2009; McCahery et al., 2010; Abdioglu et al., 2011; Mijiyawa, 2012; Gumus et al., 2013; Azam et al., 2014). However, very few Indian studies have assessed the role of governance practices followed by companies, on FII (e.g., Bhattacharya & Rao, 2005; Aggarwal et al., 2007; Aggarwal et al., 2010; Khan & Banerji, 2016). Hence, present study covers these research gaps by analyzing corporate governance as determinants of FII for better understanding the variations therein, in the Indian context. In present study, firm performance and corporate governance as determinants of FII have been analysed individually as well as their combined impact on FII is also presented. In this way, present study shows a comprehensive analysis by covering the research gap of previous studies wherein all these factors have been analysed individually. There was hardly any study which has taken together all these factors. In
addition to these factors, there is a need to identify the determinants at macro level also without which study will be incomplete. Hence, macro-economic variables have also been included as one of the determinants of FII. Further, it has been evident that the liberal trade policies, globalization, and amendments in FII regulations have made India as one of the attractive destination for FII. Hence, present study also shows the trend and pattern of FII in recent years and various determinants influencing their investment decision with respect to the Indian securities market.

3.3 OBJECTIVES OF THE STUDY

The present study aims to identify the key determinants of FII in India for BSE-listed companies.

1. To analyze the trend and pattern of FII in India during the period of study.
2. To empirically examine the relationship and impact of macro-economic variables on FII.
3. To determine the relationship and impact of firm performance characteristics on FII.
4. To examine the impact of corporate governance on FII.
5. To suggest measures for improving FII in India.

3.4 HYPOTHESES OF THE STUDY

Previous studies have revealed that IIP, Indian stock market return, market capitalisation, stock market turnover, foreign reserves, PPI representing inflation of US have been found to have a significant association (positive impact) on FII, while, Exchange rate, WPI, S&P 500, USA T-bill representing interest rate of USA, have been found to be negatively influencing the FII (e.g., Rai & Bhanumurthy, 2004; Chan et al., 2005; Saraogi, 2008; Kaur & Dhillon, 2010; Dandapani & Lawerence, 2013; Srinivasan & Kalaivani, 2013; Bhasin & Khandelwal, 2014; Mohanasundaram, et al., 2015; Dhingra et al., 2016). Though, there are numerous variables acting as indicators of macro-economic variables influencing foreign investment, however, it is important to empirically identify the key variables influencing such decisions. Thus based on previous research, present study has examined above mentioned variables as
proxies of macro-economic variables for analyzing their impact on FII in India and following hypotheses have been formulated:

$H_{1a}$: There is a significant relationship between FII and Exchange rate

$H_{1b}$: There is a significant relationship between FII and Index of Industrial Production

$H_{1c}$: There is a significant relationship between FII and Wholesale Price Index

$H_{1d}$: There is a significant relationship between FII and producer price index representing (USA) Home country inflation

$H_{1e}$: There is a significant relationship between FII and BSE stock market return

$H_{1f}$: There is a significant relationship between FII and S&P 500 representing foreign stock market return

$H_{1g}$: There is a significant relationship between FII and BSE market turnover

$H_{1h}$: There is a significant relationship between FII and Foreign exchange reserves

$H_{1i}$: There is a significant relationship between FII and BSE market capitalization

$H_{1j}$: There is a significant relationship between FII and US T-bill representing foreign interest rates

There has been empirical evidence in the past which shows that FIIs prefer big-sized firms for investment as they are well known in the market (Dahlquist & Robertsson, 2001). Further, literature shows that FIIs are attracted more towards the companies with superior past track record, including peculiar features like, low leverage and high liquidity (e.g., Del Guercio, 1996; Gillan & Starks, 2000). However, most of these studies have been conducted in other countries. There have been very few Indian studies based on analyzing the impact of firm performance characteristics on FII (e.g., Parsanna, 2008; Patnaik & Shah, 2008; Lakshmi, 2010; Deb et al., 2013). Hence, it is important to empirically analyze and prove the impact of firm specific characteristics for understanding the variations in FII, in the Indian context.
On the basis of results provided by various studies like Jensen & Meckling (1976), Badrinath et al. (1989), Bathala et al. (1994), Laconishok et al. (1994), Falkenstein (1996), Dahlquist & Robertsson (2001), Gompers & Metrick (2001), Liljeblom et al. (2001), Bennett et al. (2003), Almazan et al. (2005), and Aggarwal et al. (2005), firm size, book-market ratio, turnover, dividend yield, ROE, leverage, cash, and export rate, have been taken as the proxies of firm performance characteristics. Following hypotheses have been formulated regarding these determinants of FII:

\( H_{2a} \): There is a significant relationship between FII and firm size

\( H_{2b} \): There is a significant relationship between FII and book to market ratio

\( H_{2c} \): There is a significant relationship between FII and firm market turnover

\( H_{2d} \): There is a significant relationship between FII and dividend yield

\( H_{2e} \): There is a significant relationship between FII and return on equity

\( H_{2f} \): There is significant relationship between FII and Leverage

\( H_{2g} \): There is a significant relationship between FII and cash

\( H_{2h} \): There is significant relationship between FII and export rate

Indian studies have mostly focused on FDI which invest for a longer period and more comprehensive data is available in respect of them (e.g., Sethi et al., 2003; Kamath, 2011; Sahni, 2012; Kumar & Devi, 2013). Further, there have been foreign studies based on corporate governance as determinants of FII (e.g., Ferreira & Matos, 2006; Kim & Rhe, 2009; McCallery et al., 2010; Abdioglu et al., 2011; Mijiyawa, 2012; Gumus et al., 2013; Azam et al., 2014). However, very few Indian studies have assessed the role of governance practices followed by companies on FII (e.g., Bhattacharya & Rao, 2005; Aggarwal et al., 2007; Aggarwal et al., 2010; Khan & Banerji, 2016). Hence, present study attempts to cover up these research gaps by analyzing the impact of corporate governance on FII for better understanding the variations in their investments, in the Indian context. Based on literature review (e.g., Jensen, 1986; Hermali & Weisbach, 1988; Borokhovich et al., 1996; Yermack, 1996; Eisenberg et al., 1998; Hussain, 2001; Felo et al., 2003; Cai & Warnock, 2005; Dahya et al., 2006; Aggarwal et al., 2007; Reddy et al., 2008; McCallery et al., 2010;
Bowman & Min, 2012; Kumari & Pattanayak, 2014), following hypotheses have been formulated relating to corporate governance determinants of FII:

\( H_{3a} \): There is a significant relationship between FII and board independence

\( H_{3b} \): There is a significant relationship between FII and board size

\( H_{3c} \): There is a significant relationship between FII and CEO duality

\( H_{3d} \): There is a significant relationship between FII and audit committee

\( H_{3e} \): There is a significant relationship between FII and audit committee independence

\( H_{3f} \): There is a significant relationship between FII and promoter shareholding

3.5 POPULATION AND SAMPLE SELECTION PROCEDURE

All BSE-listed companies as on March 31st, 2015 constitutes the population for the present analysis. BSE and NSE have been the two largest and prominent stock exchanges in India. BSE being the oldest one (established in 1875), has more than 5400 listings with market capitalization crossing $1.6 trillion, much higher than that of NSE. There are indices for mid-cap, small-cap, top 100 and 200 companies on BSE, however, SENSEX is primarily considered while investing in a broad base of companies. These indices also have US dollar denominated aspects and are considered as the good broad based indicators of emerging market economies. Further, FIIs prefer listed companies as they are expected to follow the best reporting practices and are more transparent in their dealings.

The trend and pattern of FII in India has been analysed for the financial years 2005-06 to 2017-18. Based on the data availability, the preference of FII in varied sectors by way of the asset under custody (AUC) held by FIIs, AUC held by FIIs in India from various countries all over the world and the category-wise investment pattern of FIIs in India, has been assessed for the time period, 2011-12 to 2017-18.

Macro-economic, firm performance and corporate governance variables as determinants of FII have been analysed for the financial years April 01st, 2005 to March 31st, 2016. This period has been apparent of most of the amendments in SEBI
(FII) rules and regulations, with maximum number of registered FIIs were evident in 2005-06 of 882 as compared to previous years. Further, financial year 2005-06 has been evident of considerable up in the SENSEX points. Financial year 2006-07 covers the majority of holdings, i.e., in 540 companies out of top 1000 companies listed on BSE, by FIIs. Moreover, this period has been evident of global crisis in 2008-09. It is thus imperative to assess the important determinants influencing FIIs in India during such period. Further, a longer period of study is expected to yield better results.

Depending upon the analysis requirement, time-series monthly data for the financial years 2005-06 to 2015-16, has been used for testing the impact of macro-economic variables on FII. The final sample resulted into 132 observations that were analyzed over a period of eleven years. For analysing the impact of firm performance and corporate governance variables on FII, initial sample included all companies (4,168) listed with BSE as on March 31\textsuperscript{st}, 2015. Out of it, companies (3,628) with no FII data for the required study period were excluded. Secondly, to bring uniformity in analysis, companies (121) with financial year ending other than April 01-March 31\textsuperscript{st} were eliminated. Finally, those companies (128) for which there were insufficient or missing data over the study period for all variables under study were excluded. It resulted in a final sample of 291 companies (c.f. Annexure- A). In all, there were 3,201 company-year observations over the eleven year study period for assessing the impact of firm performance and corporate governance on FII in India. Table 3.1 presents the sample selection procedure.

