# Role of Foreign Portfolio Investment in Dynamism of Indian Capital Market: A Causality Study

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## ABSTRACT

*The flow of foreign capital in the form of institutional investment assumed a greater significance in the growth and development of the developing nations. The era of globalization has converted the whole world into a single form of market where there is the unrestricted flow of funds takes place from one country to another country. The same influence also observed in the Indian economy. When the reform process provided a platform to the foreign institutions to make an investment in the national boundary by lifting the different barriers and offering them liberty in the investment policies. Taking into consideration such a role of foreign funds in the Indian market present paper explored the trend of foreign portfolio investment in concern of the Indian capital market. The present paper also investigates the Causal Relationship between Foreign Portfolio Investment and Indian Stock market NSE index Nifty Return. In this context, different variables associated with portfolio investment such as FPIP, FPIS, FPIN, Ratio FPIP, Ratio FPIS, Ratio FPIN have been taken. NSE Nifty has been taken as the benchmark for the Indian stock market. Monthly data from April 2010 to March 2019 have been taken as the sample. To test the causality for the time series data Granger Causality test has been applied. The result of the study showed that there is no causality between FPIS and NSE Return and the same result is reported for Ratio FPIN and NSE Returns during the study period. Result also revealed the evidence for bi-directional causality between Ratio of FPIP and Returns, Unidirectional Causality found to exist when causality test is applied on the Ratio of FPIS, FPIP, FPIN, and NSE Returns for the period under study.*

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## 1. INTRODUCTION

The establishment of a sound and stable financial market is a crucial aspect to ensure the development and progress of the economy. Fluctuations in the performance of the stock market are caused by different players prevailing in both the domestic market as well as outside the home country. Investment in the stock market in the form of a foreign portfolio is one among such factors. That decides the fate of the Indian securities market to a larger extent **(Kulshrestha 2014).** Foreign portfolio investment assumed a greater significance in the Indian securities market after the liberalization process. As it is only after 1992 economic reforms that investment by these institutions was given the approval to make the investment in the Indian stock market **(Babu and prabheesh 2008).** Investment by Foreign institutions come under the category of more sophisticated, well-informed investors as they are more experienced due to their more involvement in different securities. Especially in the Indian capital market, Foreign Portfolio Investment does play an influential role as the larger proportion of the securities are under their custody. So they have become one of the major causes behind the fluctuation in prices of Indian stock market indices. In the last 15 years, the growth and development that took place in the Indian securities market to some extent can be attributed to the investment by the foreign portfolio investors. This fund flows helped the economy in achieving the heights of success by contributing to the foreign exchange reserves and also provides great support to the corporates in procuring  financial aid **(Kumar 2007)**.

Indian stock market has not only  caused the activities of the foreign portfolio investment but sometimes also get driven by the movement in the foreign portfolio investment, which has been proved in different studies conducted previously. But the consensus has not been found among the results found by the different researchers therefore, the present study has tried to extend the existing literature by conducting the empirical investigation  on the causal relationship between the stock market return and different variables of foreign portfolio investment that comprises Fpip, fpis, fpin, ratio fpis, ratio fpip, ratio fpin. The main aim of this paper is to study the role of the foreign portfolio investment in the dynamism of the Indian stock market NSE Nifty index through a causal study. The paper has been organized in the following sections. Section1 provides a brief introduction to the concept and its trend during the study period. Section 2

