Foreign Institutional Investors: Trends and Investment Preferences in India

A Thesis

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by

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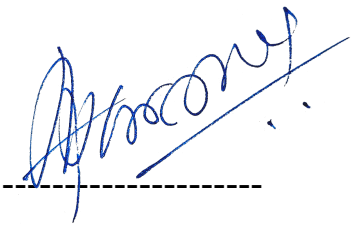
Certificate

This is to certify that this dissertation entitled Foreign Institutional Investors: Trends and Investment Preferences in India towards the partial fulfillment of the BS-MS dual degree program at the Indian Institute of Science Education and Research, Pune represents the study/work carried out by Udhay Vershwal Indian Institute of Science Education and Research under the supervision of Anil K. Sharma Professor, Department of Management Studies, IIT Roorkee during the academic year 2022-2023.



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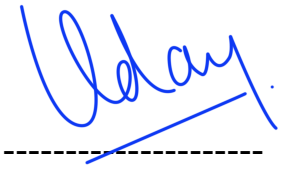
This thesis is dedicated to my family, teachers, and friends for their endless love, support, and sacrifices.

Declaration

I hereby declare that the matter embodied in the report entitled Foreign Institutional Investors: Trends and Investment Preferences in India are the results of the work carried out by me at the Department of Management Studies, IIT Roorkee, Indian Institute of Science Education and Research, Pune, under the supervision of Anil K. Sharma and the same has not been submitted elsewhere for any other degree.



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Abstract

Indian capital markets are heavily influenced by foreign institutional investments(FII). Foreign institutional investors are drawn to investing in developing economies like India because of its substantially stronger growth than developed economies. Additionally, foreign investment is crucial for developing nations like India. The Indian equity market has recently seen the emergence of foreign institutional investors as significant players. In this study, FIIs data from the past 4 years(2018-2022) is analyzed to understand the dynamics of trading behaviors of FIIs and how the investment preferences of FIIs change over time. In this research, we also intend to examine the sector-wise trends and patterns of foreign institutional investments in India. We have employed Pearson's correlation analysis to examine the relationship between different sectors in the Indian market by using foreign institutional investors' fortnightly sector-wise FIIs investment data. Further, quarterly data is analyzed to find the change in the net investment of different sectors and the moving average is used to get a deeper understanding of the trends. The research also examines how FII has impacted certain companies that are part of the National Stock Exchange's sensitivity index(NIFTY) and the connection between foreign institutional investment and company-specific attributes such ownership structure, financial performance, and stock performance. It is observed that FII investments are inversely related to Promoter's holding, DII, government holdings, and the general public. The P/E Ratio, P/B Ratio, and earnings per share are some factors influencing their investment decision among the financial performance variables.

Keywords: Foreign Institutional Investors, Capital Market, National Securities Depository Limited, Earning per share, National Stock Exchange, Price to Earnings Ratio.

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Chapter 1. Introduction

According to IBEF, “A foreign institutional investor (FII) is an investor or investment fund investing in a country outside of the one in which it is registered or headquartered. The term foreign institutional investor is most commonly used in India, referring to outside entities investing in the nation's financial markets”[1]. Since investment markets in India are regulated by the Securities and Exchange Board of India (SEBI), it states that, “Some of the countries with the highest volume of foreign institutional investments are those with developing economies, which generally provide investors with higher growth potential than mature economies. This is one reason FIIs are commonly found in India, which has a high-growth economy and attractive individual corporations to invest in. All FIIs in India must register with the SEBI to participate in the market”[2]. For example, imagine a US mutual fund considers an India-listed firm as a high-growth investment prospect. In such a scenario, it may take a long position by buying shares on the Indian stock exchange. Private American investors who might not be able to purchase Indian stocks directly also gain from this kind of arrangement. They might instead invest in the mutual fund and benefit from its great growth potential.

SEBI is considered the watchdog of the Indian securities market. SEBI is the counterpart of the Securities and Exchange Commission(SEC) in the United States. The main aim of SEBI is to protect the interests of Indian investors, regulate the capital markets, and promote the development of the same.[3] Capital markets provide a platform to channelize savings from those that have a surplus to those in need. Major suppliers who can lend money include players like investors and commercial banks, whereas companies, governments, and individuals often seek money for different purposes. The capital market comprises of primary and secondary markets. Equity and bond markets are two most popular markets in the capital market. Capital markets, through connecting investors to capital seekers, not only provide a channelizing platform but also increase transactional efficiencies. Therefore, foreign institutional investors being one of the major participants in India's capital markets play an important role of providing capital to the sectors that need capital for increased growth and productivity. In this study, we aim to analyze the dynamics and trends in foreign institutional investment in India over the past four years, 2018 to 2022 in different contexts.

India had received FII investments totaling Rs. 8,474 crores ($1,089 million) as of June 2022. The Directorate for Promotion of Industry and Internal Trade (DPIIT) estimates that from April 2000 and June 2022, “FDI equity inflow to India totaled US$ 604.99 billion. India's FII

investments have mostly stayed profitable since they began in 1992. FIIs participated in primary markets at levels not seen in the previous ten years, totaling Rs. 80,309 ($10.15 billion) in 2021 and Rs. 6,371 crores ($million) in 2022. (Until July 2022). Moreover, India's market cap increased by a record amount in FY2021–22, rising to Rs. 264.06 trillion (US$ 3.42 trillion) from Rs. 204.31 trillion (US$ 2.76 trillion) in FY2020–21. India had the best-performing equity market in 2021 despite Covid-19. The Indian rupee also outperformed other important world currencies like the British pound, Japanese yen, and euro."[6]

According to MoneyControl, In recent financial years, FII's net investments in Indian debt and equities reached historic highs. This offers great potential for research to understand the preference and trading behaviors of foreign institutional investors. Although there is a lot of literature available in this area, earlier studies have mainly focused on the impact of FIIs on the Indian stock market and the trends of investments by these FIIs.

In recent years, the Indian capital market is one of the developing marketplaces in the international markets. Many studies have stated that A significant portion of the expansion of the Indian market has been attributed to foreign institutional investors.(Shanmukha Rao Munji(2014), Impact of FIIs Trading Behavior On Indian Equity Market). India is home to the second-highest number of listed companies, behind the United States. India is currently the top investment destination for foreign investors. Due to this large number of foreign investors in the Indian equity market, many researchers have studied the trading habits of FIIs and their effects on the Indian market(Gupta, Akriti & Kaur, Gurpreet & Sarva, Mahesh. (2020). Foreign Institutional Investments in India: A Trend Analysis. 67. 947). Among all the studies done on the impact of Foreign Institutional Investments in the Indian market, this is a common observation that FIIs have supported the growth of the Indian stock market as well as they have sustained and grown in the market over years. In September 1992, India welcomed foreign institutional investors as part of its effort to liberalize its financial markets. This incident is significant because it successfully globalized the country's financial services sector. In the Indian equity market, foreign institutional investors (FIIs) have grown to be important players.("Mishra, P., & Zaveri, F. (2017). A project report on analysis of FIIs investment in Indian market"). Due to the high significance of FIIs in the market, many researchers have focused on the trends and patterns of FIIs investments. A research examining the trend and pattern of FIIs in India from 2000-01 to 2017-18 observed that the Indian stock market has seen an increase in foreign institutional involvement during that period. Foreign investment into the Indian economy has been primarily fueled by the robust fundamentals of the Indian economy and positive investor confidence worldwide. Although

there is a lot of literature available in this area, earlier studies have mainly focused on the impacts of FIIs on the Indian stock market and the trends of investments by these FIIs and a few researchers have worked on finding the kind of organizations the FIIs put their money in. It is observed that organizations that have more general public shares claimed to obtain greater investment.(Dave K. "A Study on FII's Investment in Equity Market and its Impact on BSE SENSEX". IjrarCom. 2016;3(4):20-24) from foreign institutional investors

1.1 Rationale And Scope Of Study

In order to understand the dynamics of FIIs' trading activity and how their investment choices change over time, this research will evaluate data from the past four years. In this study, We intend to look at the pattern and trend of foreign institutional investments in India from 2018 to 2022. Due to the robust domestic fundamentals of the nation and the belief in their capacity for growth, FIIs have largely maintained a bullish outlook since their first arrival in India. This is largely because India's capital markets are still emerging. This information offers great potential for research to understand the preference of FIIs and how they are able to sustain and grow in the Indian market. This analysis of the preference of FIIs can be used by retail investors to sustain and grow in the capital market. The objective of the study is to observe the relationship between foreign institutional investment(FII), domestic institutional investors(DII), government shareholding, and promoter's shareholding pattern. The study also noticed that stock performance can have a strong influence on FII investments. This research seeks to look into the specific characteristics of the companies included in the Nifty index of the National Stock Exchange(NSE) and their impact on attracting more foreign institutional investment. This project also includes the analysis of the fortnightly and quarterly sector-wise FIIs investment data from the period 2018 to 2022 for analyzing the trends of FIIs and to observer the correlation between sectors of the Indian market. As best as we can tell, this is the first study to analyze the fortnightly sector-wise FIIs investment data from the period 2018 to 2022 for analyzing the trends of FIIs. This study will help us to understand the investment preferences of FIIs and retail investors can also use the findings of this study to observe these trends and invest accordingly to grow in the capital market. Since the study mainly focuses on the Indian capital market, the scope of the study is limited to Indian data. Additionally, data for only past four years has been considered for this preliminary research in order to get initial insights into the FII investments in India. Another reason for considering only four years of data is that only after 2018, a comprehensive classification of industry sectors is available which enables a more detailed analysis.

Chapter 2. Description of Model and Variables

This study has examined the ownership structure, financial performance, and stock performance of a firm, and how they relate to foreign institutional investment.

2.1 Shareholding/Ownership Structure

Shareholder structure in India refers to the many types of investors who own shares in a company. The Companies Act of 2013 and the rules of the Indian Securities and Exchange Board (SEBI) primarily govern the shareholder structure in India. Promoters and public shareholders are the two categories of shareholders that are permitted in India. Here are some typical categories of investors and their stake in the company:

2.1.1 Promoter: An individual or legal entity that establishes a company and holds a significant interest in the company's shares. You hold a majority stake in the company and play an active role in management. In India, the Securities and Exchange Board of India (SEBI) defines a promoter as anyone who directly or indirectly controls an asset.

2.1.2 Foreign investors: Foreign investors are individuals or entities that invest in the company's shares from outside India. They are subject to regulations and restrictions imposed by the Reserve Bank of India (RBI) and the Securities and Exchange Board of India (SEBI).

