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How has the Correlation between FII & DII resulted in a positive Trend in Indian Stock Markets in spite of lower GDP; catalyzing the markets to rise ?

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Abstract

The investment that is occurred by organizations or institutions like mutual funds, hedge funds, insurance companies and more in the real or financial assets of a country is commonly known as Institutional Investor. It is generally of two types: Foreign Institutional Investor (FII) & Domestic Institutional Investor (DII). The stock markets are usually agitated by FII & DII because of their money power. This study aims to find out the correlation between FII & DII and how it resulted in a positive trend in Indian stock markets, inspite of lower GDP. The study is conducted on the monthly time-series data of purchases and sales of FIIs and DIIs since April 2011 till March 2021. The study has taken the monthly values of BSE Sensex as proxy for stock market behavior. It is found that FII and DII act as catalysts to the Indian stock markets positively and when FII moves up, DII goes down and when FII goes down, DII moves up.

Keywords : FII, DII, Indian Stock markets, BSE Sensex, Correlation, Trend.

Introduction

Institutional Investors are those organizations (e.g. Mutual Funds, Hedge Funds, Pension Funds, Banks, Insurance Companies) which collect large funds and then invest those in securities, financial, real estate and other investment assets. They have a profound impact on stock prices because they account for most of the trading; having tend to buy and sell stocks in bulk which create major withdrawal effects when they leave. These are further divided into two parts :- a) Domestic Institutional Investors (DIIs) & b) Foreign Institutional Investors (FIIs). Domestic institutional investors (DIIs) are those that undertake investment insecurities and alternative money assets of the country they're based and comprise local mutual funds, insurance companies, local pension funds, and banking and financial institutions. Foreign institutional investors (FIIs) refer to investors from other countries putting money in the Indian stock markets in the form of sovereign wealth funds, pension funds apart from banks. FIIs have been permitted to invest in Indian stock markets through the Securities and Exchange Board of India (SEBI) Act, dated September 14, 1992.

Stock market is a place where shares of public listed companies are bought and sold. It is the backbone of every country and plays a vital role for economic development of the countries through providing the allocation of funds and mobilization of resources. SENSEX is the shorthand for the Indian stock market and it is a good indicator of how the Indian economy is performing. SENSEX refers to the benchmark index of the BSE in India where

Bombay Stock Exchange (BSE) is the oldest stock exchange in India, a free-floating, market-weighted and leading stock market index of 30 best and financially sound companies listed on BSE.

Indian economy is a middle-income developing and mixed economy. According to the IMF, on a per-capita-income basis, India ranked 144th by GDP (nominal) and 128th by GDP (PPP). Many foreign institutional investors (FIIs) got attracted in Indian capital markets to invest a huge amount of money. According to **Ernst and Young's** (EY's) **Global CCB-Technology** report , India ranks fifth among the most attractive investment decisions in the world. Although the Indian economy is one of the fastest growing economies in the world, but it is observed that the economy was slowing down gradually after 2011-'12 and declining at a faster rate after 2016-'17 due to shocks of "demonetization" in 2016 and the introduction of the GST Tax in 2017 and the economy was almost halted after striking the Covid-19 pandemic on March, 2020. The author has attempted to evaluate the research question, " how has the correlation between FII & DII resulted in a positive trend in Indian stock markets in spite of lower GDP, catalyzing the markets to rise".

Literature Review

Jalota(2017); in the study examined the behavioural aspects of FIIs and DIIs in the Indian stock market and how the behavior of FIIs affected DIIs. Taking the monthly figures from January,2012 to March 2017, she found that the FII movement has a impact on the movement of DII and the movement is in opposite direction.

Roy& Deb(2019); revealed that in our Indian stock market FII and DII plays an important role regarding volatility of the market.

Bhatnagar(2011); analysed the trend analysis of FIIs investment in India from January 2004 to August 2010. He has collected the annually and monthly data from the RBI's annual. He found that FIIs have less impact on the Indian stock market and there are other unexplained variables which influence the stock market.