provides a review of the existing literature. Section 3 outlines the objectives and methodology of the study. Section 4 discusses the result and discussion. Section 5 presents the conclusion of the study. The limitation and scope for future research is in section6
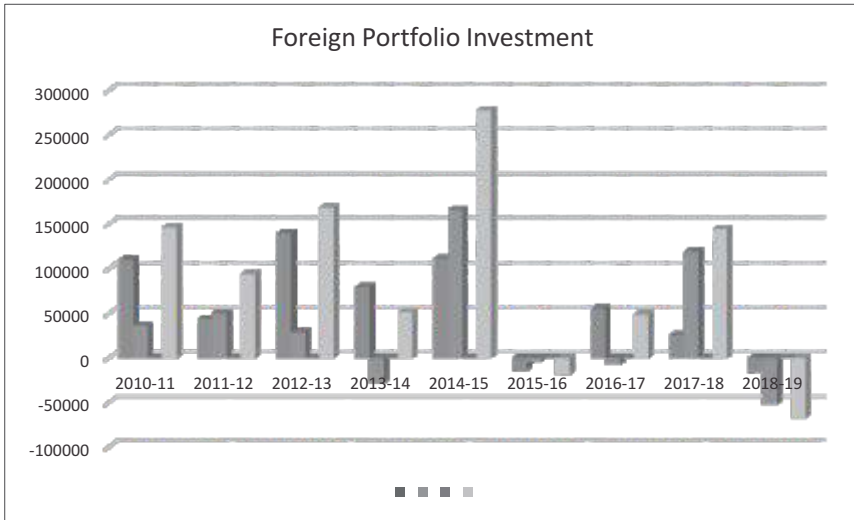
**Foreign Portfolio Investment**

It refers to the investment made by the outside residents in the Indian securities such as shares, corporate bonds, government bonds, infrastructure securities etc. This category of investment can be initiated by individuals, companies or by the government outside the home country. But the investors are not given the possession or full control over the financial assets in the international countries. As per SEBI guidelines, foreign portfolio investment includes: Asset management companies, Banks, Pension Funds, Mutual Funds, and Investment trusts as nominee Companies, Institutional Portfolio Managers, University Funds, Charitable funds and Charitable Societies, Endowment funds, and Sovereign wealth funds.

The table shown below depicts the annual investment made in the Indian capital market in the form of foreign portfolio Investment during the study period i.e. the year 2010-2019.

**Year Wise Foreign portfolio Investment Trend**

| Year | Foreign Portfolio Investment (in Rs.Crores) | | | |
|---|---|---|---|---|
| | Equity | Debt | Hybrid | Total |
| 2010-11 | 110121 | 36317 | 0 | 146438 |
| 2011-12 | 43738 | 49988 | 0 | 93726 |
| 2012-13 | 140033 | 28334 | 0 | 168367 |
| 2013-14 | 79709 | -28060 | 0 | 51649 |
| 2014-15 | 111333 | 166127 | 0 | 277461 |
| 2015-16 | -14172 | -4004 | 0 | -18176 |
| 2016-17 | 55703 | -7292 | 0 | 48411 |
| 2017-18 | 25635 | 119036 | 11 | 144682 |
| 2018-19 | -16149 | -51860 | 735 | -67274 |

Source : www.sebi.gov.in
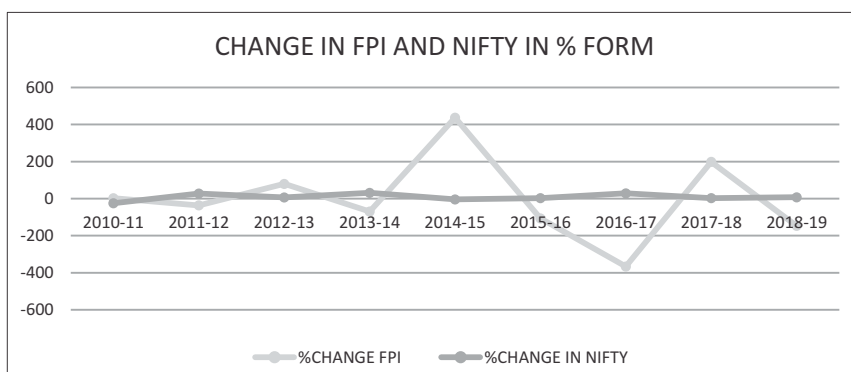
**Foreign Portfolio Investment**