2.1.3 Domestic institutional investors (DIIs): DIIs are domestic entities such as mutual funds, insurance companies, and banks that invest in Indian stocks. They are regulated by SEBI and are not subject to any investment limits.

2.1.4 Public Shareholders: Public shareholders are individuals or institutions who buy shares in the company through stock exchanges. They can be retail or institutional investors, and their ownership is proportionate to the number of shares they hold in the company. Public shareholders generally have less control over the company's affairs than promoters.

2.1.5 Government ownership: In some cases, the government may also own a significant portion of the company's stock. This is especially true for public sector companies where the state is the main shareholder. Treasury actions can have a significant impact on how a business is run and operated. Government, through its ownership, has significant influence over the operations and decision-making of public sector companies. For private sector companies, government involvement is generally limited to regulatory oversight.

Ownership structure can have a significant impact on the decision-making process and overall performance of a company. The percentage of stock each type of investor owns determines ownership and control of the company.

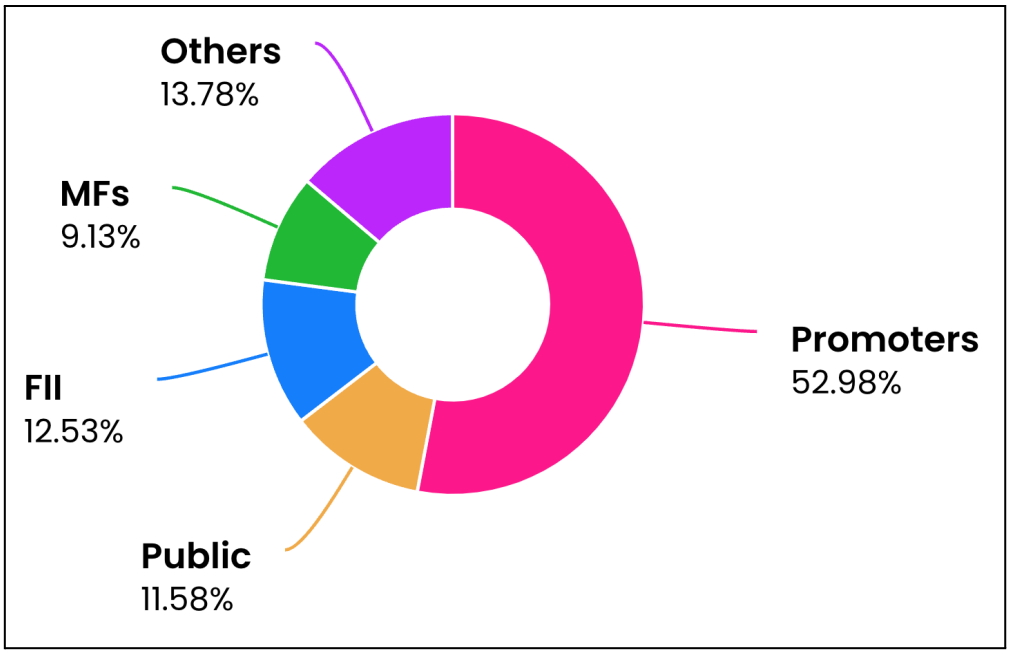


Figure 1: Shareholding Pattern/Ownership Structure of BPCL in Dec'22. Source- Univest

2.2 Returns

Returns are the profit or loss made on an investment over a specific time period. The stock market's success reflects what investors think about the company. Market prices represent both the current performance and the expectations of investors for future performance. Many variables including market circumstances, corporate financial performance, economic and geopolitical developments, and investor attitude can affect share return. Share return is an important measure for investors as it helps them to evaluate the profitability of their investments. Generally, a higher share return denotes a more profitable investment, while a lower or negative share return denotes a loss. The value change of a stock or investment as a percentage over a three-month period is referred to as quarterly stock performance. Investors use this indicator to assess the success of particular companies or investments over the duration of the quarter. Using quarterly stock returns, investors frequently monitor a company's stock performance over time and analyze it against other stocks in the same market or industry. Yet, since quarterly stock returns only represent a snapshot of stock prices over a three-month period, they shouldn't be seen as the main indicator of a company's long-term prospects. This study collects quarterly return information for sixteen quarters(2018-2022) for each of Nifty's forty-seven(Nifty 50) companies.

"Indian equities were the second-best performers in 2022, followed by Brazil. Domestic benchmarks Nifty 50 and Sensex gained 4.3% and 4.4%, respectively, last year. In contrast, the major indices of the US, Europe, China, Hong Kong, Taiwan, South Korea, and Russia lost between 9% and 39% over this period."[5]

Figure 2: Returns of indices across the world in 2022. Source- Economic Times

2.3 Earnings Per Share(EPS)

Investors will judge the company's performance, and one of the important and commonly used financial performance indicators is earnings per share. EPS calculates the earnings per outstanding common share of a corporation. It is determined by dividing the company's net income by the quantity of outstanding common shares. Investors worry about earnings per share because it reflects the company's earnings per share. It can also help investors determine the value of a company's shares and compare companies in the same or similar industries. This study collects Standalone EPS information for sixteen quarters(2018-2022) for each of Nifty's forty-seven(Nifty 50, data is not available for three firms for the specified time period) companies. Figure 3 shows the EPS across the world in June'22. We can also look at India's EPS.

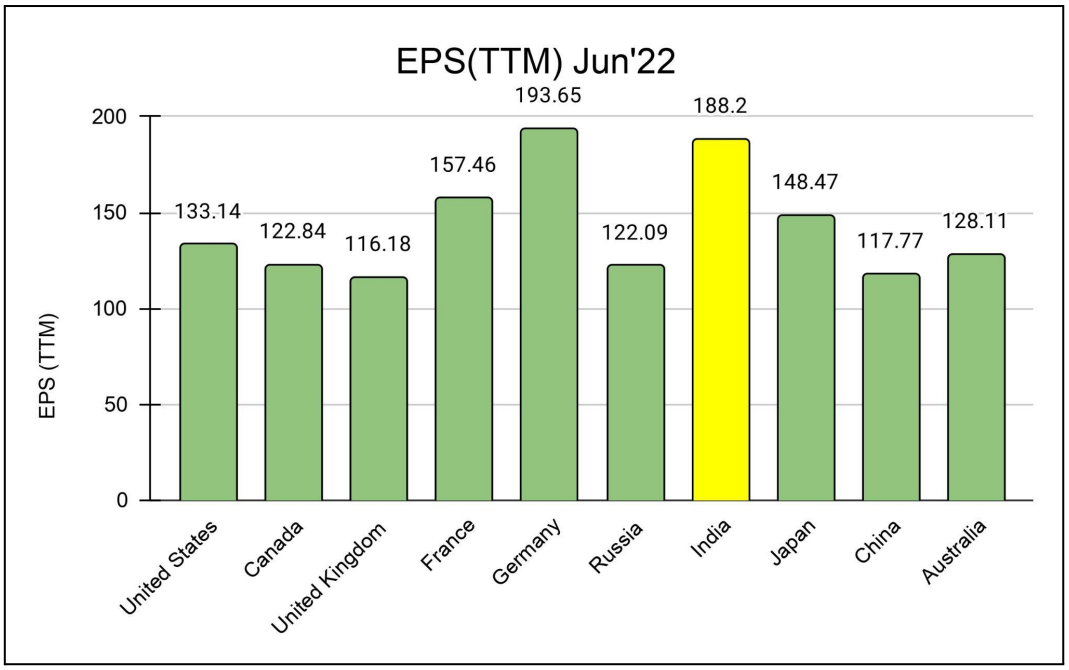


Figure 3: EPS across the world in June'22. Source- Siblis Research

2.4 Price Earnings Ratio(P/E)

The price-earnings ratio indicates the growth in the market price relative to the company's profits, Link your earnings to the market price. P/E is calculated by dividing a company's current stock price by its EPS over a specified period of time, usually the last 12 months(TTM). P/E can vary widely by company, industry, and sector. P/E ratios are frequently used by investors to assess how much a company is worth in relation to other businesses in the same sector. This study collects TTM(Trailing Twelve Months) P/E ratio.

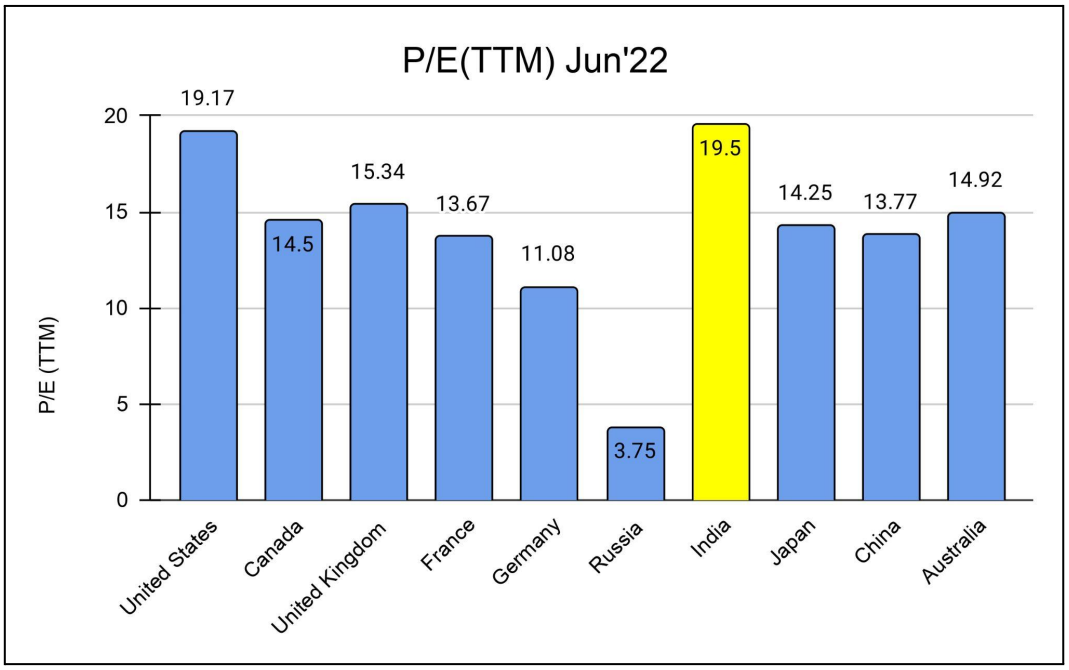


Figure 4: P/E across the world in June'22. Source- Siblis Research

2.5 Price-to-Book Ratio(P/B)

The price-to-book (P/B) ratio is a financial indicator that compares a company's market value to its book value. A company's book value is calculated by deducting its liabilities from its assets on its balance sheet. Investors often use P/B ratio to identify potentially undervalued stocks and compare the value of one company to another within the same industry or sector. The capital invested by shareholders is roughly measured by the book value of the stock.