Nautiyal & Kavidayal (2013); in their paper using the monthly data from January 2000 to July 2012 found that FII does neither Granger cause stock price nor stock price Granger cause Net Foreign investment.

Shah(2014); examined the trend and pattern of FIIs flow in India and relationship between FII and NSE. He found that net purchases in FIIS has increased during the period 2001 to 2013 on daily basis, moderate positive correlationship exists between FIIs and NSE and FIIs flow has no significant impact on NSE.

Garg & Chawla (2015); found in their paper that the correlation between FII and DII net investment is highly negative which implied if FIIs invest in the stock market, the DIIs withdraw their money and if FIIs withdraw their money, DIIs invest their money in Indian stock market. They considered the time period from April 2007 to March 2015.

Gahlot (2019); in the study examined the effect of FIIs and DIIs activities on volatility of Indian stock market and the causal relationship between FIIs and DIIs which helped investors to make investment decision in the four major indices, namely Nifty, Nifty Next 50, BSE Sensex and BSE 100.

Arora (2016); investigated the trading behavior of FIIs and DIIs in the Indian stock market and also the relation between stock returns and equity flows by FIIs and DIIs. He found that while FIIS act as positive feedback traders, DIIs act as contrarian investors and negative feedback traders. It showed that DII investment has a significant positive relation with future stock returns and weak evidence of a negative relation between FII investment and future stock returns.

Need of the Study

The Indian stock market is highly volatile and FIIs and DIIs play a meaningful role in the movement of stock indexes. It has been observed that when institutional investor buys heavily, the stock market goes up and when they leave, it tends to create major withdrawal effects in the stock market. The one of the fastest growing Indian economy had slowed in 2017, due to shocks of ill-conceived "demonetization" in 2016 and the initiation of the GST Tax in 2017 and it had almost stumbled when the covid-19 pandemic hit the economy in March, 2020. So, this paper will focus on how both the institutional investors (FII & DII) influence the stock market positively and enable the economy to recover.

Research Methodology

Objectives of the Study:

1. To study the type of correlation between FII & DII.
2. To evaluate the trend of investment by FIIs and DIIs during the period from April 2011 till March 2021 and the trend of Indian stock market simultaneously.

3. To examine the liquidity and volatility in stock markets contributed by FIIs and DIIs.

Testable Statistical Hypotheses of the Study:

- H_1: Investments by FIIs have contributed more to stock market liquidity than DIIs.
- H_2: Investments by FIIs have contributed more to stock market volatility than DIIs.
- H_3: The correlation between FII and DII resulted positively in BSE SENSEX.

Methodology: The study is based on secondary data. This study is considered the monthly data for the period of April 2011 to March 2021 which leads 120 observations for 10 years.

The study has taken the closing price of the BSE SENSEX as the proxy for stock market behavior, collecting from the Bombay Stock Exchange website and www.moneycontrol.com is used for monthly data on gross purchase and gross sale by FIIS and DIIs. All the analysis are performed with the help of Microsoft Excel by using the tools descriptive statistics, correlation, regression and line graph with least square equations and coefficient of variation .

Data Analysis and Findings

Liquidity measures by using descriptive statistics:

Table 1 performs the descriptive statistics on gross purchases, gross sales and net purchases or sales by FIIs & DIIs respectively. The study started from the month of April,2011 with gross purchase, gross sales and net purchase or sales of Rs.49,090.25crores; Rs.49,085.85crores; Rs. 4.4 crores by FIIs and of Rs.19,996.44 crores, Rs. 20,554.71 crores and Rs. -558.27 crores respectively by DIIs. The BSE SENSEX closing price was

Rs.19,135.96 crores in April;2011 and it ended with Rs. 59,509.15 crores. The FII and DII gross purchases, gross sales and net purchases or sales were ended with Rs.1,90,759.51 crores; Rs.1,89,514.29 crores; Rs.1245.22 crores; Rs.1,13,745.81 crores; Rs. 1,08,541.39 crores ;Rs.5204.42 crores respectively.