Table 3.1: Sample Selection Procedure

<table>
<thead>
<tr>
<th>Selection Criterion</th>
<th>Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial sample of all BSE-listed companies as on March 31\textsuperscript{st}, 2015</td>
<td>4,168</td>
</tr>
<tr>
<td>Less:</td>
<td></td>
</tr>
<tr>
<td>Companies with no FII data for the study period</td>
<td>3,628</td>
</tr>
<tr>
<td>Companies with financial year ending other than March 31\textsuperscript{st}</td>
<td>121</td>
</tr>
<tr>
<td>Companies with missing data for the study period</td>
<td>128</td>
</tr>
<tr>
<td>Final sample size for assessing the determinants of FII in India</td>
<td><strong>291</strong></td>
</tr>
</tbody>
</table>

Note: The sample distribution of 3,201 company-year observations over a period of 11 years constitutes the final sample.
3.6 SOURCES OF DATA

The requisite data pertains to total amount of FII, FII in debt and equity, asset under custody held by FIIs in different sectors of the Indian economy, and macro-economic, firm performance, and corporate governance variables. It has been taken up from the corporate database (PROWESS) maintained by CMIE (Centre for Monitoring Indian Economy), companies’ annual reports, SEBI publications and the websites of BSE (http://www.bseindia.com), RBI (http://www.rbi.org.in), and NSDL (www.fpi.nsdl.co.in). CMIE provides reliable and accurate data for inter-year and inter-firm comparison based on its well developed normalization methodology (Patnaik & Shah, 2008).

3.7 VARIABLE DESCRIPTION

It is important to precisely define variables under study for obtaining a clear view of analysis. Following section presents the operationalization of dependent and independent variables.

3.7.1 Operationalization of the Dependent Variable

FII has been used as the dependent variable in present study.

a. Foreign Institutional Investment ($FII_{ni}$): $FII_{ni}$ has been taken as a dependant variable for analysing the impact of macro-economic variables. It has been computed by taking net inflows of debt and equity in rupees crores and required data has been obtained from the website of NSDL (Kaur & Dhillon, 2010, Bhasin & Khandelwal, 2014; Mohanasundaram, et al., 2015; Dhingra et al., 2016).

b. Foreign Institutional Investment ($FII$): $FII$ has been taken as a dependant variable for analysing the impact of firm performance and corporate governance. $FII$ has been computed by taking proportion of FII holdings in the stock at the end of the particular financial year for which data has been obtained from the PROWESS database (Lakshmi, 2010; Ding, 2011).

3.7.2 Operationalization of Independent Variables

Macro-economic, firm performance and corporate governance have been taken up as the primary independent variables that account for variations in FII in India over the period of study.
a. **Macro-economic Variables:** Variables like, Exchange rate (*ER*), Index of industrial production (*IIP*), wholesale price index (*WPI*), Producer Price Index (*PPI*), BSE Stock Market Return (*RN*), *S&P 500*, stock market turnover (*TO*), foreign exchange reserves (*FR*), market capitalisation (*MCAP*), and *US T-BILL* representing interest rate prevailing in USA, have been taken as the proxies of macro-economic conditions.

- **Exchange Rate (*ER***): *ER* is exchange rate of Indian rupee in US dollars and data has been obtained from the website of RBI (Kaur & Dhillon, 2010; Kumar, 2011).

- **Index of Industrial Production (*IIP***): *IIP* is an index for industrial production representing country’s economic growth and data has been obtained from the website of RBI (Kaur & Dhillon, 2010; Kumar, 2011; Dandapani & Lawerence, 2013; Gumus et al., 2013).

- **Wholesale Price Index (*WPI***): Data pertaining to *WPI* representing host country inflation has been obtained from the website of RBI (Kaur & Dhillon, 2010; Dandapani & Lawerence, 2013; Gumus et al., 2013; Tripathi & Maggu, 2014).

- **Producer Price Index (*PPI***): Data pertaining to *PPI* representing monthly producer price index of US showing foreign country inflation has been obtained from the official website of U.S. Department of Labor, and Bureau of Labor Statistics (Kaur & Dhillon, 2010; Mohanasundaram, *et al.*., 2015; Dhingra *et al.*, 2016).

- **BSE Stock Market Return (*RN***): *RN* represents monthly returns on BSE-Sensex and required data has been obtained from the website of BSE (Kaur & Dhillon, 2010; Kumar, 2011; Dhingra *et al.*, 2016).

- **S&P 500**: *S&P 500* shows monthly returns on S&P 500 index and its data has been obtained from the website of yahoo finance (Kaur & Dhillon, 2010; Dhingra *et al.*, 2016).

- **Stock Market Turnover (*TO***): *TO* represents stock market turnover of BSE and its data has been obtained from the website of BSE (Kaur & Dhillon, 2010; Dhingra *et al.*, 2016).
• **Foreign Exchange Reserves (FR):** Data of FR showing foreign exchange reserves has been obtained from the website of RBI (Bhatia & Kishor, 2013; Bhasin & Khandelwal, 2014).

• **Market Capitalisation (MCAP):** Data pertaining to MCAP has been obtained from the website of BSE (Kaur & Dhillon, 2010; Dhingra et al., 2016).

• **US T-BILL:** US T-BILL shows monthly rate of US 3-month t-bill representing interest rate in USA, has been collected from the website, viz., https://fred.stlouisfed.org/series/TB3MS (Kaur & Dhillon, 2010; Mohanasundaram, et al., 2015).

b. **Firm Performance Variables:** With respect to firm performance characteristics, firm size (SIZE), book-to-market ratio (BM), turnover (TURN), dividend yield (DY), return on equity (ROE), leverage (LEV), cash (CASH), and export rate (EXP) have been taken as independent variables.

• **Firm Size (SIZE):** FIIs prefer big-sized firms over small ones while taking investment decision as big-sized firms are perceived to be better known and well established, and are in a position to manage the risky situations prevailing in the market. SIZE has been computed by taking log of total assets (Dahlquist & Robertsson, 2001; Lakshmi, 2010; Ding, 2011).

• **Book-to-market ratio (BM):** BM is used for differentiation between companies with value-oriented stock or growth-oriented stocks. FIIs prefer to invest in companies with low BM ratios as it is an indicator of growth firms. BM has been computed by taking ratio of net worth to market capitalization (Patnaik & Shah, 2008; Ding, 2011; Deb et al., 2013).

• **Turnover (TURN):** Market liquidity of companies’ shares is better assessed by its turnover. High turnover rate ensures proper management of company’s funds and relatively more demand of its offerings in a market, thereby, attracting more investors. TURN indicating the liquidity of company’s shares, has been computed by the ratio of total value of stocks traded to market capitalization (Patnaik & Shah, 2008).
Dividend Yield (DY): FII prefer few shares with high dividend yield to avoid income tax burden. It has been computed by ratio of dividend to equity to market value of equity (Dahlquist & Robertsson, 2001; Abdioglu et al., 2011; Ding, 2011; Dandapani & Lawerence, 2013).

Return on Equity (ROE): ROE proxies for firm profitability and is expected to attract more of foreign investment. In present study, ROE has been taken as the ratio of profit after tax to net worth (Dahlquist & Robertsson, 2001; Patnaik & Shah, 2008; Lakshmi, 2010; Abdioglu et al., 2011; Deb et al., 2013).

Leverage (LEV): LEV is a measure of a company’s long-term financial distress and has been computed by the ratio of total assets to net worth in present study (Dahlquist & Robertsson, 2001; Patnaik & Shah, 2008; Abdioglu et al., 2011).

Cash (CASH): FIIs are attracted towards the companies with more cash as it’s an indicator of liquidity. CASH has been computed by the ratio of cash and short-term investments with total assets (Cornett et al., 2007; Abdioglu et al., 2011).

Export Rate (EXP): EXP proxy firm visibility in foreign markets. In present study, EXP has been computed by the ratio of exports to sales (Lakshmi, 2010). Data related to all above mentioned variables has been obtained from the PROWESS database.

c. Corporate Governance Variables: Corporate governance constitutes the third primary independent variables that explain variations in FII. In present study, corporate governance has been characterised by board independence (BIND), board size (BS), CEO duality (CEOD), audit committee size (ACS), audit committee independence (AIND), and promoters’ shareholdings (PSH).

Board Independence ( BIND ): FII s prefer companies with independent boards which are expected to act in shareholders’ interest by effectively monitoring the management and reducing the information asymmetry. BIND representing board independence has been taken up as the total non-executive
directors divided by total number of directors (Bhattacharya & Rao, 2005; Cornett et al., 2007).

- **Board Size (BS):** Optimum BS is expected to enhance corporate value thereby causing positive impact on FII and in present study, it has been indicated by number of total directors on the board (Bhattacharya & Rao, 2005; Cornett et al., 2007).