2.6 Dividend Yield

A financial metric, known as dividend yield calculates the annual rate of dividends paid to shareholders as a percentage of the company's stock price. It shows the return on investment that a shareholder can earn from owning specific stocks based on the dividend income that the company receives. The yield was calculated to measure shareholder returns. It measures the entire return to shareholders by taking into account dividends and share price growth. Figure 5 shows the dividend yield across the world in June'22. We can also check India's dividend yield.

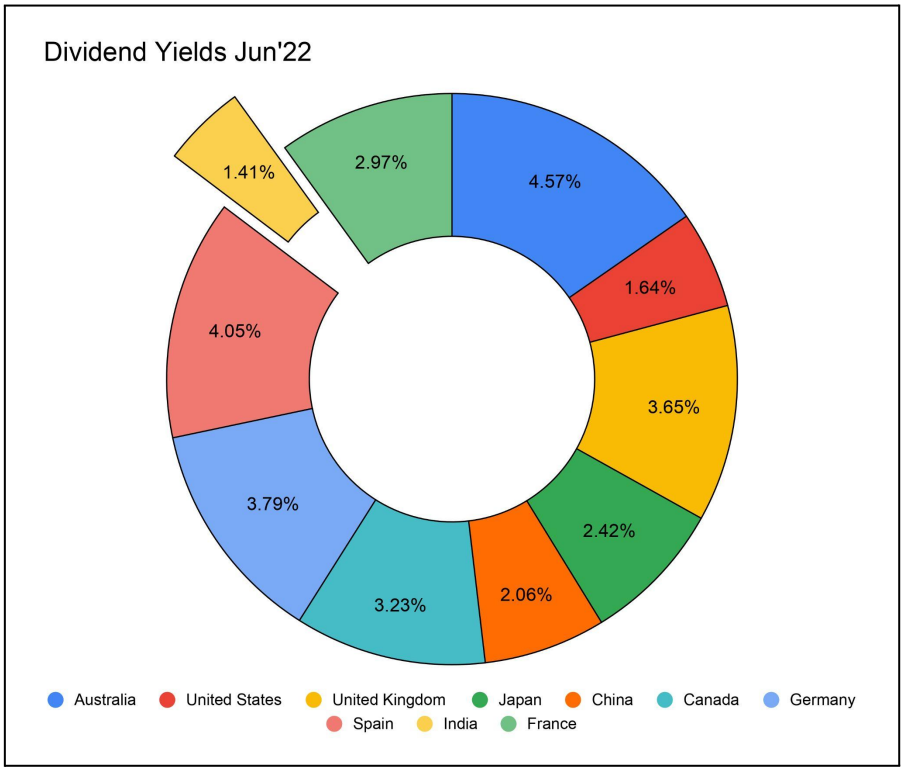


Figure 5: Dividend Yield across the world in June'22. Source- Siblis Research

Note: These parameters are all calculated on a quarterly basis. Metrics that depend on daily price movements, such as PE ratio, PB ratio, and dividend yield, The price on the last Thursday of the last month of the quarter is taken into account.

Chapter 3. Methodology

3.1 Data Acquisition

Fortnightly Sector-wise FII Investment data	
NSDL	**https://www.fpi.nsdl.co.in/web/Reports/FPI_Fortnightly_Selection.aspx**
Compiled Data	**https://docs.google.com/spreadsheets/d/1WWt64UAxd94HoHF6VT0CNyOYjqZVpGfXorbFyWaGCME/edit#gid=1510721349**
Firms Holding(%)	
Promoters Holdings(%), FII Holdings(%), DII Holdings(%), Government Holding(%) and Public(%)	**https://www.bseindia.com/**
Compiled Data	**https://docs.google.com/spreadsheets/d/1WWt64UAxd94HoHF6VT0CNyOYjqZVpGfXorbFyWaGCME/edit#gid=691235829**
Quarterly Share Return(ROR%)	
Share Return	**https://in.tradingview.com/**
Earning Per Share	
EPS	**https://www.bseindia.com/**
Characteristics of the firms	
P/E Ratio, P/B Ratio, Dividend Yield	**https://trendlyne.com/**

Table 1: Simplified data and the sources of the data.

The data for the purpose of this study is extracted from the official website of NSDL. The dataset is tested for different frequencies, i.e. fortnightly and quarterly for a four-year period (2018 – 2022). This would help us in understanding the changing dynamics in the data due to changing frequencies. The dataset has been sourced from the NSDL website (shrtco.de/Data Source). NSDL is "one of the largest depositories in the world, established in august 1996 has established a state-of-the-art infrastructure that handles most of the securities held and settled in dematerialized form in the Indian capital market."[4]

AUC and Net Investment: The depositories (NSDL and CDSL) provide daily FPI net investment statistics and FPI Assets Under Custody (AUC) data for the equities and debt markets. In a circular, SEBI said, "in order to capture FPI investment data in hybrid securities, a third category termed as 'Hybrid Security' shall be created for the purpose of capturing and disseminating FPI investment data in hybrid securities." To implement the requisite procedures for the daily reporting by the FPI custodians and the dissemination on their websites of the AUC of the FIIs in debt, equity, and hybrid securities, SEBI asked for depositories (NSDL and CDSL).

The sectors that has been considered for the purpose of this study include:

"Automobiles and Auto Components, Total Financial Services Banks, Other Financial Services, Chemicals and Petrochemicals, Coal, Commercial Services and Supplies, Construction Materials, Consumer Durables, Diversified, Healthcare Equipment and Supplies, Healthcare Services, Hotels, Restaurants and Tourism, Household and Personal Products, Insurance, Media, Metals and Mining, Oil and Gas, Pharmaceuticals and Biotechnology, Real Estate Investment, Realty, Retailing, Software and Services, Telecom Services, Telecommunications Equipment, Diversified Consumer Services, Food and Drugs Retailing, Food, Beverages and Tobacco, Forest Materials, General Industrials, Hardware Technology and Equipment, Textiles, Apparels and Accessories, Transportation, Airlines, Logistics, Marine Port and Services, Roads and Highways, Shipping, Capital Goods, Surface Transportation, Transport Related Services, Airport Services, Utilities, Sovereign, Others."

Data Simplification: For this study and data analysis, we have only used the amount of net investments denominated in INR.

NSE and BSE are the two main stock exchanges in India where investors can trade and invest. On the NSE, there are 20 sectors whereas BSE has 35 sectors. The index is scientifically established based on globally recognized construction and evaluation techniques. It is widely published and acknowledged in both the Indian and global markets. The National Stock Exchange (NSE) was established in 1992 and is based in Mumbai. It is the largest exchange in India by market capitalization and trading volume. This study collects ownership structure and Standalone EPS for sixteen quarters(2018-2022) for each of Nifty's forty-seven(Nifty 50, information was not available for three firms for the specified time period) companies from BSE India on a quarterly basis.

The quarterly share return is directly collected from the trading view platform. TradingView is used worldwide by traders and investors from different countries and regions. The data on

TradingView comes from multiple sources, including exchanges and data providers. The platform aims to provide reliable and accurate data.

P/E Ratio, P/B Ratio, and Dividend Yield are collected from the trendlyne platform. Trendlyne is an Indian financial technology platform that provides tools and information for investors and traders to make informed investment decisions. One of the main features of Trendlyne is its stock screener tool, which allows users to filter stocks based on various criteria such as market capitalization, price-to-earnings ratio, dividend yield, and other financial metrics. Trendlyne gathers data from various sources, including stock exchanges, regulatory filings, and third-party providers. Trendlyne platform makes effort to ensure that the data is accurate and up-to-date. These metrics are dependent on daily price changes, therefore quarterly P/E, P/B, and yield are not available. The price on the last Thursday of the last month of the quarter is taken into account and data is recorded for such variables.

3.2 Research methodology

To examine the sample data, we have used various statistical tools including time series analysis, correlation analysis, and moving averages. We have used the regression technique to establish the relationship between dependent and independent variables so that we can learn about FII's investing preferences.

3.2.1 Time series analysis is a technique for analyzing a series of data points collected over a specific time interval. In time series analysis, the data points are not just recorded intermittently or randomly but the data is recorded at consistent intervals over a pre-defined time period. We have sector-wise investment data, so in order to analyze the trend in the investment, we need to compute changes in the investment from the previous time period under consideration. So we applied the function $F(x)$, *where* $F(x) = y - x$ and then plotted it for each sector (both on fortnight and quarterly basis). Additionally, we used the moving average of the 9th length to observe the trend and the direction of the investments. “Simple moving average (SMA) is an arithmetic moving average calculated by adding recent prices and then dividing that figure by the number of time periods in the calculation average.” Another important tool used is correlation analysis. Correlation is used to illustrate the link between two variables. As we previously stated, a function's goal is to anticipate a value by transforming the input *x into the outpot (f(x))*. We can also state that a function makes predictions based on the correlation between two variables.

3.2.2 In correlation analysis, the relationship between two variables is measured by a value which is called the correlation coefficient. We have employed Pearson’s correlation analysis

to examine the relationship between different sectors in the Indian market by using foreign institutional investors' fortnightly sector-wise FIIs investment data.

The correlation coefficient value will always lie between -1 and 1.

- 1 denotes a perfect positive linear relationship between the two variables.
- 0 denotes that there is no linear relationship between the two variables.
- -1 denotes a perfect negative linear relationship between the two variables.

We have used Pearson's correlation. *"Pearson's correlation coefficient is the covariance of the two variables divided by the product of their standard deviations."* It is computed as:

$$\varrho_{X,Y} = cov(X,Y) / \sigma_X \sigma_Y$$

where,

$cov(X, Y)$ = covariance between X and Y.

σ_X = standard deviation of X.

σ_Y = standard deviation of Y.

We have used Python programming language to arrive at the empirical results and many relevant Python libraries such as Pandas, Numpy, Matplotlib, and Seaborn.

3.2.3 Regression

We use the regression technique to establish the relationship between a dependent variable and independent variables, one or more independent variables are possible. Understanding the factors that affect foreign investor's portfolio decisions is important since it is acknowledged that foreign investment is a significant source of finance. According to the study's analysis, foreign investors might not favour companies or investment preferences are inversely related to promoter's holding, DII, government holdings, and the general public. To determine whether this finding is accurate with regard to NIFTY 50 companies, The shareholders were divided into five groups promoters, FII, DII, government, and general public. To regulate the size of the company, the separate group's shareholdings are taken as percentages. Correlation and regression coefficients are used to observe the relationship.