From Table:1, it is shown that FII mean gross purchase throughout the study period is Rs.93649.71 crores whereas in case of DII it is Rs.51192.74 crores. FII mean gross sales is Rs.91596.74 crores and DII mean gross sales is Rs.49964.52 crores. Now the average net purchase done by FII is about 2.2 % of its average gross purchase by FII and the average net purchase of DII is about 2.4 % of its average gross purchases by DII. Sum of DIIs gross purchase is only 54.66% of sum of FIIs gross purchase whereas sum of DIIs net purchase is 59.83% of sum of FIIs net purchase. It is also seen from the table that FIIs mean gross purchase and gross sales are 1.83 times more than mean gross purchase and sales of DIIs . So, from the above analysis, it may be concluded that FIIs provide more liquidity into the stock market than DIIs. DIIs are more investment oriented than FIIs and FIIs are more trading oriented with short term profit-motive than DIIs. Thus, **the hypothesis H_1 is accepted.**

Table 1: Descriptive statistics on gross purchases, gross sales and net purchase/sales by FII & DII

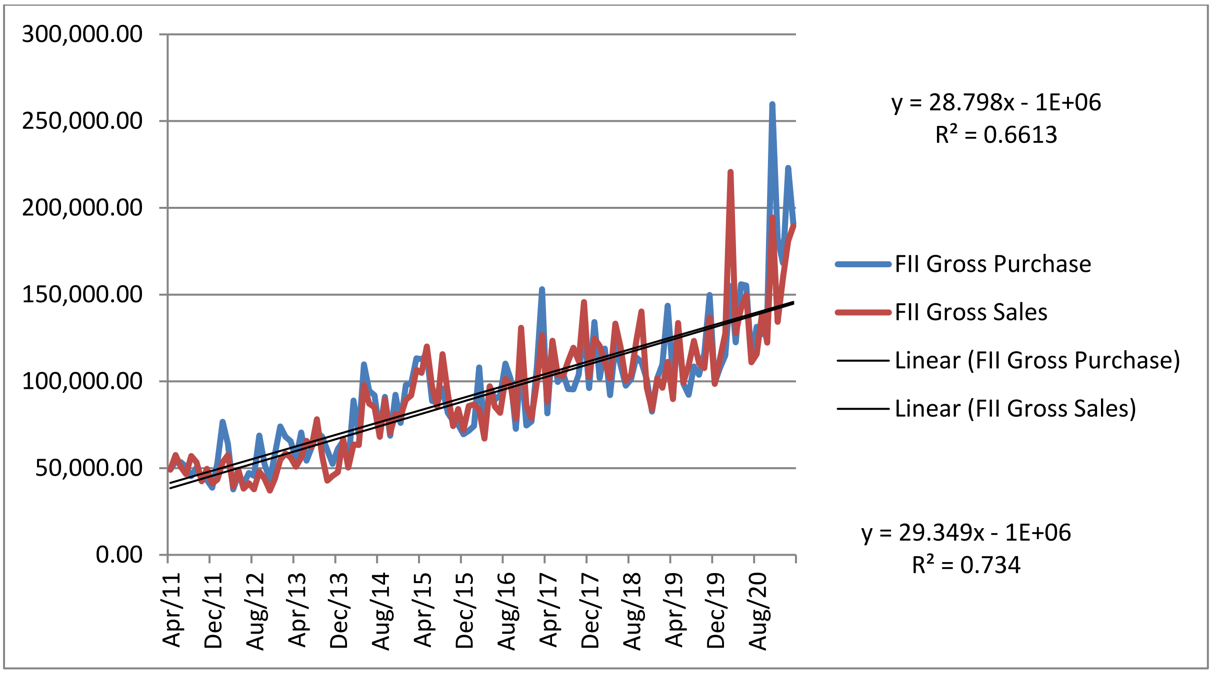
STATISTICAL MEASURES	FII Gross Purchase	FII Gross Sales	FII Net Purchase / Sales	DII Gross Purchase	DII Gross Sales	DII Net Purchase / Sales
Mean(Rs. CRORE)	93649.71	91596.74	2052.97	51192.74	49964.52	1228.22
Median	92242.22	89686.72	1672.78	42106.43	39833.8	855.51
Standard Deviation	37495.27	36270.46	14898.78	28856.07	26940.38	11714.47
Range(Rs. CRORE)	222055.73	183684.54	131133.8	145711.28	105686.26	103914.35
Minimum(Rs. CRORE)	37723.69	37036.67	-65816.7	12145.65	16347.07	-48319.17
Maximum(Rs. CRORE)	259779.42	220721.21	65317.13	157856.93	122033.33	55595.18
Sum (Rs. CRORE)	11237965.2	10991608.4	246356.8	6143128.69	5995742.6	147386.09
Count	120	120	120	120	120	120