- **CEO Duality (CEOD):** FIIs tend to believe that company’s performance increase further where chairman and CEO status are held by different persons, as such separation tend to increase investors’ confidence. Based on this assumption, CEOD has been included as proxy of measuring dual position. It has been taken as a dummy variable with a value of 1 if there is such duality and 0, if there is no such duality (Abdioglu et al., 2011; Liu et al., 2011; Suwaidan et al., 2013).

- **Audit Committee Size (ACS) and Audit Committee Independence (AIND):** FIIs prefer appropriate structure of audit committee represented by audit committee size with large number of independent auditors (AIND) who plays a pivotal role in enhancing the quality of financial reporting by a company. Accordingly, these two variables have been included as proxy of corporate governance. ACS is represented by total members in audit committee and AIND is taken up as total non-executive directors divided by total audit committee members (DeZoort & Salterio, 2001; Felo et al., 2003; Aggarwal et al., 2007).

- **Promoters’ Shareholdings (PSH):** PSH has been included as another corporate governance proxy. FIIs are reluctant to invest in companies with more PSH as it can create conflicting interest among the stakeholders. PSH has been taken as promoters’ shares as proportion of total number of share issued by a company (Patnaik & Shah, 2008; Lakshmi, 2010; Ding, 2011). All above mentioned corporate governance proxies’ data has been obtained from the PROWESS database and companies’ annual reports.

Table 3.2 presents the description of variables used in the study, including the symbol, definition and source.
### Table 3.2: Description of Variables

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Variable</th>
<th>Symbol</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A: Dependent Variable</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Foreign Institutional Investment</td>
<td>$FII_{ni}$</td>
<td>Net inflows (Debt and Equity in rupees crores, for analysing macro-economic variables)</td>
<td><a href="http://www.fpi.nsdl.co.in">www.fpi.nsdl.co.in</a></td>
</tr>
<tr>
<td>2.</td>
<td>Foreign Institutional Investment</td>
<td>$FII$</td>
<td>Proportion of FII holdings in the stock at financial year end (for analysing firm performance and CG variables)</td>
<td>PROWESS</td>
</tr>
<tr>
<td><strong>B: Independent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Macro-economic Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Exchange rate</td>
<td>$ER$</td>
<td>Exchange rate of Indian Rupee in terms of US$</td>
<td><a href="http://www.rbi.org.in">www.rbi.org.in</a></td>
</tr>
<tr>
<td>2.</td>
<td>Index of Industrial Production</td>
<td>$IIP$</td>
<td>Index for industrial production as proxy for economic growth</td>
<td><a href="http://www.rbi.org.in">www.rbi.org.in</a></td>
</tr>
<tr>
<td>3.</td>
<td>Wholesale Price Index</td>
<td>$WPI$</td>
<td>Wholesale price index representing home country inflation</td>
<td><a href="http://www.rbi.org.in">www.rbi.org.in</a></td>
</tr>
<tr>
<td>5.</td>
<td>Return on Sensex</td>
<td>$RN$</td>
<td>Monthly returns on BSE-Sensex</td>
<td><a href="http://www.bseindia.com">www.bseindia.com</a></td>
</tr>
<tr>
<td>7.</td>
<td>Turnover of BSE</td>
<td>$TO$</td>
<td>Stock market turnover of BSE in rupees crore</td>
<td><a href="http://www.bseindia.com">www.bseindia.com</a></td>
</tr>
<tr>
<td>8.</td>
<td>Foreign Exchange reserves</td>
<td>$FR$</td>
<td>Foreign Exchange Reserves in rupees crore</td>
<td><a href="http://www.rbi.org.in">www.rbi.org.in</a></td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>S. No.</th>
<th>Variable</th>
<th>Symbol</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Firm Size</td>
<td>SIZE</td>
<td>Log of total assets</td>
<td>PROWESS</td>
</tr>
<tr>
<td>2.</td>
<td>Book-to-Market Ratio</td>
<td>BM</td>
<td>Ratio of net worth to market capitalization</td>
<td>PROWESS</td>
</tr>
<tr>
<td>3.</td>
<td>Turnover</td>
<td>TURN</td>
<td>Ratio of total value of stocks traded to the market capitalisation</td>
<td>PROWESS</td>
</tr>
<tr>
<td>4.</td>
<td>Dividend Yield</td>
<td>DY</td>
<td>Ratio of dividend to equity to market value of equity</td>
<td>PROWESS</td>
</tr>
<tr>
<td>5.</td>
<td>Return on Equity</td>
<td>ROE</td>
<td>Ratio of profit after tax to net worth</td>
<td>PROWESS</td>
</tr>
<tr>
<td>6.</td>
<td>Leverage</td>
<td>LEV</td>
<td>Ratio of total assets to net worth</td>
<td>PROWESS</td>
</tr>
<tr>
<td>7.</td>
<td>Cash</td>
<td>CASH</td>
<td>Cash and short-term investments divided by total assets</td>
<td>PROWESS</td>
</tr>
<tr>
<td>8.</td>
<td>Export rate</td>
<td>EXP</td>
<td>Exports to sales</td>
<td>PROWESS</td>
</tr>
</tbody>
</table>

**Firm Performance Variables**

**Corporate Governance Variables**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Variable</th>
<th>Symbol</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Board Independence</td>
<td>BIND</td>
<td>Number of non-executive directors divided by total number of directors</td>
<td>PROWESS</td>
</tr>
<tr>
<td>2.</td>
<td>Board Size</td>
<td>BS</td>
<td>Number of total directors on the board</td>
<td>PROWESS</td>
</tr>
<tr>
<td>3.</td>
<td>Chairman/ CEO Separation (Duality)</td>
<td>CEOD</td>
<td>A dummy variable with a value of 1 if CEO and chairman is the same individual, otherwise 0</td>
<td>PROWESS</td>
</tr>
<tr>
<td>4.</td>
<td>Audit committee Size</td>
<td>ACS</td>
<td>Number of members in audit committee</td>
<td>PROWESS</td>
</tr>
<tr>
<td>5.</td>
<td>Audit Committee Independence</td>
<td>AIND</td>
<td>Number of non-executive directors divided by total number of audit committee members</td>
<td>PROWESS</td>
</tr>
<tr>
<td>6.</td>
<td>Promoters’ shareholdings</td>
<td>PSH</td>
<td>Shares held by promoters divided by total number of shares issued</td>
<td>PROWESS</td>
</tr>
</tbody>
</table>

**Note:** Researcher’s Compilation; Index used in macro-economic variables are revised as per new base year i.e., 2011-12.

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3.8 THE FRAMEWORK OF ANALYSIS

The following framework has been used to analyze the data collected on the variables under the study. The data has been analyzed by using the STATA (version 12.0), EViews (version 9), and SPSS (version 17.0). Basic tests for checking the data normality i.e., Kolmogorov-Smirnov (K-S) and Shapiro-Wilk (S-W) and for checking normality of distribution, i.e., Skewness and Kurtosis are presented in this chapter and statistical techniques specific to particular objectives (e.g., firm performance and corporate governance) have been presented in that respective chapters.

3.8.1 Univariate Analysis and Normality Test

Univariate analysis consist of analyzing the data as a single measurement or individually. Preliminary univariate analysis including descriptive statistics and correlation analysis for the macro-economic, firm performance and corporate governance variables have been presented in the respective chapters of analysis.

Majority of statistical tools and techniques have been based on the assumptions of normality of data (Hair et al., 2010). Thus it is imperative to empirically check the normality of data before applying any statistical technique. Accordingly, the Kolmogorov-Smirnov (K-S) and Shapiro-Wilk (S-W) tests have been applied to test data normality. Further, Skewness and Kurtosis have also been computed to test the normality of the distributions. A normal distribution has the tendency to show a skewness of zero and kurtosis of three. Table 3.3 presents the results of normality applied on firm performance and CG variables while that of macro-economic variables has been presented in respective chapter, i.e., Chapter 5. Results of the K-S and S-W test show that all concerned variables appear to be non-normal.
Table 3.3: Tests of Normality

<table>
<thead>
<tr>
<th>Variable</th>
<th>Kolmogorov-Smirnov</th>
<th>Shapiro-Wilk</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>FII</td>
<td>0.195***</td>
<td>0.816***</td>
<td>1.646</td>
<td>3.303</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.034***</td>
<td>0.991***</td>
<td>-0.321</td>
<td>0.504</td>
</tr>
<tr>
<td>BM</td>
<td>0.271***</td>
<td>0.489***</td>
<td>6.927</td>
<td>9.270</td>
</tr>
<tr>
<td>TURN</td>
<td>0.024***</td>
<td>0.993***</td>
<td>-0.028</td>
<td>-0.484</td>
</tr>
<tr>
<td>DY</td>
<td>0.405***</td>
<td>0.244***</td>
<td>0.294</td>
<td>10.97</td>
</tr>
<tr>
<td>ROE</td>
<td>0.187***</td>
<td>0.620***</td>
<td>2.650</td>
<td>3.832</td>
</tr>
<tr>
<td>LEV</td>
<td>0.281***</td>
<td>0.515***</td>
<td>4.756</td>
<td>13.15</td>
</tr>
<tr>
<td>CASH</td>
<td>0.047***</td>
<td>0.990***</td>
<td>0.320</td>
<td>-0.036</td>
</tr>
<tr>
<td>EXP</td>
<td>0.149***</td>
<td>0.922***</td>
<td>0.456</td>
<td>-0.658</td>
</tr>
<tr>
<td>BS</td>
<td>0.131***</td>
<td>0.958***</td>
<td>0.810</td>
<td>1.291</td>
</tr>
<tr>
<td>BIND</td>
<td>0.153***</td>
<td>0.943***</td>
<td>0.805</td>
<td>0.991</td>
</tr>
<tr>
<td>ACS</td>
<td>0.262***</td>
<td>0.792***</td>
<td>1.740</td>
<td>5.119</td>
</tr>
<tr>
<td>AIND</td>
<td>0.283***</td>
<td>0.848***</td>
<td>1.055</td>
<td>3.265</td>
</tr>
<tr>
<td>CEOD</td>
<td>0.437***</td>
<td>0.584***</td>
<td>0.802</td>
<td>-1.358</td>
</tr>
<tr>
<td>PSH</td>
<td>0.275***</td>
<td>0.442***</td>
<td>7.782</td>
<td>13.67</td>
</tr>
</tbody>
</table>