The performance of a firm will have a significant impact on every investor's investment decision. Earnings per share, price-to-earnings ratio, price-to-book ratio, and quarterly

dividend yield are the variables. These variables are noted for every quarter for four years that is 2018 to 2022. The information is collected for sixteen quarters for each of the forty-seven NIFTY companies. There are two different information that can be extracted from this data: cross-sectional information between the different companies and time-series information, that is, within the company over time. The association between this two-way information is examined using the panel data regression technique.

The dependant variable is the percentage of shares held by foreign investors in the sample unit. Company is a unit variable, and a time variable is a quarter. The analysis is broken down into three sections that measure the effects of time series, cross-sections, and random effects.

3.2.3.1 Time series Regression (Fixed-effects regression)

This model analyzes data collected over time and can be used to predict future values of the dependent variable. It is a statistical technique for analyzing and predicting time-varying data. This approach uses one or more time-dependent variables to indicate the importance of the dependent variable at future times. "*Time series regression in panel data estimates the (xtreg, fe) coefficients of Beta and Alpha assuming that the units (ui) are fixed quantities."*

Equation:

The equation for the time series regression model is as follows:

"y(t) = β0 + β1x1(t) + β2x2(t) + ... + βkxk(t) + ε(t)

where y(t) is the dependent variable at time t, x1(t), x2(t), ..., xk(t) are the independent variables at time t, β0, β1, β2, ..., βk are the coefficients to be estimated, and ε(t) is the error term at time t."[7]

To perform time series regression in Stata, you can use the "xtreg" command. An example of the Stata command for a time series regression with one dependent variable (y) and two independent variables (x1 and x2):

xtreg y x1 x2, fe

In this example, "fe" stands for fixed effects, which is a common method for controlling for time-invariant unobserved heterogeneity in panel data.

3.2.3.2 Cross-Sectional Regression (Between effects regression)

Cross-sectional regression is a statistical technique used to analyze the relationship between one or more independent and dependent variables using data collected at one time point.

Cross-sectional regression collects data from a sample of individuals, firms, or other units of analysis at a point in time. Statistical methods are then used to estimate the relationship between the independent and dependent variables. The resulting model provides insights into the factors that influence the outcome of interest.

In cross sectional analysis (xtreg, be) the means are calculated for each of the units and the model estimates Beta values.

Equation:

$$y\_i = \beta 0 + \beta 1 x1\_i + \beta 2 x2\_i + \ldots + \beta k xk\_i + u\_i$$

where y_i is the dependent variable for individual i, x1_i, x2_i, ..., xk_i are the independent variables for individual i, β0, β1, β2, ..., βk are the coefficients to be estimated, and u_i is the between-effects error term for individual i.[8]

Stata command for a cross-sectional regression with between effects using the "xtreg" command:

xtreg y x1 x2 i.id, be

In this "y" is the dependent variable, "x1" and "x2" are the independent variables, "i.id" is the variable identifying the cross-sectional units (i.e., the individual or entity being observed at a single point in time), and "be" stands for between effects. This command estimates the between effects for the cross-sectional regression model.

3.2.3.3 Panel Data Regression (Random-effects GLS regression)

Random-effects regression is a type of panel data regression that allows for unobserved individual-specific or entity-specific heterogeneity that is constant over time. In this model, the coefficients for the independent variables are allowed to vary randomly across individuals or entities, while the intercept is assumed to be fixed.

Equation:

$$y\_it = \beta 0 + \beta 1 x1\_it + \beta 2 x2\_it + \ldots + \beta k xk\_it + a\_i + u\_it$$

where y_it is the dependent variable for individual i at time t, x1_it, x2_it, ..., xk_it are the independent variables for individual i at time t, β0, β1, β2, ..., βk are the coefficients to be estimated, a_i is the individual-specific random effect, and u_it is the error term.[9]

Stata provides the "xtreg" command to estimate random-effects panel data regression. An example of the Stata command for estimating random-effects panel data regression:

xtreg y x1 x2, re i(id)

In this example, "y" is the dependent variable, "x1" and "x2" are the independent variables, "re" stands for random effects, and "i(id)" specifies the variable that identifies the individual or entity.

Chapter 4. Empirical Results and Discussion

4.1 Results of time series analysis of sector-wise fortnightly FII data

This section presents the empirical results of the analysis conducted using the above-mentioned dataset. For fortnightly analysis, we have collected all the total net investment data of each sector from the financial year 2018 to 2022 and plotted it on the graphs as per the time series analysis methods mentioned in Section 3.2.1. From fortnightly data, we got 96 points on the graph and 46 plots, it is very hard to find any pattern or trend from these plots, so we have used the same method but instead of using fortnightly data we have used the quarterly data i.e. by adding 6 columns of the fortnight data. Another thing is that the financial year in India begins from April 1 and ends on March 31. Corresponding quarters are Q1, Q2, Q3, and Q4 i.e. "Q4`= Jan, Feb, and Mar, Q1= Apr, May, and June, Q2= Jul, Aug, and Sep, Q3= Oct, Nov, and Dec."

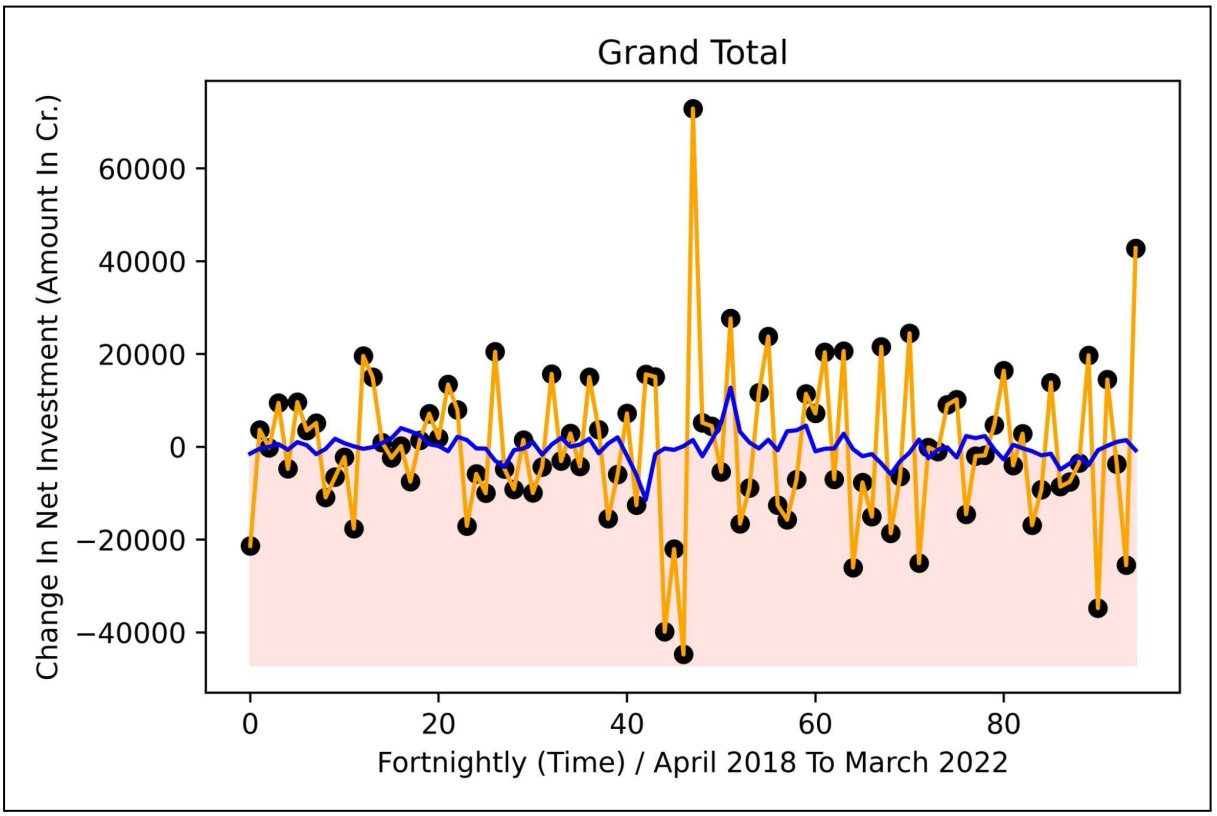
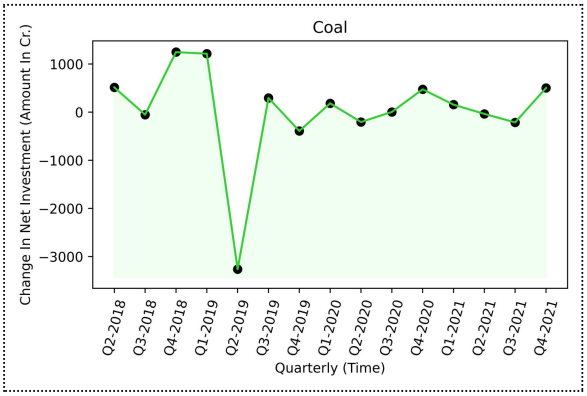


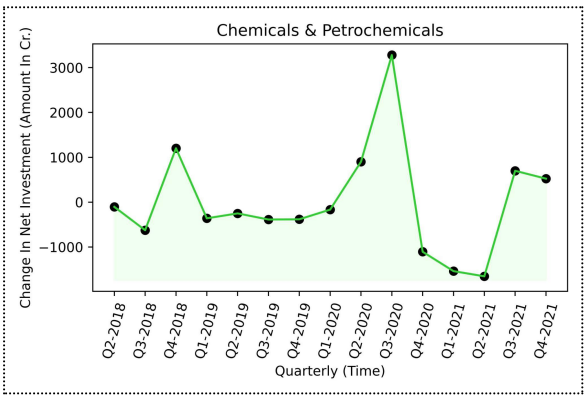
Figure 6: Plot depicting grand total of the fortnight data

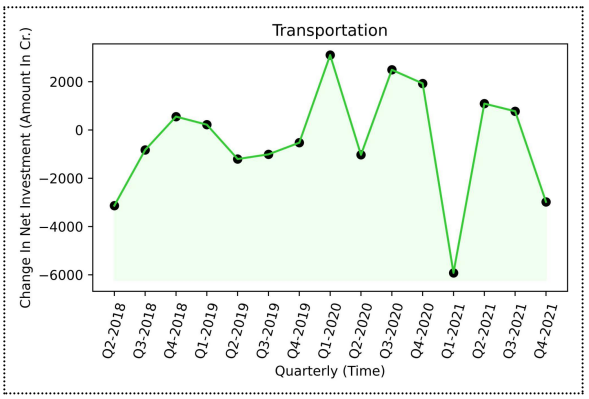
Notes: Blue line indicated the moving average of the 9th length. The remaining graphs and code can be made available upon request.