[Source: Computed by the Author using MS Excel]

The following **fig.1** shows the trend of gross purchase and gross sales by FIIs during the period of the study. There is increasing trend overtime as the slope coefficient is positive (28.79) in gross purchase of FIIs, depicted by least square equation of gross purchase. In case of gross sales the same situation arises as the coefficient is 29.34 which is also positive. The notable point is that the coefficient of gross sales is greater than gross purchase of FIIs. To prevent the spread of the covid-19 pandemic, nationwide lockdown was declared on 24th March, 2020 and FII gross sales was Rs.2,20,721.21 crores in March,2020. Again, in November, 2020 gross purchase by FIIs reaches at peak. It clearly depicts that FIIs are more trading oriented with short term profit motive.

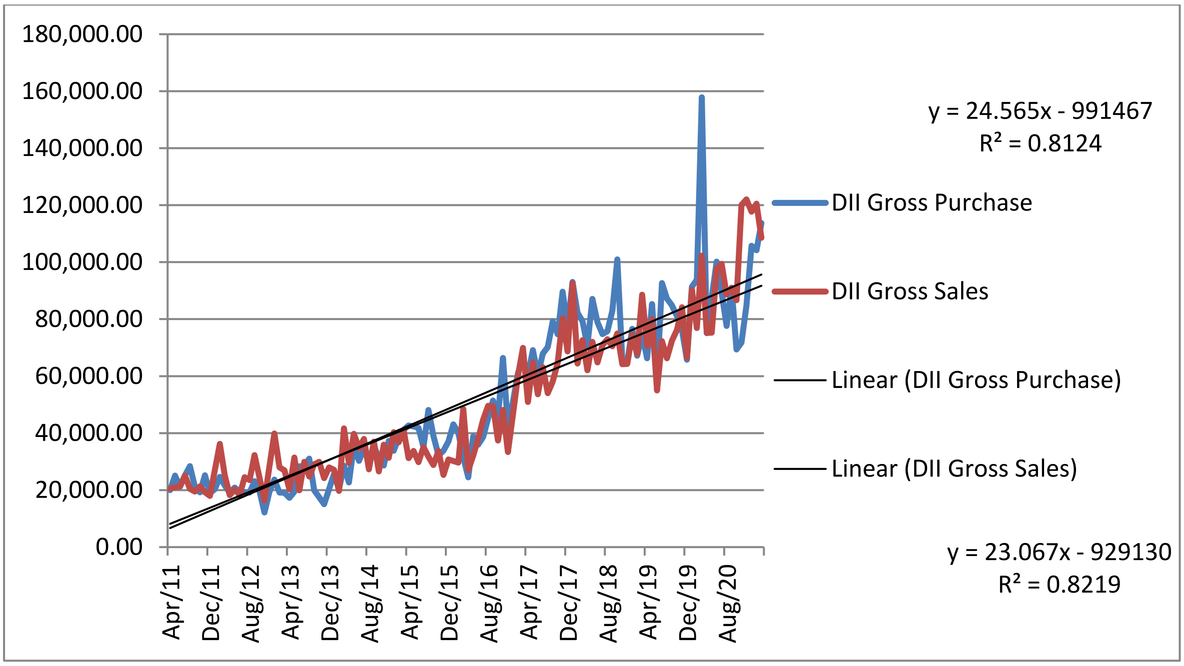
In **fig2,** the opposite situation arises in case of DII. It performs the trend of gross purchase and gross sales by DIIs during the study period. It reached at maximum on March 2020 by purchasing Rs.1,57,856.93 crores. Both the coefficient of gross purchase and sales of DIIs are positive but the coefficient of gross purchase (24.56) is greater than coefficient of gross sales (23.06) which indicates that DIIs are more investment oriented than FIIs.