Note: *** significant at 1%; The results are obtained using SPSS 17.0

Analysis of Skewness and Kurtosis also show that all variables are not normally distributed. According to Brooks (2014), one of the ways to deal with the non-normal distributions is to use the logarithmic values of the variables. Since, many firm performance variables and the primary dependent variable, i.e., FII, have negative values, thus using logarithmic values is not a feasible solution. Further, deletion of extreme values as outliers is likely to reduce the informativeness of the sample. Thus, in a concern for normality, robust regressions (c.f. Annexure- B) are estimated which is one of the weighted least square regressions. These regressions show standard errors free from normality assumptions and equality of variances. Also, the significance of the coefficients is tested using robust standard errors that correct both heteroscedasticity and cross-sectional correlations.

Both the Spearman’s and Pearson’s correlations have been determined to analyze the association between the variables under study. Spearman’s correlation is a non-parametric measure of association among the variables. It assesses the
relationship between the variables without relying on the assumption of normal distribution and can be computed by using the following formula:

\[ r = 1 - \left( \frac{6 \sum d_i^2}{n(n^2 - 1)} \right) \]

where

\[ d_i = \text{Difference between ranks of } i\text{th pair of the two variables} \]
\[ n = \text{Number of pairs of observations} \]

The quantitative measurement of the degree of association between the variables is given by a parameter called ‘correlation coefficient’. It was developed by Karl Pearson and is also referred to as ‘Pearsonian Correlation Coefficient’ and is denoted by the Greek letter \( \rho \) (rho), if it is calculated from the population values, and ‘\( r \)’ if calculated from the sample (Kothari, 2004). The correlation coefficient is computed by the following formula:

\[ r = \frac{\sum (x_i - \bar{X})(y_i - \bar{Y})}{n \sigma_x \sigma_y} \]

where

\[ \bar{X} = \text{Arithmetic mean of } X \text{ data series} \]
\[ \bar{Y} = \text{Arithmetic mean of } Y \text{ data series} \]
\[ \sigma_x = \text{Standard deviation of } X \text{ data series} \]
\[ \sigma_y = \text{Standard deviation of } Y \text{ data series} \]
\[ n = \text{Total number of observations} \]

3.8.2 Multivariate Analysis

Multivariate analysis is based on assessment of two or more variables, simultaneously. Generally, these techniques are concerned with studying the simultaneous relationships among two or more independent variables and a dependent variable. In the present study, various factors relating to macro-economic, firm performance and corporate governance variables which influence FII in India, has been assessed by using the multiple regression equation. The data spans through the financial years 2005-06 to 2015-16 and covers 291 companies with 3,201 company-
year observations. The data, thus, combines time series for various cross-sections. In other words, it is a panel data consisting of a group of cross-sectional units, i.e., companies, which are observed over a period of study (i.e., April 01st, 2005 to March 31st, 2016) for assessing the influence of firm performance and corporate governance on FII in India.

Panel data results in large cross-sectional units wherein every individual variable is piled up in a single series. Further, it includes both the time series and cross-sectional features of observations which are expected to be more informative with high degree of freedom (d.f.) and less collinearity issues. It thereby, supplements observed analysis which seems impossible if only one of the series, i.e., either time series or cross-sectional series is used (Baltagi & Kao, 2001).

One of the peculiar features of a panel data is that it may have either group or time effects or a combination of both, and these effects are further classified into random (RE) or fixed effect (FE). A random effect (RE) model of the panel data assumes the random association between variables which is shown in the error term. While, in a fixed effect (FE) model, a different intercept is estimated for each pool member by adding a company related dummy variable. This process creates large number of parameters as compared to the actual observations, and lowers down the overall power of the test. Further, the RE model assumes the exogeneity of the variables of interest while the FE model supports the endogeneity of variables which is to be tested by applying suitable techniques. While, comparing these two models based on consistency or efficiency, RE model has been found to provide more efficient results than the FE (Mundlak, 1978). According to Gujarati (2003), RE model is most suitable for analyzing large number of cross-sectional units over a comparatively less number of time-series. This condition aptly suits in present study where 3,210 company-observations are analyzed over a period of eleven years. According to Greene (2000), results of the RE model enable to generalize the findings outside the sample and draw inferences about the population which is not possible in case of FE model. Also, there have been studies which have found Generalized Least Square (GLS) RE model to be more efficient in analyzing the panel data as compared to the FE counterpart (Whelan, 2004; Monalisa, 2011; Singh, 2012; Khanna, 2015).

Normally control variables need not be used in RE and FE models, however, time dummies may be introduced in the regression model (Basso, 2012; Pillai, 2016).
Consistent with it, time dummy variable for year effect ($D_t$) has been introduced in the present study for controlling unexpected events which might distort the results. The random effects are examined by the Lagrange multiplier (LM) test (Breusch & Pagan, 1979). Results of the $F$ test which test the null hypothesis that pooled OLS model is appropriate as compared to FE model and Hausman test (Hausman, 1978) which is applied to choose between the FE and GLS RE models are presented in Table 3.4.

### Table 3.4: Results of the $F$ Test and Hausman Test

<table>
<thead>
<tr>
<th>Model for Assessing the Impact of Firm Performance Variables on FII</th>
<th>$FII_{jt} = \beta_0 + \beta_1 SIZE_{jt} + \beta_2 BM_{jt} + \beta_3 TURN_{jt} + \beta_4 DY_{jt} + \beta_5 ROE_{jt} + \beta_6 LEV_{jt} + \beta_7 CASH_{jt} + \beta_8 EXP_{jt}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$F$ test for choosing between FE and Pooled OLS models</td>
<td>$F$ test that all $u_{i,j} = 0$; $F (8, 3182) = 179.73; \text{Prob } &gt; F = 0.000$</td>
</tr>
<tr>
<td>Breusch &amp; Pagan LM test for choosing between RE and Pooled OLS models</td>
<td>Var($u$) = 0; chibar2 (01) = 8431.86; Prob &gt; chibar2 = 0.000</td>
</tr>
<tr>
<td>Hausman test for choosing between FE and RE models</td>
<td>$\chi^2 = 27.99; \text{Prob } &gt; \chi^2 = 0.062$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model for Assessing the Impact of CG Variables on FII</th>
<th>$FII_{jt} = \theta_0 + \theta_1 BIND_{jt} + \theta_2 BS_{jt} + \theta_3 CEOD_{jt} + \theta_4 ACS_{jt} + \theta_5 AIND_{jt} + \theta_6 PSH_{jt} + \theta_7 D_t + \epsilon_{jt}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$F$ test for choosing between FE and Pooled OLS models</td>
<td>$F$ test that all $u_{i,j} = 0$; $F (6, 3184) = 77.25; \text{Prob } &gt; F = 0.000$</td>
</tr>
<tr>
<td>Breusch &amp; Pagan LM test for choosing between RE and Pooled OLS models</td>
<td>Var($u$) = 0; chibar2 (01) = 9534.85; Prob &gt; chibar2 = 0.000</td>
</tr>
<tr>
<td>Hausman test for choosing between FE and RE models</td>
<td>$\chi^2 = 50.87; \text{Prob } &gt; \chi^2 = 0.052$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model for Assessing the Impact of both CG and Firm Performance Variables on FII</th>
<th>$FII_{jt} = \Delta_0 + \Delta_1 BIND_{jt} + \Delta_2 BS_{jt} + \Delta_3 CEOD_{jt} + \Delta_4 ACS_{jt} + \Delta_5 AIND_{jt} + \Delta_6 PSH_{jt} + \Delta_7 SIZE_{jt} + \Delta_8 BM_{jt} + \Delta_9 TURN_{jt} + \Delta_{10} DY_{jt} + \Delta_{11} ROE_{jt} + \Delta_{12} LEV_{jt} + \Delta_{13} CASH_{jt} + \Delta_{14} EXP_{jt} + \Delta_{15} D_t + \epsilon_{jt}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$F$ test for choosing between FE and Pooled OLS models</td>
<td>$F$ test that all $u_{i,j} = 0$; $F (14, 3176) = 120.7; \text{Prob } &gt; F = 0.000$</td>
</tr>
<tr>
<td>Breusch &amp; Pagan LM test for choosing between RE and Pooled OLS models</td>
<td>Var($u$) = 0; chibar2 (01) = 7848.43; Prob &gt; chibar2 = 0.000</td>
</tr>
<tr>
<td>Hausman test for choosing between FE and RE models</td>
<td>$\chi^2 = 32.33; \text{Prob } &gt; \chi^2 = 0.056$</td>
</tr>
</tbody>
</table>
Analysis of Table 3.4 makes it clear that for all the models, $F$ test rejects the null hypothesis of zero company heterogeneity. Consequently, in the entire three models FE model is preferred on pooled OLS model. Results of Breusch & Pagan LM test also lead to rejection of null hypothesis and thereby GLS RE model is found to be suitable than the pooled OLS model. Finally, the result of Hausman test in all the three models lead to acceptance of null hypothesis that the individual effects are uncorrelated with the other regressors and hence GLS RE model is favoured over FE model and applied in the present study.