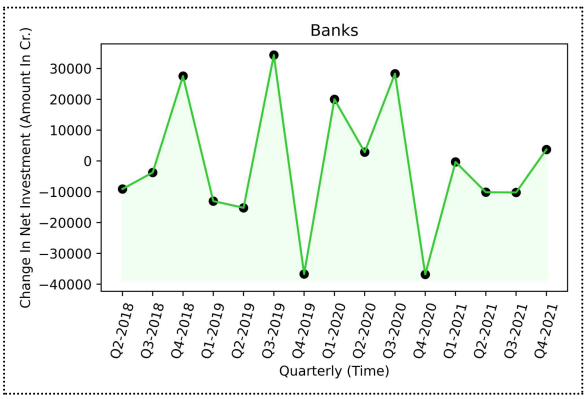
For quarterly analysis, we have added 6 columns and by adding 6 columns of the fortnight data i.e. 15 days of data we got 1 reading to analyze it quarterly, resulting in 46 plots (sector-wise) and 16 points on the graph.

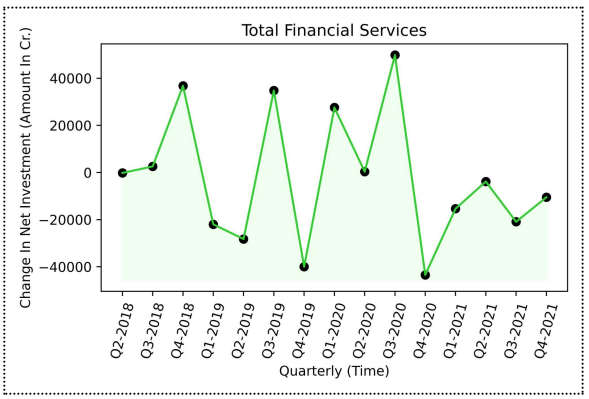
4.1.1 Plots of the major sectors like Automobiles & Auto Components, Chemicals & Petrochemicals, Coal, Healthcare Services, Hotels, Restaurants & Tourism, Total Financial Services, Others, Banks, Transportation, and The Grand total of all the sectors are given below (Figure 7).

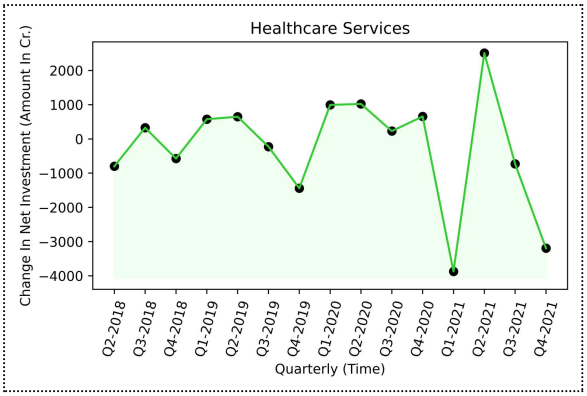


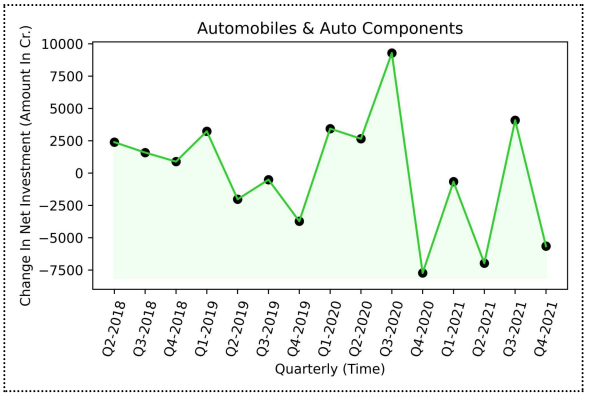












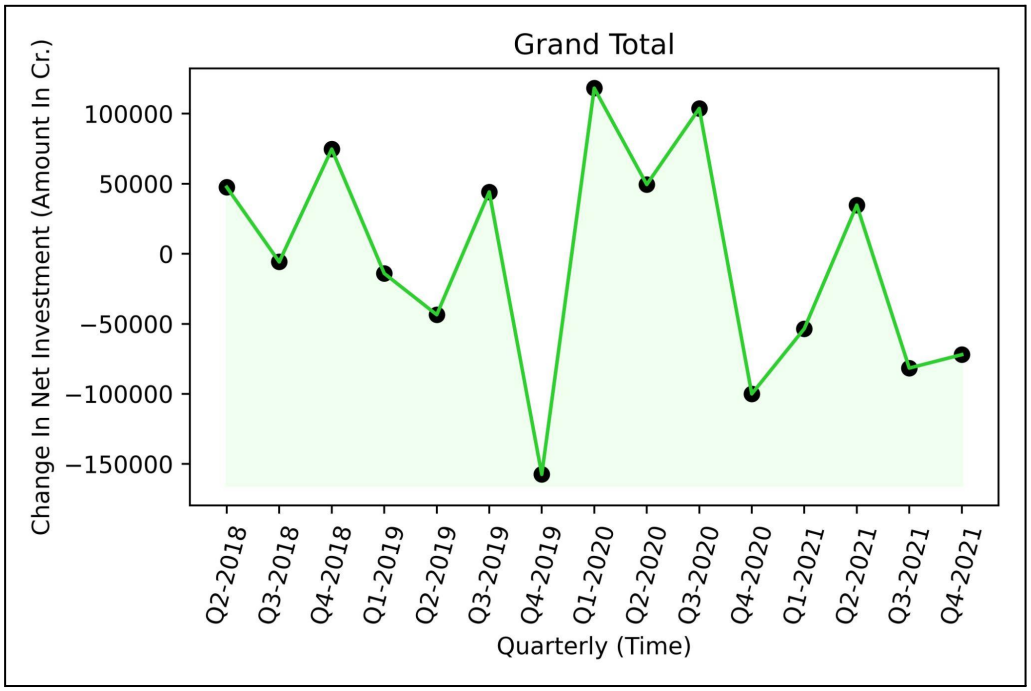
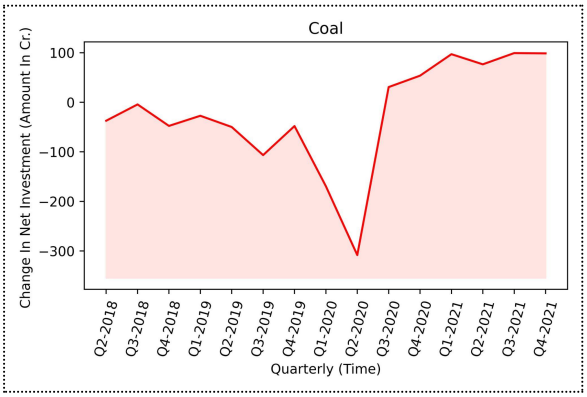
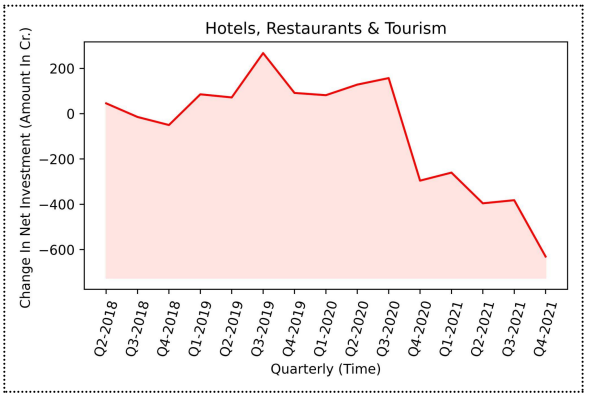
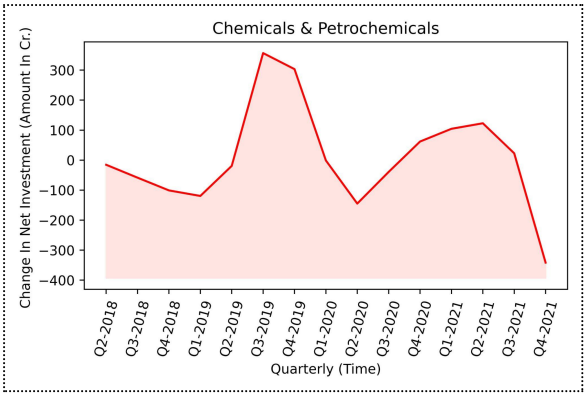


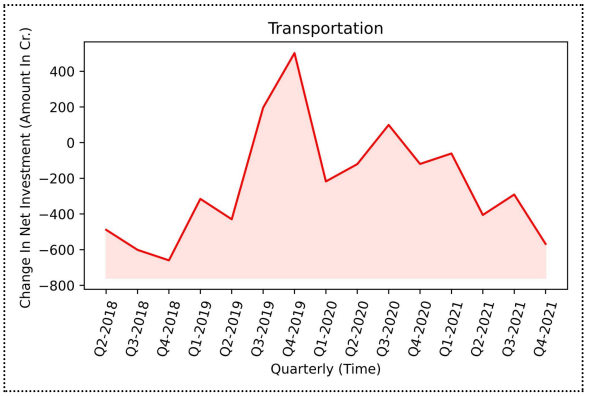
Figure 7. Plot depicting grand total of the quarterly data

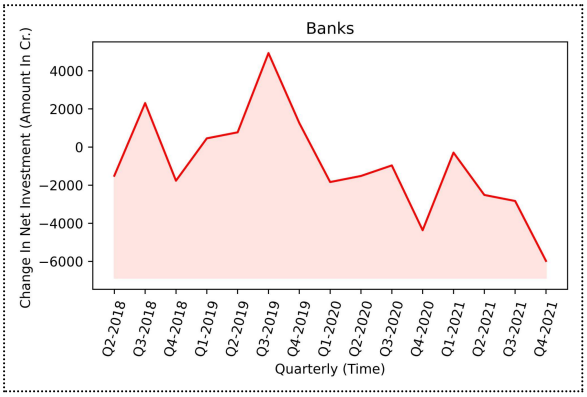
4.1.2 On the same quarterly graphs, we have plotted the moving average of the 9th length for each sector but with a zoomed y-axis to observe the perfect trend and the direction of the net investment and changes in it. Plots of the major sectors like Automobiles & Auto Components, Chemicals & Petrochemicals, Coal, Healthcare Services, Hotels, Restaurants & Tourism, Total Financial Services, Banks, Transportation, Airlines, Capital Goods, and The Grand total of all the sectors are given below.