Fig: 1 Trend of Purchase and Sale by FIIs (Rs. Crores)



(Source: Author's own work, MS Excel)

Fig: 2 Trend of Purchase and Sale by DIIs (Rs. Crores)



(Source: Author's own work, MS Excel)

Standard deviation as a measure of risk: The standard deviation of gross sales by FIIs is 1.35 times more than the standard deviation of gross sales by DIIs. The standard deviation of gross purchase by FIIs is 1.29 times more than the standard deviation of gross purchases by DIIs. So, the risk associated with both purchase and investment activity by FIIs is more than that of DIIs.

Regression Analysis: Regression has been used to determine the strength of relationship among Net Purchase or Sales by FIIs , DIIs and BSE Sensex. The table 2 displays regression results assuming BSE Sensex as explained variable, FII and DII net purchase or sales as explanatory variables. The regression equation is as follows:-

$\mathbf{Y= 27217.93 + 0.36\ X_1 + 0.44\ X_2}$,where Y indicates BSE Sensex, X_1 and X_2 for Net FIIs and DIIs purchase and sale respectively.

This says that both FIIs and DIIs net purchase and sale have positive impact on BSE Sensex. The DIIs net purchase and sale has relatively higher impact on BSE Sensex as the coefficient is 0.44 greater than 0.36. All of them are significant as P-value is 0.005 & 0.008 respectively and F_{ANOVA} [= 4.01] exceeds the significant value of F which is 0.02. So, **the hypothesis H_3 is accepted.** R-square value is 0.06 which means model explains the 6% variation. In other words, independent variables FII Net Purchase and Sale and DIIs Net Purchase and Sale are able to explain 6% variation of the dependent variable BSE Sensex.

Table 2: Regression results considering BSE Sensex as dependent variable, Net FIIs and Net DIIs as explanatory variables

Regression Statistics	
Multiple R	0.25
R Square	0.06
Adjusted R Square	0.05
Standard Error	8168.96
Observations	120

ANOVA

	df	SS	MS	F	Significance F
Regression	2	534963413	267481707	4.01	0.02
Residual	117	7807634474	66731918.6		
Total	119	8342597887			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	27217.93	874.5	31.12	2E-58	25486.01	28949.84
FII Net Purchase/Sales	0.36	0.12	2.82	0.005	0.1	0.618
DII Net Purchase/Sales	0.44	0.16	2.69	0.008	0.11	0.76

[Source : Computed by author using MS Excel]

Table 3: Correlation between FII Net purchase or sales and DII Net purchase or sales and BSE Sensex