According to Field (2009), autocorrelation is one of the problems of time series data where values of a variable are related to their respective past values. Lag-one autocorrelation is the commonly found problem in time series and Durbin-Watson (D-W) statistic is applied to identify the same. Value of D-W close to 2 indicates very little lag-one autocorrelation while for large samples, value less than 1.5 shows the problem of autocorrelation. Another problem which is usually evident in time series data is the issue of multicollinearity which indicates a high degree of association among the independent variables among themselves thereby reducing their statistical power (Hocking & Pendleton, 1983). It is detected through variance inflation factors (VIF). Any variable with VIF value near to 10 shows the serious problem of multicollinearity (Gujarati, 2003). Both these test have been applied in present study wherein all firm performance and corporate governance variables have been checked for autocorrelation and multicollinearity, for all the period under analysis, year-wise and on panel basis and results are given in Table 3.5.

VIF values of all variables are shown individually for all the financial years under analysis and for panel data while D-W is shown in the last column of the table. Results of Table 3.5 show that the D-W statistics and VIF values of all variables have been found to be within the acceptable limits. Hence, no problem of autocorrelation and multicollinearity has been detected.
Table 3.5: Multicollinearity and Autocorrelation Tests

<table>
<thead>
<tr>
<th>Year</th>
<th>BS</th>
<th>BIND</th>
<th>ACS</th>
<th>AIND</th>
<th>CEOD</th>
<th>PSH</th>
<th>SIZE</th>
<th>BM</th>
<th>TURN</th>
<th>DY</th>
<th>ROE</th>
<th>LEV</th>
<th>CASH</th>
<th>EXP</th>
<th>D-W</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-06</td>
<td>2.47</td>
<td>2.43</td>
<td>1.95</td>
<td>1.95</td>
<td>1.14</td>
<td>0.01</td>
<td>4.12</td>
<td>1.13</td>
<td>2.24</td>
<td>1.15</td>
<td>1.86</td>
<td>1.95</td>
<td>3.05</td>
<td>1.09</td>
<td>1.81</td>
</tr>
<tr>
<td>2006-07</td>
<td>2.52</td>
<td>2.52</td>
<td>2.08</td>
<td>2.28</td>
<td>1.16</td>
<td>0.01</td>
<td>4.18</td>
<td>1.11</td>
<td>1.98</td>
<td>1.03</td>
<td>1.40</td>
<td>1.49</td>
<td>3.46</td>
<td>1.05</td>
<td>1.87</td>
</tr>
<tr>
<td>2007-08</td>
<td>2.56</td>
<td>2.49</td>
<td>1.91</td>
<td>2.11</td>
<td>1.13</td>
<td>0.01</td>
<td>4.62</td>
<td>1.26</td>
<td>2.65</td>
<td>1.10</td>
<td>1.18</td>
<td>1.48</td>
<td>3.33</td>
<td>1.04</td>
<td>1.91</td>
</tr>
<tr>
<td>2008-09</td>
<td>3.01</td>
<td>2.84</td>
<td>2.28</td>
<td>2.33</td>
<td>1.09</td>
<td>1.12</td>
<td>4.09</td>
<td>1.21</td>
<td>2.13</td>
<td>1.06</td>
<td>1.07</td>
<td>1.35</td>
<td>3.51</td>
<td>1.10</td>
<td>1.91</td>
</tr>
<tr>
<td>2009-10</td>
<td>3.03</td>
<td>2.39</td>
<td>2.26</td>
<td>1.97</td>
<td>1.07</td>
<td>1.06</td>
<td>4.43</td>
<td>1.37</td>
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<td>1.24</td>
<td>1.42</td>
<td>3.07</td>
<td>1.05</td>
<td>1.78</td>
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<td>2010-11</td>
<td>3.25</td>
<td>2.53</td>
<td>2.63</td>
<td>2.22</td>
<td>1.05</td>
<td>1.05</td>
<td>4.09</td>
<td>1.41</td>
<td>2.39</td>
<td>1.15</td>
<td>1.15</td>
<td>1.48</td>
<td>2.54</td>
<td>1.09</td>
<td>1.84</td>
</tr>
<tr>
<td>2011-12</td>
<td>2.18</td>
<td>1.65</td>
<td>1.27</td>
<td>1.25</td>
<td>1.04</td>
<td>1.06</td>
<td>4.48</td>
<td>1.37</td>
<td>2.34</td>
<td>1.02</td>
<td>1.13</td>
<td>1.33</td>
<td>3.21</td>
<td>1.04</td>
<td>1.90</td>
</tr>
<tr>
<td>2012-13</td>
<td>3.31</td>
<td>2.89</td>
<td>2.22</td>
<td>2.09</td>
<td>1.07</td>
<td>1.06</td>
<td>2.54</td>
<td>1.20</td>
<td>2.05</td>
<td>1.01</td>
<td>1.09</td>
<td>1.33</td>
<td>2.24</td>
<td>1.07</td>
<td>1.91</td>
</tr>
<tr>
<td>2013-14</td>
<td>2.71</td>
<td>2.25</td>
<td>2.22</td>
<td>2.00</td>
<td>1.07</td>
<td>1.04</td>
<td>3.49</td>
<td>1.27</td>
<td>2.41</td>
<td>1.02</td>
<td>1.56</td>
<td>1.69</td>
<td>2.95</td>
<td>1.05</td>
<td>2.01</td>
</tr>
<tr>
<td>2014-15</td>
<td>3.23</td>
<td>2.32</td>
<td>1.64</td>
<td>1.01</td>
<td>1.07</td>
<td>1.04</td>
<td>4.36</td>
<td>1.37</td>
<td>2.34</td>
<td>1.02</td>
<td>1.14</td>
<td>1.41</td>
<td>3.25</td>
<td>1.04</td>
<td>1.84</td>
</tr>
<tr>
<td>2015-16</td>
<td>2.75</td>
<td>2.05</td>
<td>1.47</td>
<td>1.05</td>
<td>1.05</td>
<td>1.04</td>
<td>2.59</td>
<td>1.24</td>
<td>2.07</td>
<td>1.03</td>
<td>1.11</td>
<td>1.24</td>
<td>2.22</td>
<td>1.06</td>
<td>1.99</td>
</tr>
<tr>
<td>Panel</td>
<td>2.59</td>
<td>2.10</td>
<td>1.62</td>
<td>1.36</td>
<td>1.03</td>
<td>1.03</td>
<td>3.31</td>
<td>1.20</td>
<td>2.01</td>
<td>1.01</td>
<td>1.13</td>
<td>1.27</td>
<td>2.74</td>
<td>1.01</td>
<td>1.87</td>
</tr>
</tbody>
</table>
3.8.3 Analysis of Trend and Pattern of FII in India

The first research objective was to analyze the trend and pattern of FII in India during 2005-06 to 2017-18. For this, trend analysis has been conducted by applying least square method of time-series along with short-term fluctuations which has been shown in both tabular as well as graphical form to FII data over a period of eleven years. It includes FII in India in the form of equity, debt and total amount of investment. The procedure adopted for trend analysis initiates with fitting a straight line trend which can be expressed by the following equation:

\[ Y = a + bX \]

where,

- \( Y \) = Trend values
- \( X \) = Unit of time
- \( a \) = Y-intercept
- \( b \) = Slope of the trend line

In the above equation, to determine \( a \) and \( b \), following two normal equations have been used:

\[
\sum Y = Na + b \sum X \\
\sum XY = a \sum X + b \sum X^2
\]

For the present study,

\( Y \) = Amount of FII (Total, Equity, Debt) and
\( X \) = Deviation of years from the year of origin

After determining the equation, \( Y = a + bX \), the trend values were fitted related to different years and plotted on a graph paper which shows a straight line trend. Deviations of trend values from actual values result in short-term fluctuations.

Importance of the FII in the Indian Capital market is better evident by looking at the assets under their custody (AUC) held by FIIs in India. For this, total amount, average and range of AUC held by FIIs for the financial years 2011-12 to 2017-18 of thirty two different sectors of the Indian economy have been analyzed. Further, the
total AUC held by FIIs in main sectors of the Indian economy along with their percentage increase or decrease over time have also been analyzed. AUC held by FIIs of top eleven countries in India for the financial years ending on March 31st, 2012 to March 31st, 2018 has been shown. Also, the category-wise pattern of AUC held by FIIs in India has been assessed. As with effect from the financial year 2014-15, there has been change in the categories of FII, accordingly, AUC held by FIIs in India in different categories has been bifurcated as first for the financial years 2011-12 to 2013-14 and secondly, for the financial years 2014-15 to 2017-18. The comparative analysis has also been made of equity, debt and total AUC held by FPIs category-wise.