Source: Author work on excel

- The above table and graph revealed the status of portfolio investment from April 2010 to March 2019 by stating the amount invested in the form of equity, Debt and Hybrid in the Indian capital market. It is clear from the figure that there was more investment in the equity segment as compared to Debt in the year 2010. Whereas in the subsequent financial year 2011-12 foreign portfolio investment turned their attention towards Debt it has shown downfall trend in investment in equity segment in comparison to the previous financial year. During 2014-15 the foreign portfolio investment touches new height in total investment as Rs.277461 crore in which the investment in the form equity was Rs. 111333 crore and investment in Debt was Rs. 166127 crore. The year 2015-16 was not good for the Indian capital market as in this financial year there was suddenly withdrawn of funds from both segments Debt as well as the equity market. In the financial year 2016-17 again foreign funds showed their interest in the equity segment of the Indian capital market. The year 2017-18 was good enough as there was an increase in total investment. The debt investment reached a higher record after 2014-15 as the investment was Rs.119036 in debt by the foreign institutional investors. Apart from the above- stated data, the graph, and table also revealed that during 2018-19 the foreign portfolio investment

status showed a negative trend in the Investment market as the foreign funds have been withdrawn from equity and debt market. This withdrawn was the result of the depreciation of the Indian rupee and the NBFC crisis.

**Table depicting Change in Foreign Portfolio Investment and closing price of Nifty**

| Financial YEAR | NET FPI | %CHANGE IN FPI | NIFTY CLOSING PRICE | %CHANGE IN PRICE |
|---|---|---|---|---|
| 2010-11 | 146438 | 2.649693673 | 4624.3 | -24.61814329 |
| 2011-12 | 93726 | -35.99612123 | 5905.1 | 27.69716498 |
| 2012-13 | 168367 | 79.63745385 | 6304 | 6.755177728 |
| 2013-14 | 51649 | -69.32356103 | 8282.7 | 31.38800761 |
| 2014-15 | 277461 | 437.2049798 | 7946.35 | -4.06087387 |
| 2015-16 | -18176 | -106.5508306 | 8185.8 | 3.013333166 |
| 2016-17 | 48411 | -366.3457306 | 10530.7 | 28.64594786 |
| 2017-18 | 144682 | 198.8618289 | 10862.55 | 3.151262499 |
| 2018-19 | -67274 | -146.4978366 | 11665.95 | 7.396053413 |



Source: Author work on Excel

- The above graph and table revealed the change that took place in net foreign portfolio investment and closing price of the Nifty index during the sample period from April 2010 to March 2019. During the study

period, various ups and downs in the investment by institutional investors have been observed. These fluctuations in investment also accompanied by a change in the closing price of nifty sometimes in the same direction whereas at some point of time both have shown opposite move. In the financial year 2011-12 the net foreign portfolio investment has shown downfall it has decreased by 35.99% as compared to previous year investment. In the same financial year, 2011-12 Nifty closing price has indicated positive change, it has increased by 27.69%. In 2012-13 the change in both variables has shown positive move. Net investment again decreased by 69.32% but on the other side closing price of nifty get increased by 31.38% in 2013-14. The Financial year 2014-15 was good for the Indian economy from an investment point of view as it showed a tremendous increase but the nifty closing price gets reduced by 4.06%. The next financial year the net foreign portfolio investment reached Rs.48411 crore which was the highest downfall during the sample period of study. In 2017-18 net foreign portfolio investment reached Rs.144682 Crore which was good from an economic point of view and change in Nifty closing price was 3.15%. But in 2018-19 the investment pattern has shown a downfall and increase in nifty price. This trend analysis of change in portfolio investment and nifty price provides information about the direction of the movement of both variables. It also reveals the fact of whether they move in the same direction or in opposite direction to each other.

## 2.    REVIEW OF LITERATURE

**Bose and Coondoo (2004**) using the data from 1999 to 2004 investigated the impact of various policy decisions of foreign institutional investment in the performance of the Indian stock market. For this purpose multivariate Garch model was used, the study observed that there has been an increase in the foreign institutional investment in the Indian economy since liberalization.

**Poshakwale and Thapa (2007)** discussed the relationship between the Indian equity market and equity market of the US and the UK and also further analyzed the role of foreign institutional investment in ensuring this relationship. For this purpose, the VAR and Johanson Cointegration the framework has been employed on the daily data of portfolio investment and

securities return over the period started from 1st January 2001 to 15 January 2007. The result suggested that any change in foreign portfolio investment flows and in developing country stock markets cause an influence on the Indian securities return. The result of the Granger causality test found that the stock market of a developed nation not only influence the Indian stock market movement but it also causes a change in the movement of foreign portfolio investment flows in the Indian capital market.