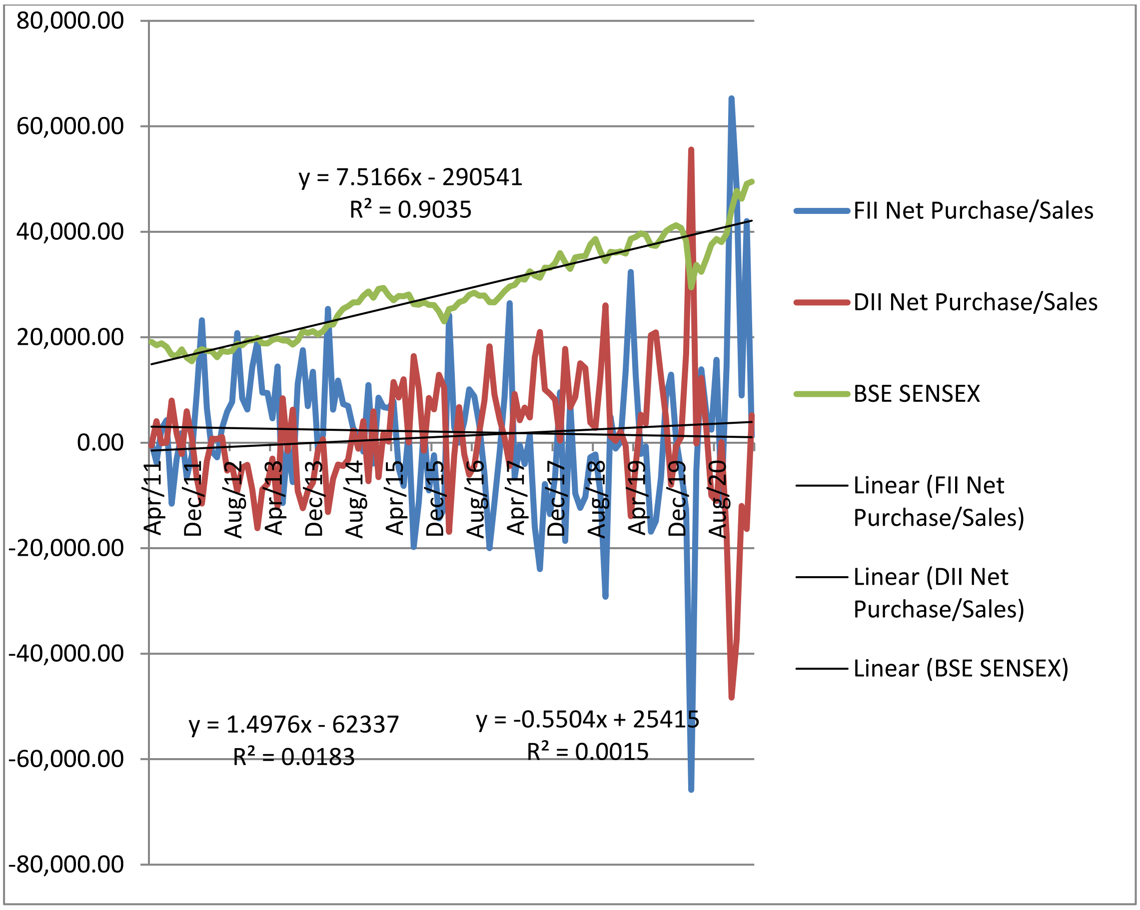
	FII Net Purchase/Sales	DII Net Purchase/Sales	BSE SENSEX
FII Net Purchase/Sales	1		
DII Net Purchase/Sales	-0.92	1	
BSE SENSEX	0.08	0.02	1

[Source : Computed by author using MS Excel]

Correlation has been used under study to determine the statistical relationships among variables Net purchase or Sale by FIIs, Net purchase or Sales by DIIs and BSE Sensex. Based on the results of table 3, it can be concluded that there is a strong negative correlation of -0.92 between net FIIs and DIIs. It suggests that if FIIs invest in Indian stock market, the DIIs withdraw their money out of the stock market and the opposite situation arises if DIIs invest their money in the Indian stock markets. A moderate positive correlation is observed between Net FIIs and BSE Sensex which is 0.08 and the correlation between Net DIIs and BSE Sensex is 0.02 which is also positive. It concludes that if Net FIIs and Net DIIs increase in its values, the BSE Sensex also increases in its value but the effect of Net FIIs is more significant on BSE Sensex.