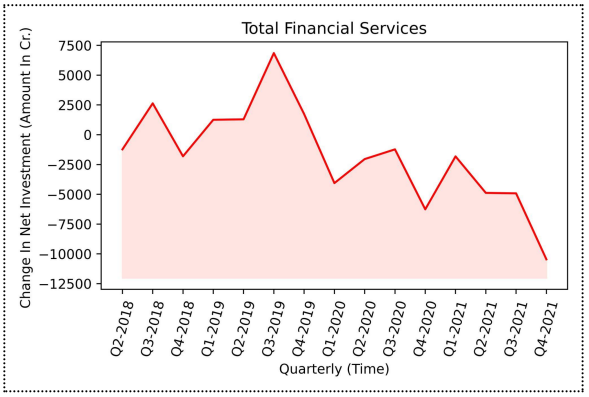


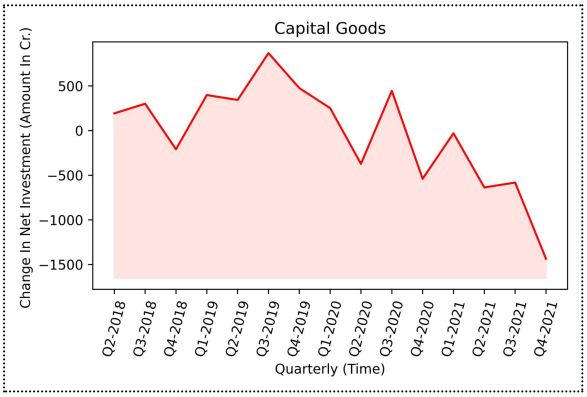


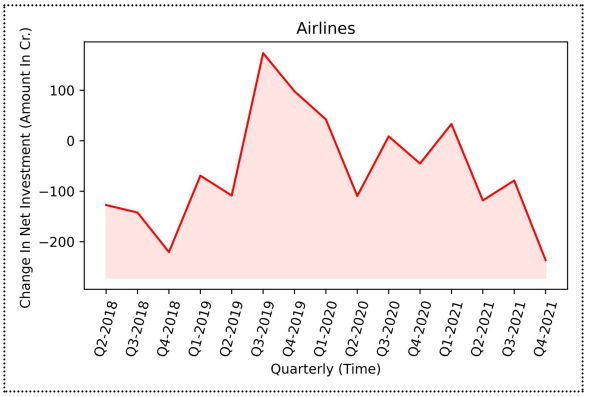

Chemicals & Petrochemicals
Change In Net Investment (Amount In Cr.)
Quarterly (Time)

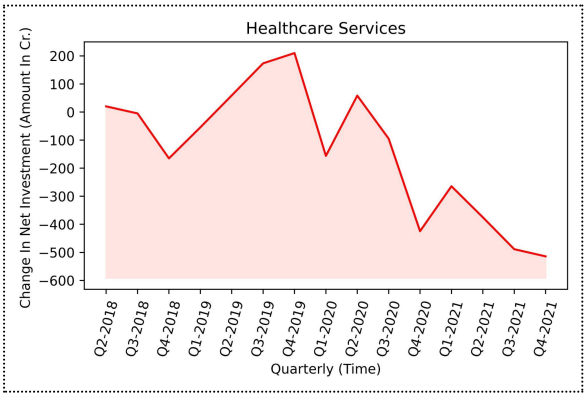

Transportation
Change In Net Investment (Amount In Cr.)
Quarterly (Time)

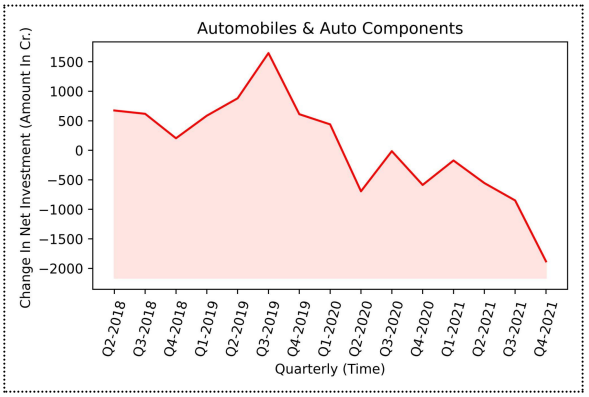

Banks
Change In Net Investment (Amount In Cr.)
Quarterly (Time)


Total Financial Services
Change In Net Investment (Amount In Cr.)
Quarterly (Time)


Capital Goods
Change In Net Investment (Amount In Cr.)
Quarterly (Time)


Airlines
Change In Net Investment (Amount In Cr.)
Quarterly (Time)


Healthcare Services
Change In Net Investment (Amount In Cr.)
Quarterly (Time)


Automobiles & Auto Components
Change In Net Investment (Amount In Cr.)
Quarterly (Time)

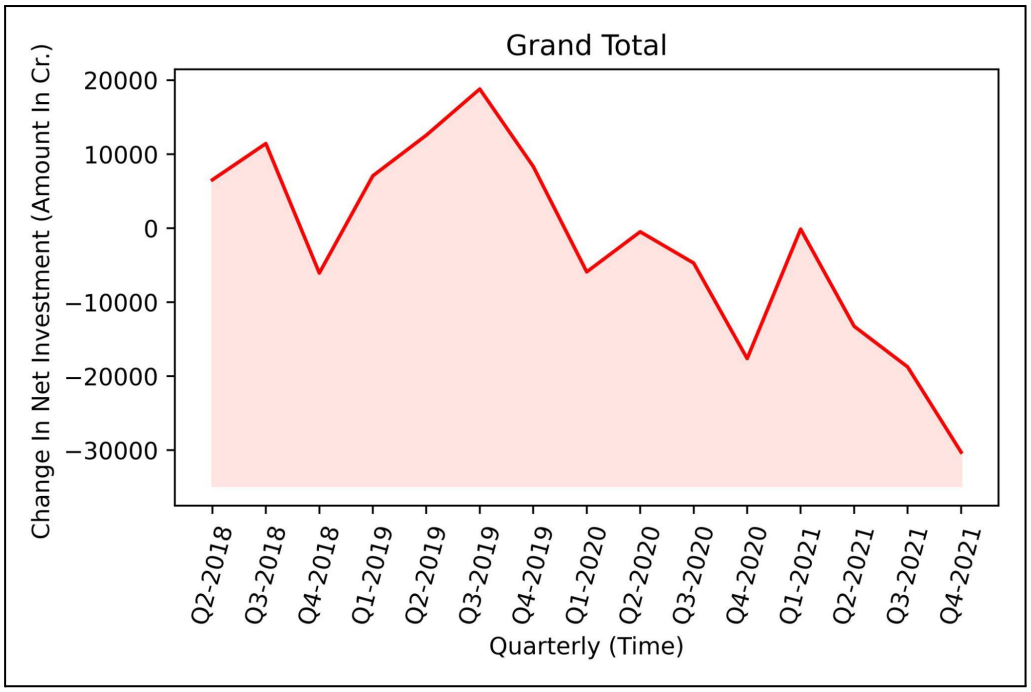


Figure 8. Plot depicting a grand total of the moving average for quarterly data

Notes: Remaining sector-wise graphs and code can be made available upon request
The observations made are:

From the quarterly analysis, we can observe that FIIs are net buyers in the financial year 2019 and 2020 but net sellers in 2018, 2021, and 2022.

4.2 Results of correlation analysis of sector-wise fortnightly FII data

For correlation analysis, we have collected all the total net investment data of each sector starting from the financial year 2018 to 2022 and observed the correlation between the sectors by using the method mentioned above. The correlation table for each financial year is given below.

- Positive correlation: When two variables move in the same direction, there is a positive correlation. When one variable rises, the other rises, and vice versa.
- Negative correlation: A negative correlation between two variables means that they are moving in opposite directions. An rise in one variable results in a decrease in the other in both directions.
- Weak/Zero correlation: No correlation exists when one variable does not affect the other.

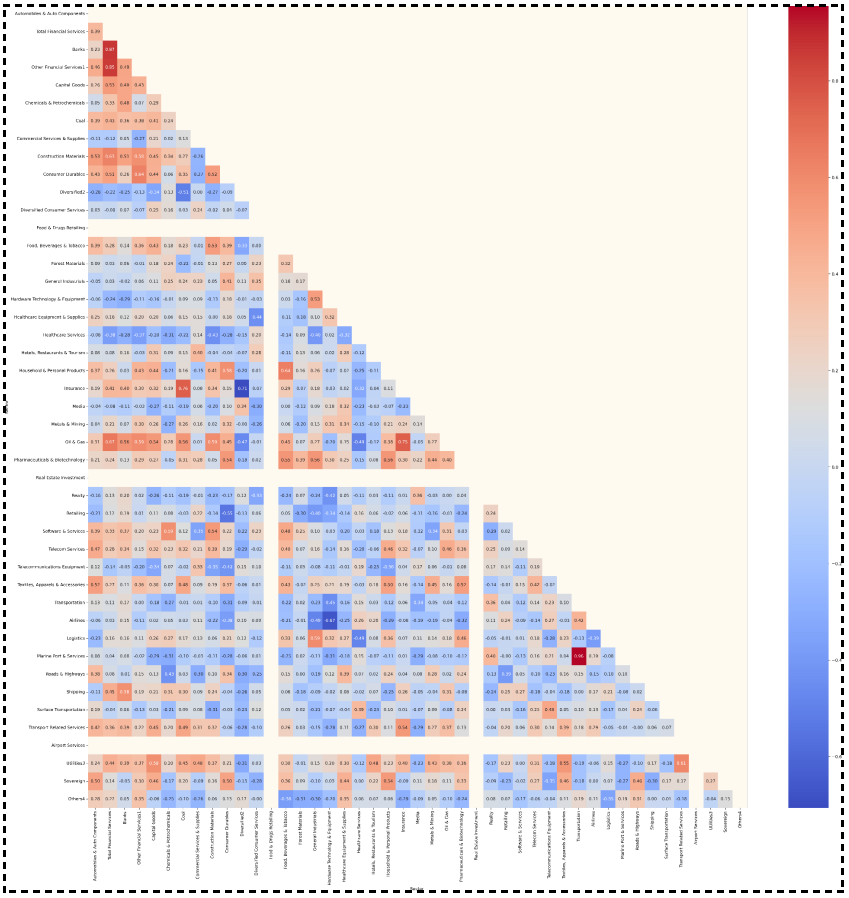


Figure 9. Correlation of total sector-wise fortnightly data (FY 2018-2019).