**Kumar (2007)** by using the dataset from 1992 to 2005 and applying OLS Regression revealed the significance of the institutional investments for the Indian stock market. He found that the institutional investments individually as in a combined form have influenced the movement of the stock market in India.

**Babu and Prabheesh (2008)** applied Granger causality test, impulse response function and VAR framework to analyze the causal relationship between the variables. For the fulfillment of the objective daily data of nifty index and foreign institutional flows have been used. The period of the study is from 2003 to 2007 including 1036 observations. The result revealed the bi-directional causality between them.

**Mishra et al. (2009)** examined the impact of net equity investment by foreign institutional investors on the performance of the Indian stock market return. They analyzed the data of 17 years from January 1993 to May 2009. To analyze the impact on the Sensex the regression analysis has been applied to the monthly data. Regression result revealed that a 19.74 % change in the Sensex return is caused by foreign institutional fund flows.

**Shukla et al. (2011)** investigated the pattern of foreign institutional investment in the Indian stock market for the period covering April 2005 to March 2010. The researchers have analyzed the contribution of foreign institutional investment by taking the monthly data of foreign institutional investment, BSE Sensex, midcap and small-cap indices. To analyze the shareholding pattern of foreign institutional investors in some selected companies quarterly data has been used. A high degree of correlation between institutional investment and selected indices of the Indian stock market. The study also revealed that the volatility of the stock market has escalated due to the entry of foreign funds.

**Dhiman (2012)** examined the impact of foreign institutional investment on Indian stock market NSE by using the daily data on purchase and sales of foreign institutional investment on NSE and taking the daily advance and decline data of NSE. For the study purpose, the researcher has analyzed the data by using the sample from $1^{st}$ April 2006 to 28 February 2011. The causality test and OLS has been applied to analyze the data. The study indicated that foreign institutional fund flows not the only factor that affects the stock market whereas the other factors prevailing in the environment do have a significant impact.

**Jain et al. (2012)** examined the trading pattern of the foreign institutional investors in the Indian capital market and also analyzed the impact on the BSE Sensex due to their investment using the sample from 2001 to 2010. The researchers have analyzed the data using the Karl Pearson coefficient of correlation test. The study found the high degree of correlation between the foreign institutional investment and the Sensex movement is very high.

**Chandra (2012)** by taking the daily data of foreign institutional flows and closing price of nifty investigated the causality behavior of the variables. To examine this study period from January 2003 to February 2011 were considered. The result stated that foreign funds flow in the stock market have a short -run effect on returns whereas subsequently, the returns influence them.

**Murthy and Singh (2013)** in this paper examined the impact of investment by the foreign and domestic institutions on the Indian stock market indices Sensex and Nifty.  For the study purpose, monthly data of foreign and domestic institutional investment and mutual fund was collected for the period starting from April 2007 to March 2010. The data has been analyzed by using the unit root test and Granger causality test. The study concluded that the Indian stock market is not only influenced by foreign funds flows, domestic institutional flows also have a significant influence on the stock market.

**Patel (2013)** investigated the impact on the Indian stock market return created by foreign institutional fund flows. For this purpose, the monthly data of the period started from January 1993 to May 2012 have been considered. The author has applied the Johanson Cointergation test, Granger test and error correction model. The result of Granger causality

stated that bidirectional causality found to exists between the variables and also shown that long -run relationship has been found between the variables.

**Singh pooja (2014)** studied the impact of different macro-economic variables such as IIP, Money supply, interest rate, trade deficit, FII, Exchange rate, crude oil price and gold price on the Indian stock market. To analyze the data average monthly closing price of BSE Sensex and CNX Nifty was used. The researcher has covered the time horizon of 2 years from January to December 2012. The result indicated that the performance of Indian stock markets significantly influenced by macro-economic variables.