3.8.4 Analysis of the Impact of Macro-economic Variables on FII in India

The second research objective has been to empirically test the impact of macro-economic variables on FII during the period of study. Time series data has been used for this purpose, wherein, monthly data on all required variables has been obtained from RBI, BSE and NSDL websites. Preliminary analysis include univariate analysis consisting of descriptive statistics based on the entire sample of 132 observations for the time period from financial years 2005-06 to 2015-16, used for testing the impact of macro-economic variables on FII. Further, correlation analysis of macro-economic variables with FII has also been conducted.

It is necessary to check the data stationarity particularly in case of time series before finalising any analysis technique. A stationary data has the tendency to show constant mean and variance (Brooks, 2014). As financial time series data like the daily closing prices of BSE stock market return (RN) are often non-stationary at level but the first difference, i.e., the growth rate is often stationary. Thus, the regression of one non-stationary time series variable on another may produce a spurious regression, i.e., with no meaningful association. Therefore, unit root test is conducted on all data-series variables considered for the study to ensure stationarity property of the time series. There are several unit root tests available like ADF, PP, KPSS. ADF unit root test has been applied to get a more precise view of stationarity of the macro-economic variables along with FII as a dependant variable and also for checking their
integration order and co-integration links (John et al., 2007; Kaur & Dhillon, 2010; Mohanasundaram et al., 2015; Larsson & Haq, 2016).

The ADF test makes a parametric correction in the original Dickey-Fuller (DF) test for higher-order correlation by considering all potential autocorrelation in error terms by adding the lagged difference term of the dependent variable (Mohansundarm, 2015). The standard equation of ADF is as follows:

$$\Delta Y_t = b_0 + \beta Y_{t-1} + \mu_1 \Delta Y_{t-1} + \mu_2 \Delta Y_{t-2} + \ldots + \mu_p \Delta Y_{t-p} + u_t$$

where,

- $Y_t$ = Time series to be tested
- $b_0$ = Intercept term
- $\beta$ = Coefficient of interest
- $\mu_1$ - $\mu_p$ = Parameter of the augmented lagged first difference
- $u_t$ = White noise error term

ADF test the null hypothesis of unit root, i.e., non-stationarity of data, with alternate hypothesis that the data has no unit root. There are several methods for assessing the optimal lag length $p$ and the widespread method is to minimize the value of an information criterion using the AIC (Akaike 1974) and/or the Schwarz-Bayesian (SIC) (Schwarz et al., 1978). The result of ADF unit root test on $FII_{ni}$ and macro-economic variables showed that variables have no unit root, implying stationarity is accepted. However, as all the variables have not been integrated of the same order thus Engle & Granger (1987) method for assessing the long and short-run impact of independent variables on FII cannot be applied. Hence, an advanced technique in similar circumstances for empirically assessing the impact of above mentioned explanatory variables on FII, i.e., bound testing approach or ARDL has been applied.

ARDL model is built on Unrestricted Error Correction Model (UECM) and provides realistic and efficient estimates. ARDL tests the short and long-run association among the variables, and is applicable even in case of a small sample with the tendency to remove issues related to omitted variables and auto-correlation (Pesaran et al., 2001). Further, it provides unbiased estimates of the long-run model and a valid $t$-statistic even when some of the regressors are endogenous (Inder, 1993;
Pesaran et al., 2001; Harris & Sollis, 2003).

All data is expressed as the natural logarithms, as it reduce possible heteroscedasticity (Larsson & Haq, 2016). The ordinary least square regression equation for ARDL model as applied for assessing the short-run and long-run impact of macro-economic variables on FII is as follows:

Model 1

$$\Delta \ln FII_{ni,t} = \beta_0 + \sum_{i=1}^{p} \delta_1 \Delta \ln FII_{ni,t-i} + \sum_{i=1}^{p} \delta_2 \Delta \ln ER_{t-i} + \sum_{i=1}^{p} \delta_3 \Delta \ln IIP_{t-i} + \sum_{i=1}^{p} \delta_4 \Delta \ln WPI_{t-i}$$

$$+ \sum_{i=1}^{p} \delta_5 \Delta \ln PPI_{t-i} + \sum_{i=1}^{p} \delta_6 \Delta \ln RN_{t-i} + \sum_{i=1}^{p} \delta_7 \Delta \ln S&P 500_{t-i}$$

$$+ \sum_{i=1}^{p} \delta_8 \Delta \ln TO_{t-i} + \sum_{i=1}^{p} \delta_9 \Delta \ln FR_{t-i} + \sum_{i=1}^{p} \delta_{10} \Delta \ln MCAP_{t-i} + \sum_{i=1}^{p} \delta_{11} \Delta \ln US T-BILL_{t-i} + \beta_1 \ln FII_{ni,t-i} + \beta_2 \ln ER_{t-i} + \beta_3 \ln IIP_{t-i} + \beta_4 \ln WPI_{t-i} + \beta_5 \ln PPI_{t-i} + \beta_6 \ln RN_{t-i} + \beta_7 \ln S&P 500_{t-i} + \beta_8 \ln TO_{t-i} + \beta_9 \ln FR_{t-i} + \beta_{10} \ln MCAP_{t-i} + \beta_{11} \ln US T-BILL_{t-i} + D_t + \epsilon_i$$

where,

$$\ln$$ = Natural Logarithm

$$\ln FII_{ni}$$ = Natural logarithm of Net FII flows in India

$$\ln ER$$ = Natural logarithm of Nominal exchange rate of the Indian rupee vis-à-vis US dollar

$$\ln IIP$$ = Natural logarithm of index for industrial production

$$\ln WPI$$ = Natural logarithm of wholesale price index

$$\ln PPI$$ = Natural logarithm of producer price index

$$\ln RN$$ = Natural logarithm of returns on Sensex ($$ln RN_t - ln RN_{t-1}$$)

$$\ln S&P 500$$ = Natural logarithm of returns on S&P 500 Index ($$ln S&P 500_t - ln S & P 500_{t-1}$$)

$$\ln TO$$ = Natural logarithm of stock market turnover

$$\ln FR$$ = Natural logarithm of foreign exchange reserves

$$\ln MCAP$$ = Natural logarithm of market capitalization

$$\ln US T-BILL$$ = Natural logarithm of 3 months US T-bill Rate
\[ D_t = \text{Dummies} \]
\[ t = \text{Time dimension} \]
\[ \Delta = \text{First difference operator} \]
\[ \beta_0 = \text{Intercept} \]
\[ \varepsilon_t = \text{White noise error term} \]
\[ \delta_1, \ldots, \delta_{10} = \text{Short-run coefficients} \]
\[ \beta_1, \ldots, \beta_{10} = \text{Long-run coefficients} \]

It is important to assess the lag selection before applying the ARDL model as appropriate lag selection helps in better determining the results of the model. It is important to determine the suitable lag length in the ARDL model so as to obtain the Gaussian error terms which is free from issues of non-normality, autocorrelation, and heteroscedasticity. Number of lags is determined based on VAR lag order selection criteria. Optimal lag length (k) can be determined by applying models like Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC), or Hannan-Quinn Criterion (HQC). The model specifications of AIC, SIC, and HQC for model are given as:

\[
AIC_p = \frac{-n}{2}(1+\log 2\hat{\sigma}) - \frac{n}{2}\log \hat{\sigma}^2 - P
\]
\[
SIC_p = \log(\hat{\sigma}^2) + \frac{(\log n)}{n}P
\]
\[
HQC = \log \hat{\sigma} + \frac{(2\log \log n)}{n}P
\]

where

\[ \hat{\sigma}^2 = \text{Maximum Likelihood (ML) estimator of the variance of the regression disturbances} \]
\[ \sum_p = \text{Estimated sum of squared residuals, and is the number of estimated parameters} \]
\[ p = 0, 1, 2 \ldots P \]
\[ P = \text{Optimum order of the model selected} \]

Next step is to estimate the ARDL Model 1 by OLS which tests long-run association between the variables by carrying out \( f \)-test. It tests the null hypothesis of
no long-run association between the variables with alternate hypothesis of long-run association, tested by \( f \)-statistic (Wald test). The distribution of this statistics is non-standard, irrespective of whether variables are integrated at zero I (0) or I (1). The critical values of the \( f \)-statistics are presented in Pesaran \textit{et al.} (2001) and provide two sets of critical values. One set presumes that all variables are I (0), and another presumes that all variables are I (1). If the calculated \( f \)-statistic exceeds upper bound critical value, it leads to rejection of null hypothesis. After estimating long-run relationship from Model 1, next is to estimate the conditional ARDL long-run model 2 for \( \ln FII_t \) as mentioned below:

\[
\text{Model 2} \\
\Delta \ln FII_{ni,t} = \beta_0 + \beta_1 \ln FII_{ni,t-1} + \beta_2 \ln ER_{t-1} + \beta_3 \ln IIP_{t-1} + \beta_4 \ln WPI_{t-1} + \beta_5 \ln PPI_{t-1} + \beta_6 \ln RN_{t-1} + \beta_7 \ln S&P_{500,t-1} + \beta_8 \ln TO_{t-1} + \beta_9 \ln FR_{t-1} + \beta_{10} \ln MCAP_{t-1} + \beta_{11} \ln US\ T-BILL_{t-1} + D_t + \epsilon_t, \ldots \]