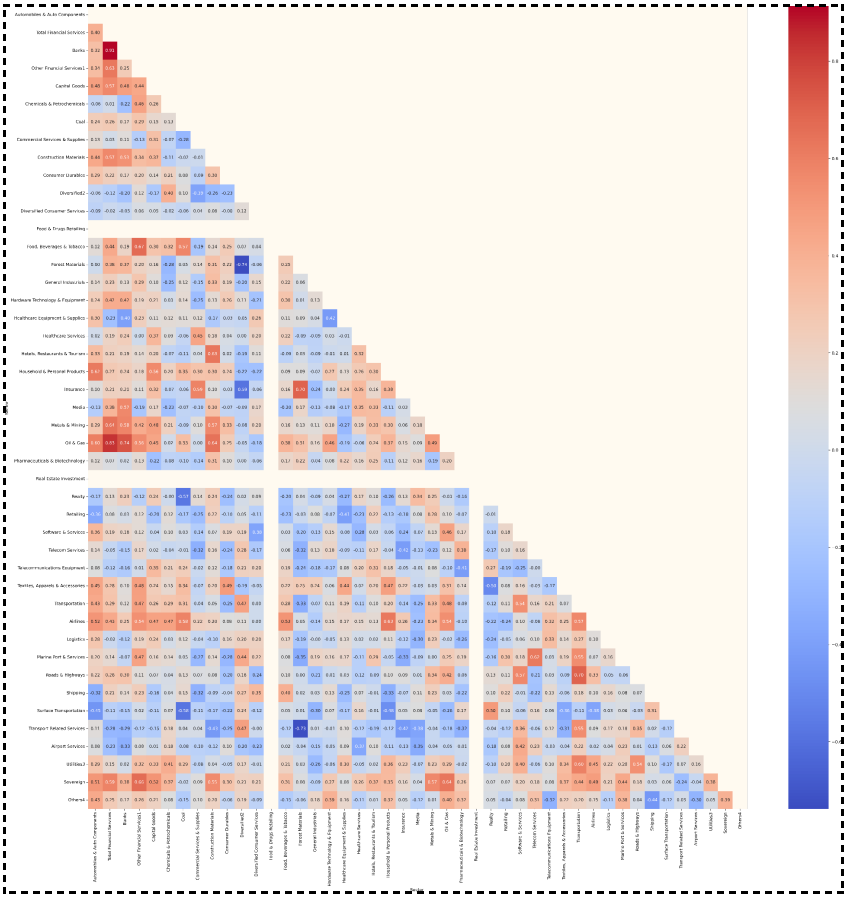


Figure 10. Correlation of total sector-wise fortnightly data (FY 2019-2020).

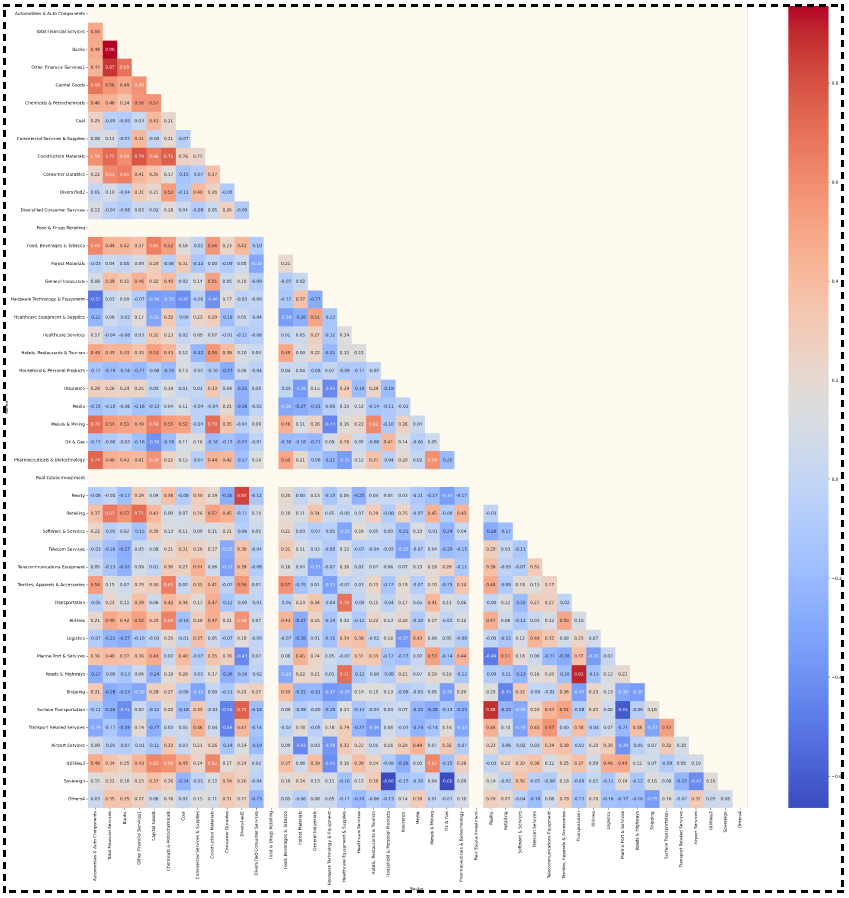


Figure 11. Correlation of total sector-wise fortnightly data (FY 2020-2021).

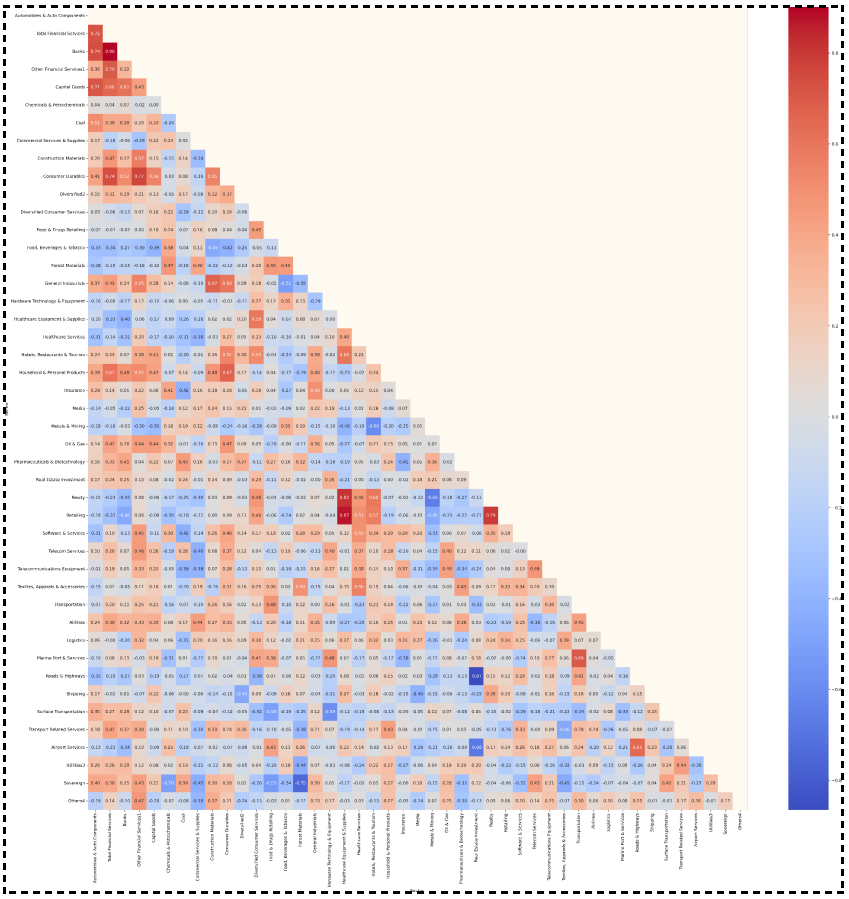


Figure 12. Correlation of total sector-wise fortnightly data (FY 2021-2022).

Figures 9–12 depict the correlation between different sectors for financial years 2018 – 19, 2019– 20, 2020 – 21, and 2021 – 22, respectively. The observations made are:

1. Correlation analysis results depict:
    - In the correlation matrices above, the extent of darkness of shades of blue and red shows increasing negative and positive correlations, respectively.
    - In the financial year 2018-2019, Transportation has the highest positive correlation with Marine Port & Services sector (0.96) and Diversified has the most negative correlation with the Insurance sector (-0.71).
    - In the financial year 2019-2020, Total Financial Services has the highest positive correlation with the banking sector (0.91) and Diversified has the most negative correlation with the Forest Materials sector (-0.74).
    - In the financial year 2020-2021, Total Financial Services has the highest positive correlation with the banking sector (0.96) and Oil & Gas has the most negative correlation with the Sovereign sector (-0.66).
    - In the financial year 2021-2022, Total Financial Services has the highest positive correlation with the banking sector (0.90) and Real Estate Investment has the most negative correlation with the Roads and Highways sector (-0.87).

4.3 Results of Regression Analysis.

Among the forty-seven NIFTY companies, there were 4 companies in which promoter holdings are zero, and 26 companies have zero government shareholdings. For the analysis, the percentage of shares held by each of these distinct groups is used as a variable.

Summary results from the study, shown in Table 2, indicate that, on average, 23% of capital for NIFTY companies comes from foreign institutional investors. Almost 45% of the funding comes from the promoters, 16% comes from financial institutions, and 16% comes from the general public (remaining from other sources).

The government of India owned less than 1% of the direct stakes in the majority of the companies listed in the Nifty 50 index, as shown in Table 2.

Promoters' holdings in the Nifty 50 companies varied widely, ranging from less than 1% to over 80%. Some companies such as Adani Enterprises, Coal India, HDFC Life, TCS, and Wipro had a high promoter holding of over 70%. In contrast, some companies such as INFY, IndusInd Bank, LT, ITC, and ICICI Bank had a low promoter holding of less than 15%.

DIIs such as mutual funds, insurance companies, and pension funds held a significant share of the equity capital of the Nifty 50 companies. Some companies on the NIFTY 50 index may have a higher public shareholding percentage, while others may have a lower.