**Kulshrestha (2014)** made an attempt to analyze the determinants of foreign institutional investment in the Indian economy and also investigated the impact on the Indian securities market. The researcher has collected the daily data on stock market indexes Sensex, Nifty and net foreign institutional investment and then examined it through the regression analysis technique. For this purpose, the data has been collected from 2000-2011. The study indicated that there is a moderate degree of relationship between foreign institutional investment and stock market index Sensex and nifty. As per the study, foreign institutional investment is one of the major factor among the macroeconomic elements that determine the movement of the Indian stock market.

**Bhatia and Kishor (2015)** analyzed the stock markets of BRICS nations and their influence on the movement of stock indices. The study has used the sample from the year 2005 to 2015. The researcher has applied VAR Model and Wald test to analyze the sample data. The study revealed that positive correlation is found to exist in the case of India, Brazil, and South Africa where as correlation is negative for China and Russian stock markets.

**Periyasamy and Kumar (2016)** in their research paper titled, "a study on the impact of institutional investors contribution on the Indian stock market with reference to Nifty" analyzed the contribution of foreign institutional investors and domestic institutional investors in the movement of the Indian stock market. The researcher has taken the data from January 2007 to August 2015. The study has used correlation and regression analysis on the

monthly data of foreign institutional investment and closing value of Nifty. The study found a low positive correlation between foreign institutional flows and Nifty whereas Domestic institutional flows are negatively correlated. Regression result revealed that both foreign institutional investment and retail investors significantly influence the movement of NSE Nifty.

**Yadav and Malik (2017)** discussed the direction of pairwise causality between the different variables of Foreign Institutional Investment and Return of the Indian stock market BSE Sensex index. The study has covered the time horizon from April 2010 to March 2015 and applied the unit root testing and Granger test to find out the direction of causality. The result reported that no causality found between the foreign institutional investment and Indian stock market Return.

The review of the literature suggested that the number of studies has been conducted in concern to the role and impact of foreign portfolio investment on the stock market in India. In different studies, the major emphasis has been laid on foreign portfolio purchase, Foreign portfolio Sale or Net Foreign portfolio Investment. Very few studies have given consideration to the other variables pertaining to investment such as Ratio of Foreign portfolio purchase, Foreign portfolio Sale and Net foreign portfolio Investment and their impact on the stock market. Further, this paper gives information about the latest scenario (2010-2019) prevailing in the Indian stock market.

**OBJECTIVE :** The prime objective of the present study is to be familiar with the role of foreign portfolio investment in determining the return of the Indian stock market. As foreign institutional investors make a huge volume of investment in the stock market and impact the returns in the Indian stock market which has a major matter of concern from the economic development point of view.

## 3.    SIGNIFICANCE OF THE STUDY

The injection of the funds in the Indian stock market in the form of foreign portfolio investment has increased Since Liberalization under the portfolio investment scheme. Keeping it into consideration the existing study has been undertaken to study the role of foreign portfolio flows in the stock

market index of NSE for the sample period of 9 years comprising April 2010 to March 2019. The knowledge of causality between investment variables and the Stock market return will provide a guideline to the domestic institutional investors for the investment. This is the section that is greatly affected by the movement of foreign portfolio investment. It will also be helpful to the government in deciding the policies related to institutional investors trading in the market.

## 4.    RESEARCH METHODOLOGY

The study is based on the secondary data which has been collected from the official website of   SEBI and the website of NSE and also from the Yahoo Finance website. For the study purpose Returns of NSE Nifty index and data of foreign portfolio investment different series were used for the period ranging from **April 2010 to March 2019**. The following series have been taken:

1.    NSE Nifty Return (calculated as Today price/Last Day price *100)

2.    FPIP (Foreign portfolio Investment Purchase)

3.    FPIS (Foreign portfolio Investment Sale)

4.    FPIN (Difference between FPIP and FPIS)

**Hypotheses:**

Following hypotheses have been considered in the study:

   H01: There is no causality between FPIP and Nifty Return

   H02: There is no causality between FPIS and Nifty Return.