In the last step, by estimating an Error Correction Term (ECT) connected with long-run estimates, short-run dynamic factors are obtained. The short-run dynamics of ARDL model 3 is stated as follows:

\[
\text{Model 3} \\
\Delta \ln FII_{ni,t} = \beta_0 + \sum_{i=1}^{p} \delta_i \Delta \ln FII_{ni,t-i} + \sum_{i=1}^{p} \delta_2 \Delta \ln ER_{t-i} + \sum_{i=1}^{p} \delta_3 \Delta \ln IIP_{t-i} + \sum_{i=1}^{p} \delta_4 \Delta \ln WPI_{t-i} + \sum_{i=1}^{p} \delta_5 \Delta \ln PPI_{t-i} + \sum_{i=1}^{p} \delta_6 \Delta \ln RN_{t-i} + \sum_{i=1}^{p} \delta_7 \Delta \ln S&P_{500,t-i} + \sum_{i=1}^{p} \delta_8 \Delta \ln TO_{t-i} + \sum_{i=1}^{p} \delta_9 \Delta \ln FR_{t-i} + \sum_{i=1}^{p} \delta_{10} \Delta \ln MCAP_{t-i} + \sum_{i=1}^{p} \delta_{11} \Delta \ln US\ T-BILL_{t-i} + D_t + \phi \ ECT_{t-1} + \epsilon_t, \ldots \]

where,

\( \delta_1, \ldots, \delta_{11} \) = Short-run dynamic coefficients of the model’s convergence to equilibrium

\( \phi \) = Speed of adjustment parameter

\( ECT \) = Error correction term derived from the estimated equilibrium relationship of Model 1
The ARDL model tries to obtain the best linear unbiased estimator (BLUE) and thereby diagnostic tests need to be done for further validating and to ensure that results are statistically robust by utilizing tests for stability, serial correlation, heteroscedasticity, misspecification (RESET) and normality in the residuals.

ARDL model is quite sensitive to structural breaks and as there is a financial time series which is sensitive to worldwide events, there is a need to analyze the stability of the coefficients. One of the ways to deal with instability in the coefficients is to increase the sample size or introduce dummy variables (Juselius, 2006; Fuihhas & Marques, 2012; Naiya & Manap, 2013). To assess the steadiness of the long and short-run coefficients CUSUM and CUSUMSQ tests proposed by Brown et al. (1975) have been applied. These tests are of a graphical nature whereby, the residuals are updated recursively and plotted against the break points for the 5% significance line. The long and short-run coefficients are stable if plots of CUSUMSQ and CUSUM stay within the 5% significance level. Both tests analyze whether residuals do not significantly deviate from its mean value by imposing parallel critical lines at 5% significance level.

Breusch-Godfrey test (Breusch, 1978; Godfrey, 1978) has been applied to check whether different lags of the residuals are correlated or not, i.e., whether there is a serial correlation or not. This test checks the null hypothesis of no serial correlation and alternate hypothesis of the presence of serial correlation among the variables of interest by $\chi^2$ as the test statistic. In present study, $\chi^2$ value has come to be 1.200 which is insignificant (0.261) thereby leading to approval of null hypothesis of no serial correlation.

In the regular OLS estimation for the ARDL model it is assumed that the residuals have a constant variance (homoscedasticity). If the model does not have a constant variance (heteroscedasticity) in the residuals the estimated coefficients will no longer be best linear unbiased estimator (BLUE) and will not have the minimum variance of the unbiased estimators. Autoregressive Conditional Heteroscedasticity (ARCH) test has been applied for checking heteroscedasticity with the null hypothesis of homoscedasticity, and alternative hypothesis of Heteroscedasticity, tested by $\chi^2$. In present study, $\chi^2$ value for testing the Heteroscedasticity has come to be 1.302 which
is insignificant (0.220) thereby leading to approval of null hypothesis of no Heteroscedasticity in the model.

RESET (Ramsey, 1969) checks the null hypothesis that the model is not mis-specified, i.e., there is no power in non-linear combinations. Alternate hypothesis states that non-linear combinations have power, i.e., there are misspecifications in the model. This model is also tested by $\chi^2$. The $\chi^2$ value of Ramsey RESET comes to be 0.607 which is insignificant (0.437) thereby leading to acceptance of null hypothesis of no misspecification.

3.8.5 Analysis of the Impact of Firm Performance on FII in India

The third research objective is to assess the association of firm performance characteristics with FII. Foreign Institutional Investors (FIIs) prefer firm-oriented attributes prevailing in a country for taking their investment decisions more as compared to the respective country-oriented characteristics prevailing therein, specifically in countries with poor shareholder protection (Ferreira & Matos, 2006). These firm-oriented attributes form the proxies of its performance and greatly influences the investment decisions of FIIs (Del Guercio, 1996; Dahlquist & Robertsson, 2001).

In correlation matrix, relationship of firm performance attributes with FII has been established and conformed to the previous research. The cause and effect relationship between firm performance attributes and FII has been assessed by panel and yearly cross-sectional regressions. First section of the respective chapter shows the annual results of the impact of firm performance variables on FII for the financial years 2005-06 to 2015-16 by presenting the results of yearly cross-sectional regressions of FII on firm performance variables represented by SIZE, BM, TURN, DY, ROE, LEV, CASH, and EXP. Second section of the chapter shows the results of GLS RE Model for the panel regressions of FII on firm performance variables for all the BSE listed companies. Adjusted $R^2$ from the regression equations shows the overall impact of all independent variables, i.e., firm performance on FII, while significant regression coefficients indicates the impact of individual independent
variables on FII. Table 3.6 presents the regression models that have been applied for yearly and panel analysis of the impact of firm performance on FII in India:

Table 3.6: Regression Models for Assessing the Impact of Firm Performance on FII

<table>
<thead>
<tr>
<th>For Yearly Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 4</strong></td>
</tr>
<tr>
<td>[ FII_{jt} = \alpha_0 + \alpha_1 SIZE_{jt} + \alpha_2 BM_{jt} + \alpha_3 TURN_{jt} + \alpha_4 DY_{jt} + \alpha_5 ROE_{jt} + \alpha_6 LEV_{jt} + \alpha_7 CASH_{jt} + \alpha_8 EXP_{jt} + \epsilon_{jt} ]</td>
</tr>
<tr>
<td><strong>GLS RE Model</strong></td>
</tr>
<tr>
<td><strong>Model 5</strong></td>
</tr>
<tr>
<td>[ FII_{jt} = \omega_0 + \omega_1 SIZE_{jt} + \omega_2 BM_{jt} + \omega_3 TURN_{jt} + \omega_4 DY_{jt} + \omega_5 ROE_{jt} + \omega_6 LEV_{jt} + \omega_7 CASH_{jt} + \omega_8 D_{jt} + \epsilon_{jt} ]</td>
</tr>
<tr>
<td><strong>RE Tobit Model</strong></td>
</tr>
<tr>
<td><strong>Model 6</strong></td>
</tr>
<tr>
<td>[ FII_{jt} = \gamma_0 + \gamma_1 SIZE_{jt} + \gamma_2 BM_{jt} + \gamma_3 TURN_{jt} + \gamma_4 DY_{jt} + \gamma_5 ROE_{jt} + \gamma_6 LEV_{jt} + \gamma_7 CASH_{jt} + \gamma_8 EXP_{jt} + \gamma_9 D_{jt} + \epsilon_{jt} ]</td>
</tr>
</tbody>
</table>

where,

- \( FII \) = Proportion of foreign institutional investments of company \( j \) for year \( t \)
- \( SIZE \) = Size of company \( j \) for year \( t \)
- \( BM \) = Book-to-market ratio of company \( j \) for year \( t \)
- \( TURN \) = Turnover of company \( j \) for year \( t \)
- \( DY \) = Dividend yield of company \( j \) for year \( t \)
- \( ROE \) = Return on equity of the company
- \( LEV \) = Leverage ratio of company \( j \) for year \( t \)
- \( CASH \) = Cash representing liquidity position of company \( j \) for year \( t \)
- \( EXP \) = Export rate of company \( j \) for year \( t \)

An overview of the analysis also brings into light the fact that FII, which is a dependent variable in the present study, has zero values. Hence, it is imperative to
check the robustness of panel results after removal of zeros. For this purpose, consistent with past research (e.g., Dalhiquist & Robertsson, 2001; Patnaik & Shah, 2008) RE Tobit Model has also been applied for the panel regressions of FII on firm performance variables for the BSE-listed companies.