	Minimum	Maximum	Mean	Std. Deviation	Variance
Promoters Holding	0	84.1	44.76918883	20.24966286	410.0488458
Foreign Institutional Investors(FII)	4.31	74.69	23.39168883	13.27242564	176.1572825
Financial Institutions(DII)	0.83	47.72	15.773125	9.012575528	81.22651765
Government Share Holding	0	0.86	0.09724734043	0.1636598808	0.02678455658
Public Share Holding	2.47	46.22	15.9687766	9.877580856	97.56660356
Quarterly Share Return	-76.74	115.02	5.665492021	19.18103141	367.9119659
EPS	-18.05	216.86	13.7825133	21.70341016	471.0380127
P/E Ratio	-130.3	314.12	35.38406915	34.28255256	1175.29341
P/B Ratio	0.34	103.63	8.296409574	14.4883023	209.9109035
Dividend Yield	0	22.42	1.458829787	2.138191917	4.571864674

Table 2. Descriptive Statistics for the Independent Variables used in the Study

In order to comprehend the cross-sectional and time series impact, the panel data for 47 companies and 16 quarters is examined. Panel data time series regression calculates the (xtreg, fe) coefficients of Beta and Alpha under the assumption that the units (ui) are constant values. Cross-sectional analysis (xtreg be) involves calculating means for each of the units and estimating beta values using a model. A weighted average of these two outcomes is provided by the estimations of random effects. Tables 3, 4, and 5 show the connection between FII and ownership structure. Tables 6, 7, and 8 detail how FII and financial performance indicators relate to one another.

Table 3 presents the regression coefficients of ownership variables on FII for time series analysis. Table 4 presents cross sectional coefficients, and Table 5 shows the outcomes of random effects.

A statistical hypothesis test called a t-test is employed to compare the means of two sets of data. It calculates the variance within each group in relation to the difference between the means of the two groups. On the other hand, the variance of two or more groups of data is compared using an F-test. The F-test calculates the ratio of the variances of the groups, and determines whether the ratio is significant or not.

A p-value less than the chosen significance level (0.05) indicates that the model is statistically significant, meaning that there is strong evidence to reject the null hypothesis(that there is no correlation between the dependent and independent variables) and conclude that the coefficients in the regression model is not equal to zero, where the correlation coefficient is given from regression model(Stata).

Dependent Variable - Foreign Institutional Investment						
(xtreg, fe) (fixed effects)						
	Correlation	Coefficient	T value	P > | T |	F Value	P > F
Promoters Holdings	-0.4433	-0.6707127	-22.45	0.000	504.02	0.0000
Financial Institutions (DII)	-0.3211	-0.3532066	-9.11	0.000	82.92	0.0000
Government Share Holding	-0.1129	-1.386499	-0.62	0.532	0.39	0.5324
Public Share Holding	-0.0725	-0.2020495	-3.38	0.001	11.44	0.0008

Table 3. Time series Regression (Fixed-effects regression) (Xtreg fixed effects)

Dependent Variable - Foreign Institutional Investment						
(xtreg, be) (between-effects)						
	sd(u_i + avg(e_i.))	Coefficient	T value	P > | T |	F Value	P > F
Promoters Holdings	9.982101	-0.4278609	-5.9	0.000	34.82	0.0000
Financial Institutions (DII)	13.20689	0.1719804	0.78	0.442	0.6	0.4421
Government Share Holding	13.22743	8.305865	0.68	0.501	0.46	0.5011
Public Share Holding	13.25456	-0.1039448	-0.52	0.603	0.27	0.6032

Table 4. Cross-Sectional Regression (Between effects regression) (Xtreg between effects)

Dependent Variable - Foreign Institutional Investment					
(xtreg, re) (random-effects), corr(u_i, X) = 0 (assumed)					
	Coefficient	Z value	P > | Z |	Chi Square	P > Chi Square
Promoters Holdings	-0.6354643	-22.87	0.000	523.26	0.0000
Financial Institutions (DII)	-0.3376155	-8.81	0.000	77.62	0.0000
Government Share Holding	-1.078177	-0.49	0.621	0.24	0.6215
Public Share Holding	-0.1939051	-3.39	0.001	11.5	0.0007

Table 5. Panel Data Regression (Random-effects GLS (Generalized Least Squares) regression)

Dependent Variable - Foreign Institutional Investment						
(xtreg, fe) (fixed effects)						
	Correlation	Coefficient	T value	P > | T |	F Value	P > F
Quarterly Share Return	-0.0034	0.0015971	0.31	0.760	0.09	0.7601
EPS	0.0624	0.0104163	1.56	0.120	2.42	0.1201
P/E Ratio	-0.0055	0.0127484	3.02	0.003	9.13	0.0026
P/B Ratio	-0.1598	0.0140896	0.87	0.386	0.75	0.3859
Dividend Yield	0.1814	-0.1348626	-1.7	0.089	2.89	0.0895

Table 6. Time series Regression (Fixed-effects regression) (Xtreg fixed effects)

Dependent Variable - Foreign Institutional Investment						
(xtreg, be) (between-effects)						
	sd(u_i + avg(e_i.))	Coefficient	T value	P > | T |	F Value	P > F
Quarterly Share Return	13.29355	-0.0412571	-0.09	0.925	0.01	0.9253
EPS	13.2323	0.07832	0.65	0.517	0.43	0.5170
P/E Ratio	13.29282	0.008974	0.12	0.907	0.01	0.9068
P/B Ratio	13.11982	-0.159674	-1.1	0.277	1.21	0.2774
Dividend Yield	12.91044	-1.775101	-1.65	0.106	2.72	0.1061

Table 7. Cross-Sectional Regression (Between effects regression) (Xtreg between effects)

Dependent Variable - Foreign Institutional Investment					
(xtreg, re) (random-effects), corr(u_i, X) = 0 (assumed)					
	Coefficient	Z value	P > | z |	Chi Square	P > Chi Square
Quarterly Share Return	0.0015909	0.3	0.761	0.09	0.7607
EPS	0.0106272	1.59	0.112	2.53	0.1117
P/E Ratio	0.0127369	3.03	0.002	9.15	0.0025
P/B Ratio	0.0119435	0.74	0.459	0.55	0.4594
Dividend Yield	-0.1437199	-1.82	0.069	3.3	0.0695

Table 8. Panel Data Regression (Random-effects GLS (Generalized Least Squares) regression)

If the p-value associated with the t-value, f-value, or chi-square is very low ($p < 0.001$) it indicates that the result obtained by the model is statistically significant. This implies that the model can be statistically accepted and as a whole is a good fit for the data and we can be sure that the relationship observed between the variables is significant and not by chance. In the method used in this study, the T statistics are in the 95 percent confidence interval.

For the results of this study, the parameter used are the ones with very low p-value. In our case in time series regression(Table 3), the p-value is less than 0.001 for parameters Promoters Holdings, Financial Institutions(DII), and Public Share Holding indicating that these parameters have a statistically significant coefficient value. According to the Cross-Sectional Regression(Table 4), the Promoters Holdings have a statistically significant result.

Moreover, for the data in this research, the p-value associated with the chi-square for the parameters Promoters Holdings, Financial Institutions(DII), and Public Share Holdings indicates that these parameters have a statistically significant result hence the regression coefficients can be used to find the relation between these parameters and FIIs.

According to the data of 16 quarters of the financial year 2018-2022, after considering the T and F statistics given in Tables 3, 4, and 5 we can consider the regression model and check the regression coefficient to find the relationship between FIIs and other parameters. The regression coefficient for promoter shareholding is negative and this explains that there is an inverse relationship between the promoter shareholding and foreign institutional Investment. This implies that the foreign investors do not prefer the companies where family shareholders dominate. The relationship between investment preferences of Financial Institutions(DII) and FIIs is also negative hence FIIs do not prefer companies with higher DIIs investors.

The regression coefficient is again negative between Public shareholding and foreign institutional investment. This infers that the higher the publicly traded shares in a firm lower will be the foreign investment.
Moreover, the data indicates that there is no influence of Government Share Holding on foreign institutional investors.

Table 6 shows the time series regression coefficients of the performance variables on foreign institutional investors. Table 7 includes the cross-sectional results whereas the random effects

are given in Table 8. The results given in both Table 6 and 8 indicates that among the various performance variables, the price earning ratio(P/E Ratio) have significant influence on FII. The data also indicates that the other variables Quarterly Share Return, EPS, P/B Ratio, and Dividend Yield have no influence on foreign institutional investors.

4.4 Constraints of the Research

- NSE have around 2113 listed companies whereas we have considered data of only 47 companies. Hence the sample size is small.
- The NIFTY 50 sample serves as the study's foundation. The NIFTY 50 corporations project an image of being the top performers in the nation. The results may provide more clarity into the relationships between the particular factors if the sample companies are likely a heterogeneous group.
- Here we have analyzed only the standalone data for the companies. Results can be different for consolidated data.
- For this study, the data from the last 4 years is considered. Again the sample size is small in terms of timeline.

Chapter 5. Conclusion

This research is an attempt to comprehend the current trends and preferences of FIIs and explore that FIIs are net buyers in the financial year 2019 and 2020 but net sellers in 2018, 2021, and 2022. By examining the sector-wise plots of the quarterly analysis we can conclude that FIIs are net sellers from the last two years(2021 to 2022).

We can conclude from the correlation that the grand total of financial services sector is highly correlated with the banking sector in the past 2-3 years(2020-2022), and the diversified sector is least correlated with the other sectors.

Foreign investment boosts labour productivity in emerging nations like India and helps those nations build up their foreign exchange reserves to cover their current account deficits. A country can access foreign capital through foreign investment. Many nations, especially those with rising markets, have few domestic sources of outside funding. Foreign capital has grown in importance as a source of financing as a result of capital market liberalization.

On the expectations of foreign institutional investors, there are a variety of speculative ideas. It's important to know when they take money out and when they put additional money in. Higher nifty ratios and high price-to-earnings ratios are factors that are attracting more foreign investment to India domestically.

This study empirically observed that the foreign investments and the promoters' holdings are inversely associated. Foreign investors like companies when the promoters' families hold a small percentage of the stock. Furthermore, foreign investment is less in companies with a higher volume of publicly held shares. The foreign institutional investors withdraw their money when the retail buyes starts to invest. This provides a pointer for further research on the trends of foreign institutional investors with respect to the public share holders and how companies can attract FIIs.

The price-to-earning (P/E) ratio is one of the financial performance metrics that have the greatest impact on Foreign Institutional Investors' decisions. The FIIs investments do not depend on other fundamental parameters like Quarterly Share Return, EPS, P/B Ratio, and Dividend Yield this provides a pointer for research on the dependency of FIIs on other methods like technical analysis for example the analysis of support, resistance, and trendlines.

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