   H03: There is no causality between FPIN and Nifty Return.

   H04: There is no causality between Ratio FPIN and Nifty Return.

   H05: There is no causality between Ratio FPIP and Nifty Return.

   H06: There is no causality between Ratio FPIS and Nifty Return.

For the present study Secondary data has been obtained from the different sources like websites of NSE and SEBI. For initial processing of the data Microsoft excel has been used, further the data processed in excel has been

analyzed by the software. Methodology involves:

(i) Checking of data set stationarity through ADF unit root test

(ii) Granger Causality test

**Unit Root Test:** first of all Unit Root testing has been applied on the monthly data commencing from April 1$^{st}$ 2010 Till March 31$^{st}$ 2019. This test is also known as test to check the stationarity of the variables. It gives the intimation about the existence of the stationarity in the time series data. The Null Hypothesis of this testing is about the prevalence of the unit root in the time series data and Alternate Hypothesis states there is no unit Root exists.

In time series data set generally trending behavior is observed which makes the results unreliable. So to extract the reliable results it becomes essential to make the data series stationary. Here the term stationarity of the data refers to a situation in which mean and variance of the data are constant are constant over a period of time. Stationarity checking of the time series data is the precondition before selecting any model as it ensures the meaningful conclusion and leads to the accurate results and forecasting out of the analysis done. To test the stationarity property of the time series data set various tests are available such as Augmented Dickey Fuller (ADF) test and Phillips- Perron (PP) test. In the present study stationarity of the data has been checked with the Augmented Dickey fuller (ADF) test. The hypothesis for the ADF test is as follows:

Null Hypothesis: Series is non stationary

Alternative Hypothesis: Series is stationary

If the probability value is greater than .05 percent level of significance it makes it insignicant value as it results that the series has a unit root which further make it unacceptable for further processing. But if the p value is less than .05 level of significance it means null hypothesis is rejected and it ensures the stationarity in the time series data set. As the ADF unit root testing if the null hypothesis is accepted than the non-stationary series has to be differenced till the time it becomes stationary.

**Granger Causality Test**: Granger causality is a technique which firstly requires the fulfillment of the stationarity condition. This econometric

technique helps in ascertaining whether the one time series can be used to further forecasting the values of another time series which is also stationary in nature. Basically it determines the causality relationship between the different time series. The main priority to run the granger causality is that variables of interest must be stationary and second optimal lag length need to be decided. To select the optimal lags different criterion are available such as Akaike Information Criteria or Schwarz information criterion. Present study has used Akaike Information Criterion to choose the numbers of lags to further run the test of causality. Granger causality is based on following hypothesis:

Null hypothesis (H0): X variable does not granger cause variable Y.

Alternate Hypothesis (H1) : X variable does granger cause variable Y.

If the p value is found to be less than .05 percent level of significance. It results to reject null hypothesis. But if the p value is more than significance level it leads to accepting the null hypothesis and rejection of the alternate one.

## 5.    RESULT AND DISCUSSIONS

### Table 1: Result of Unit Root Test on NSE Return, FPIN, FPIP, FPIS, Ratio FPIN, Ratio FPIP, Ratio FPIS

### ADF TEST OF UNIT ROOT

| Variables | NSE RET | FPIN | FPIP | FPIS | Ratio_FPIN | Ratio_FPIP | Ratio_FPIS |
|---|---|---|---|---|---|---|---|
| At level | | | | | | | |
| T-Statistics | -9.87* | -6.13* | -2.08 | -1.37 | -10.27* | -15.41* | -11.68* |
| Prob. | .0000* | .0000* | 0.2524 | .5939 | .0000* | .0000* | .0000* |
| At First Difference | | | | | | | |
| T-Statistics | -9.36* | -10.05* | -10.43* | -12.68* | -9.33* | -15.56* | -12.51* |
| Prob. | .0000 | .0000* | .0000* | .0000* | .0000* | .0000* | .0000* |

Table 1 reported the result of ADF unit root test.