Fig 3 shows the impact of Net purchase or sale by FIIs and Net purchase or sales by DIIs on BSE Sensex movement during the period of the study. It is seen that Net sales by FIIs was continuing during the period from October 2016 to October 2018 except February, March, July of 2017 and January& March of 2018 but BSE Sensex price was not falling parallelly because of continuous purchase of DIIs. Again, January 2020 to March 2020 BSE Sensex price was falling drastically due to lumpsum amount of Net Sales by FIIs when the covid-19 pandemic was struck the economy for the first time. The FIIs maximum Net sales and DIIs maximum Net purchases were held on March 2020 of Rs. 65,816.7 crores and Rs. 55,595.18 crores respectively whereas FIIs Net maximum purchases and DIIs Net maximum sales were occurred on November 2020 of Rs. 65,317.13 crores and Rs. 48,319.17 crores respectively. But Sensex goes its maximum on March 2021 of Rs. 49,509.15 crores.

Fig-3: Net Purchase or Sale by FIIs, DIIs and BSE Sensex (Rs. Crores)



(Source: Author's own work, MS Excel)

Table 4: Coefficient of Variation (CV) of FII, DII and BSE Sensex

CV OF FII DII &BSE SENSEX		
FII NET PURCHASE	DII NET PURCHASE	BSE SENSEX
725.72	953.78	29.4

(Source: Author's own work, MS Excel)

Coefficient of Variation as a measure of volatility: The volatility refers to the variation of data over a period of time for which comparison of coefficient of variation is used in Statistics. Hence, CV is calculated for FIIs and DIIs Net purchases or sales and for BSE Sensex also. From table 4, it is observed that the DIIs net investment (953.78) is more volatile than FIIs Net investment (725.72). Thus, the hypothesis **H_2 is rejected** and conclude that DIIs contributed more to stock market volatility than FIIs.

Limitations

The limitations of this study need to be noted. First the study incorporated the secondary data from the websites say, moneycontrol.com and BSE home page. This paper includes only one stock index as the proxy for stock market behavior but future research should allow to absorb other major indices for more accurate inference from the results. The analytical tools and techniques used are not so strong to predict the actual trend of the stock market as it lacked the application of advanced statistical models which could have highlighted the results.

Conclusions and Suggestions

This paper investigated the influences of FIIs and DIIs into the Indian stock market. The paper has studied the gross purchase, gross sale and net purchase or sale of both FIIs and DIIs and closing price of BSE Sensex. The major finding of the study showed that FIIs contributed more liquidity in the stock market and helped to reduce volatility. On the other hand, DIIs acted as a stabilizer in the economy as when the trading-oriented FIIs sold stocks in bulk, DIIs increasd their investment to prevent the drastic fall of the stock index. The data taking together for FIIs and DIIs exhibited that in all the positive FII values, there is negative corresponding DII values and vice-versa which implies they are negatively correlated. For instance, at the time of covid-19 pandemic, from January 2020 to April 2020, the total net sales of FIIs was Rs.89,069.01 crores whereas the total net purchase of DII was Rs. 73,484.70 crores. From the combined diagram of FIIs, DIIs and BSE Sensex, it was observed that the trendline of FII net purchase or sale was negatively sloped but the trendline of gross purchase and sales were positively sloped. From the regression analysis, we get the very low value of R-square that meant other factors might be contributing towards volatility of Indian stock market. As the correlation is not found to be strong between FII and Sensex or between DII and Sensex, some other factors can have impact and relations with stock market which requires further investigation to look into this research. These findings will help the regulators of the stock markets during economic crisis to stabilize the stock market so that they can take necessary steps to empower DIIs to purchase more when FIIs sell. Thus, there is scope for further study on the factors influencing FII and DII investment to recover the economy.

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