3.8.6 Analysis of the Impact of Corporate Governance on FII in India

The fourth research objective is to assess the influence of corporate governance on FII. Corporate governance attempts to ensure that managers and other insiders have taken due measures by adopting mechanisms for safeguarding the interests of various stakeholders. Foreign investors who are usually less in numbers and facing information asymmetries while investing in host country, by and large have relied more on adequate governance system in a company (La Porta, et al., 1999; Klapper & Love, 2004; Das, 2014). Thus, CG in a company is found to strongly influence FII. Previous studies have taken up either board size, its independence, audit committee size, its independent working along with separation of chairman or CEO position, as corporate governance proxies while assessing them as determinants of FII (e.g., De Zoort & Salterio, 2001; Felo et al., 2003; Bhattacharya & Rao, 2005; Aggarwal et al., 2007; Cornett et al., 2007). A comprehensive analysis has been made in present study by including all these key variables together as proxies of corporate governance including one more crucial variable, i.e., promoters’ shareholding which has been used in very few Indian studies (e.g., Lakshmi, 2010; Singla et al., 2014).

Consistent with the existing literature, present study has made use of univariate analysis including descriptive statistics and correlation analysis (both Pearson’s and Spearman). Multivariate analysis of the study includes yearly and panel data regressions. The Generalized Least Square (GLS) RE Model has been applied for assessing the impact of corporate governance variables on FII. Further, RE Tobit Model has been applied for checking the robustness of results of GLS RE Model. These models express FII as a function of all corporate governance variables. The overall impact of all independent variables is measured by Adjusted $R^2$, and individual independent variable’s impact is assessed by significance of regression coefficients by applying following regression models presented in Table 3.7:
Table 3.7: Regression Models for Assessing the Impact of CG on FII

<table>
<thead>
<tr>
<th>For Yearly Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 7</strong></td>
</tr>
<tr>
<td>[ FII_{jt} = \lambda_0 + \lambda_1 \text{BIND}<em>{jt} + \lambda_2 \text{BS}</em>{jt} + \lambda_3 \text{CEOD}<em>{jt} + \lambda_4 \text{ACS}</em>{jt} + \lambda_5 \text{AIND}<em>{jt} + \lambda_6 \text{PSH}</em>{jt} + e_{jt} ]</td>
</tr>
<tr>
<td><strong>GLS RE Model</strong></td>
</tr>
<tr>
<td><strong>Model 8</strong></td>
</tr>
<tr>
<td>[ FII_{jt} = \theta_0 + \theta_1 \text{BIND}<em>{jt} + \theta_2 \text{BS}</em>{jt} + \theta_3 \text{CEOD}<em>{jt} + \theta_4 \text{ACS}</em>{jt} + \theta_5 \text{AIND}<em>{jt} + \theta_6 \text{PSH}</em>{jt} + \theta_7 D_t + e_{jt} ]</td>
</tr>
<tr>
<td><strong>RE Tobit Model</strong></td>
</tr>
<tr>
<td><strong>Model 9</strong></td>
</tr>
<tr>
<td>[ FII_{jt} = \upsilon_0 + \upsilon_1 \text{BIND}<em>{jt} + \upsilon_2 \text{BS}</em>{jt} + \upsilon_3 \text{CEOD}<em>{jt} + \upsilon_4 \text{ACS}</em>{jt} + \upsilon_5 \text{AIND}<em>{jt} + \upsilon_6 \text{PSH}</em>{jt} + \upsilon_7 D_t + e_{jt} ]</td>
</tr>
</tbody>
</table>

where,

- \( FII \) = Proportion of foreign institutional investments of company \( j \) for year \( t \)
- \( BS \) = Board size of company \( j \) for year \( t \)
- \( BIND \) = Board independence of company \( j \) for year \( t \)
- \( ACS \) = Audit committee size of company \( j \) for year \( t \)
- \( AIND \) = Audit committee independence of company \( j \) for year \( t \)
- \( CEOD \) = CEO duality of company \( j \) for year \( t \)
- \( PSH \) = Proportion of share holding held by promoters

In order to analyze the impact of firm performance and corporate governance variables on FII in India, all respective variables have been taken together in a regression model. Following regression models have been applied:

Table 3.8: Regression Models for Assessing the Impact of both CG and Firm Performance on FII

<table>
<thead>
<tr>
<th>GLS RE Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 10</strong></td>
</tr>
<tr>
<td>[ FII_{jt} = \Delta_0 + \Delta_1 \text{BIND}<em>{jt} + \Delta_2 \text{BS}</em>{jt} + \Delta_3 \text{CEOD}<em>{jt} + \Delta_4 \text{ACS}</em>{jt} + \Delta_5 \text{AIND}<em>{jt} + \Delta_6 \text{PSH}</em>{jt} + \Delta_7 \text{SIZE}<em>{jt} + \Delta_8 \text{BM}</em>{jt} + \Delta_9 \text{TURN}<em>{jt} + \Delta</em>{10} \text{DY}<em>{jt} + \Delta</em>{11} \text{ROE}<em>{jt} + \Delta</em>{12} \text{LEV}<em>{jt} + \Delta</em>{13} \text{CASH}<em>{jt} + \Delta</em>{14} \text{EXP}<em>{jt} + \Delta</em>{15} D_t + e_{jt} ]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RE Tobit Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 11</strong></td>
</tr>
<tr>
<td>[ FII_{jt} = \phi_0 + \phi_1 \text{BIND}<em>{jt} + \phi_2 \text{BS}</em>{jt} + \phi_3 \text{CEOD}<em>{jt} + \phi_4 \text{ACS}</em>{jt} + \phi_5 \text{AIND}<em>{jt} + \phi_6 \text{PSH}</em>{jt} + \phi_7 \text{SIZE}<em>{jt} + \phi_8 \text{BM}</em>{jt} + \phi_9 \text{TURN}<em>{jt} + \phi</em>{10} \text{DY}<em>{jt} + \phi</em>{11} \text{ROE}<em>{jt} + \phi</em>{12} \text{LEV}<em>{jt} + \phi</em>{13} \text{CASH}<em>{jt} + \phi</em>{14} \text{EXP}<em>{jt} + \phi</em>{15} D_t + e_{jt} ]</td>
</tr>
</tbody>
</table>
Table 3.9 provides an overview of the objective-wise methodologies being used in present study for analyzing the trend and pattern of FII, impact of macro-economic, firm performance and corporate governance variables on FII in India.

### Table 3.9: An Overview of the Methodologies used for the study

<table>
<thead>
<tr>
<th>Objectives of the Study</th>
<th>Methodology</th>
<th>Operational Variables</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>To analyze the trend and pattern of FII in India during the period of study</td>
<td>Least square method of time-series,</td>
<td>FII (total), Equity and Debt, AUC</td>
<td>Chakrabarti, 2001; Saravanakrishnan, 2012;</td>
</tr>
<tr>
<td></td>
<td>pie-charts, graphs, percentage and</td>
<td></td>
<td>Sharma, 2014</td>
</tr>
<tr>
<td></td>
<td>tables</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ADF unit root test, and ARDL technique</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To empirically examine the relationship and impact of macro-economic variables on FII</td>
<td>ADF unit root test, and ARDL technique</td>
<td>FII, Index of industrial production, Indian stock market return, market capitalisation,</td>
<td>Kaur &amp; Dhillon, 2010, Bhasin &amp; Khandelwal, 2014;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>stock market turnover, foreign reserves, PPI representing inflation of US, exchange</td>
<td>Mohanasundaram, et al., 2015; Dhingra et al., 2016</td>
</tr>
<tr>
<td></td>
<td></td>
<td>rate, WPI, S&amp;P 500, and US T-bill</td>
<td></td>
</tr>
<tr>
<td>To determine the relationship and impact of firm performance characteristics on FII</td>
<td>Generalized Least Square (GLS)</td>
<td>FII, firm size, BM, turnover, dividend yield, ROE, leverage, cash, and export rate</td>
<td>Dahlquist &amp; Robertsson, 2001; Patnaik &amp; Shah,</td>
</tr>
<tr>
<td></td>
<td>Random Effect Model and RE Tobit</td>
<td></td>
<td>2008; Lakshmi, 2010</td>
</tr>
<tr>
<td></td>
<td>Model</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To examine the impact of corporate governance on FII</td>
<td>Generalized Least Square (GLS)</td>
<td>FII, Board independence, board size, chairman/CEO duality, audit committee size, its</td>
<td>Patnaik &amp; Shah, 2008; Lakshmi, 2010; Abdioglu</td>
</tr>
<tr>
<td></td>
<td>Random Effect Model and RE Tobit</td>
<td>independence, and promoters’ shareholdings</td>
<td>et al., 2011</td>
</tr>
</tbody>
</table>
3.9 SUMMARY

This chapter explains the research methods which have been applied to test the hypotheses. In order to conduct the trend analysis of FII, present study has applied least square method and used pie charts, graphs and tables for presenting the results in a concise and a simpler way. The analysis techniques of the impact of macro-economic variables on FII in India include descriptive statistics, correlations analysis, ADF unit root test, and ARDL model. The impact of firm performance and corporate governance on FII in India has been assessed by applying the Generalized Least Square (Random Effect) Model and RE Tobit Model for checking the robustness of results. Present chapter has also described in detail the need and objectives of the study. Further, hypotheses of the study, sources of data, criteria of population and sample selection, variables description including their symbol, definition and source, are also discussed in the chapter. The methods and techniques for analyzing the data have been explained in the framework of analysis.
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