The null hypothesis of the above mentioned series is: all the series are non-stationary. Whereas alternative hypothesis are all the series are stationary. The null hypotheses of Return, FPIN, Ratio_FPIN, Ratio_FPIP, and

Ratio_FPIS have been rejected. Thus the rejection means these series do not have the unit. Whereas series of FPIP and FPIS have been found to be stationary at first difference.

**Table 2: Result of Lag Length Criteria**

| Lag | LogL | LR | FPE | AIC | SC | HQ |
|-----|------|-----|-----|-----|-----|-----|
| 0 | -5075.413 | NA | 3.30e+35 | 101.6483 | 101.8306 | 101.7221 |
| 1 | -3908.411 | 2147.283 | 6.43e+25 | 79.28823 | 80.74713* | 79.87867* |
| 2 | -3855.429 | 90.07067 | 6.02e+25* | 79.20857* | 81.94400 | 80.31565 |
| 3 | -3821.997 | 52.15427 | 8.51e+25 | 79.51993 | 83.53189 | 81.14364 |
| 4 | -3787.167 | 49.45806 | 1.21e+26 | 79.80334 | 85.09183 | 81.94369 |
| 5 | -3736.121 | 65.33924 | 1.31e+26 | 79.76241 | 86.32744 | 82.41940 |
| 6 | -3714.120 | 25.08035 | 2.69e+26 | 80.30241 | 88.14397 | 83.47603 |
| 7 | -3665.924 | 48.19621 | 3.58e+26 | 80.31848 | 89.43658 | 84.00874 |
| 8 | -3585.037 | 69.56267* | 2.81e+26 | 79.68075 | 90.07537 | 83.88764 |

* Reveals the suitable lag order selected by the criterion

The above result shown in the table indicated that the optimal lag is 2 which is suggested by FPE, AIC criterion.

**Table 3: Result of Granger Causality between FPIN and NSE Return**

| Null Hypotheses | Observations | F-Statistics | Prob. |
|-----------------|--------------|--------------|-------|
| FPIN does not Granger Cause NSE Return | 106 | 0.69852 | 0.4997 |
| NSE_ Return does not Granger Cause FPIN | 106 | 15.8411 | 1.E-06 |

The above mentioned table of Granger causality test provided the detail of the direction of causality. As per the test statistics there exists one -way causality and the direction of causality is from NSE Nifty return to Net Foreign portfolio Investment. Granger test of causality table mentioned that Nifty return impacted the investment pattern of foreign portfolio investment in India. Whereas the Null hypotheses of FPIN do not granger cause Nifty Return has been accepted. Which revealed that there is unidirectional causality.

## Table 4: Result of Pair-Wise Granger Causality between FPIP and NSE Return

| Null Hypotheses | Observations | F-Statistics | Prob. |
|---|---|---|---|
| FPIP does not Granger Cause NSE Return | 106 | 2.35980 | 0.0996 |
| NSE Return does not Granger Cause FPIP | 106 | 4.12154 | 0.0190 |

The above table of Pair-Wise Granger Causality between NSE Nifty Return and purchase by the foreign portfolio investment stated that the first Null hypothesis of FPIP does not granger cause NSE Return has been accepted and second null hypotheses of NSE Return does not Granger Cause FPIP have been rejected. It revealed that Causality is running from Nifty return to foreign portfolio investment.

## Table 5: Result of Pair-Wise Granger Causality between FPIS and NSE Return

| Null Hypotheses | Observations | F-Statistics | Prob. |
|---|---|---|---|
| FPIS does not Granger Cause NSE Return | 106 | 2.35189 | 0.1004 |
| NSE Return does not Granger Cause FPIS | 106 | 1.63832 | 0.1994 |

The above table of Pairwise Granger Causality between NSE Nifty return and foreign portfolio investment Sale Revealed that first null hypotheses cannot be rejected as the p-value is greater than.05% level of significance. Which indicated that FPI Sale cannot Granger Cause NSE Return. The second hypotheses have been accepted which shows there is no causality running from NSE to FPI Sale. The result revealed the fact of no causality between the variables during the study period.

## Table 6: Result of Pair-wise Granger Causality between Ratio FPIN and NSE Return

| Null Hypotheses | Observations | F-Statistics | Prob. |
|---|---|---|---|
| Ratio_ FPIN does not Granger Cause NSE Return | 106 | 0.87310 | 0.4208 |
| NSE Return does not Granger Cause Ratio FPIN | 106 | 1.27702 | 0.2833 |

The result of granger Causality table explained that both the above null hypotheses cannot be accepted. It means there is no causality between the variables and Neither FPIN nor NSE Nifty return has any influence on each other.

**Table 7: Result of Pair-wise Granger Causality between Ratio FPIP and NSE Return**

| Null Hypotheses | Observations | F-Statistics | Prob. |
|---|---|---|---|
| Ratio FPIP does not Granger Cause NSE Return | 106 | 3.37368 | 0.0381 |
| NSE Return does not Granger Cause Ratio FPIP | 106 | 4.31293 | 0.0159 |

The above table of Pair-Wise Granger Causality test mentioned that first hypothesis of Ratio FIIP does not granger cause NSE Return cannot be accepted as the p-value is less than .05% level. Whereas the second hypothesis of NSE return does not granger cause also cannot be accepted. It revealed that there is bi-directional causality exists between the variables.

**Table 8: Result of Pair-wise Granger Causality between Ratio FPIS and NSE Return**

| Null Hypotheses | Observations | F-Statistics | Prob. |
|---|---|---|---|
| Ratio FPIS does not Granger Cause NSE Return | 106 | 3.10880 | 0.0490 |
| NSE Return does not Granger Cause Ratio FPIS | 106 | 1.85881 | 0.1611 |

The above mentioned table of Pair-Wise Granger Causality between Ratio FIIS and the return of NSE Nifty provided  information about the direction of causality between the variables. The first null hypothesis is rejected and the second hypothesis is accepted. The result reported in the table revealed that there is unidirectional causality exists from Ratio FIIS to NSE Nifty Return.

## 6.    CONCLUSION

The study has examined the direction of causality between the foreign portfolio investment and Indian stock market NSE Nifty Return. The different associated variables of foreign portfolio investment comprise

Foreign portfolio investment purchase(FPIP), Foreign Portfolio investment Sale(FPIS), Foreign Portfolio Net investment(FPIN), Ratio of FPIP, Ratio of FPIS, Ratio of FPIN. In order to represent the entire stock market of the Indian economy NSE index, Nifty has been taken. The Granger Causality between Nifty return and different variables of foreign portfolio investment has been analyzed. It is concluded that during the study period in case of some variables of foreign portfolio investment such as FPIN, FPIP, Ratio of FPIS there exists unidirectional causality. There is no causality found to exist between FPIS and return, Ratio of FPIN, and NSE Nifty Return. There is bidirectional causality that has been found between Ratio FPIP and Indian stock market Return.

## 7.    PRACTICAL IMPLICATION OF THE STUDY

The major implication of the study is that the regulators of the capital market should keep a close watch on the activities of the institutional Investors as their trading pattern influences the stock market performance. Therefore, a causal study between foreign institutional investment and the stock market needs to be examined intensely as it will be helpful for the policymakers for drafting the policies related to the stock market and related to investment limits. Broadly, the knowledge of causal relationships would be helpful for the domestic institutional and individual investors as well in devising their investment strategies. Further, this study also provides a platform to the academicians and learners to develop a theory and further explore this relationship keeping the dynamics of the stock market and Variables into consideration.

## 8.    LIMITATION OF THE STUDY AND SCOPE FOR FUTURE RESEARCH

The main limitations of the study are as follows:

1.  The study suffers from the limitation of restricted sampling period i.e. 2010 to 2019. The inclusion of the global    pre-crisis period as well crisis period may give more comprehensive and robust results.

2.  The study has just given the emphasis on the causal relationship between foreign portfolio investment and stock market return without given consideration to the other macroeconomic factors that

also have significance in determining the stock market performance.

In the present study only single index of NSE have been taken for the study purpose. In the future studies other indexes of NSE may become the part of the study. That may give more robust result and may give better understanding about this causality between these variables.

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