AN EMPIRICAL STUDY ON TESTING CAUSAL RELATIONSHIP BETWEEN FII'S, EXCHANGE RATE (USDINR) AND INDIAN STOCK MARKET (SENSEX)

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Abstract:

Indian monetary market has seen a rare volatility within the previous couple of years. Since the year 2002, Indian market has fully grown from a far volatile condition to growth phenomena, from a SENSEX purpose of 5500 in December 2003 to 13,787 in December 2006 and crossed the mark of 20,000 within the year 2007 and once more in 2013. Because of varied reasons, the exchange has conjointly intimate with forceful decline to even but 8,000 points in 2008. It's not due to solely the domestic market however additionally the international investors. There are several alternative variables that contribute to the positive growth of the exchange. FIIs investment is taken into account to be one amongst the most important factor the economic development factors. There's no doubt that the easement of the FII flows into the Indian capital Market since 1993 has had a substantial impact on Indian exchange. Since the worldwide crisis (2008) emerged within the world economy, the inflows of foreign investors inflated in developing countries and Asian country wasn't the exception in terms of giant investment by foreign investors. India's capital market recognized as associate rising market within the world and growing quick since the economic easement and economic process in 1991. Since 1993, once easement policies came in to result and Indian market opened for foreign investment, the FIIs become the thrust for the general development of economy still as cause threat within the development. This paper tries to investigate the impact of currency fluctuations on the investment by the foreign investment investors, for analyzing the impact and causative relationship, augmented Dickey-Fuller test and relation test has been applied, and for analyzing FIIs role within the development of capital of India market simple regression model has been used. When applying the relation take a look at, we have a tendency to found that FII causes rate of exchange. As so much as relation relationship thinks about, a unidirectional relation or unidirectional relation is found from FII towards charge per unit. As so much because the causative relationship between the FIIs and SENSEX, FII square measure solely answerable for up to sixty.8%. This implies that no matter changes have happened within the SENSEX for amount underneath study the FII are accountable up to 60.8%. This suggests that there are several different macro-economic factors that have indirectly affected the SENSEX in India.

Key words: FII, BSE Sensex, volatility, exchange rate, macro economic factors,

Introduction:

In our economy the flow of foreign investment is allowed only after the country become open economy. Most of the investment from foreign countries was either trough investment n the stock market and listed Indian companies as Foreign Institutional investment or the foreign investment which in directly listed and unlisted companies as foreign direct investment. Out of these two the earlier one plays a major role in influencing the volatility of the stock market and stock market indices of the host country. FDI plays a major role in developing the overall economy.

"An organize and well regulated stock market provides liquidity to shares, ensures safety and fair dealing and buying of securities and helps in monitoring firms in process of collection and use of funds by them" (Agrawal, 2000)

The stock market investment by FIIs is influenced by not only by the internal and external economic conditions but also by short-term returns, primarily influenced by what is known as 'market sentiment'. These in turn result in high volatility of stock market with high speculation which ultimately result in tremendous increase in the inflow FII's capital flows. The very usual practice and belief about stock market is that volatility in the price or return indices in Indian stock markets are often subject to comprehensive deviation from fundamental values with subsequent reversals and that these incomes are largely prejudiced or created by the inflows and outflows of foreign capital. In such a scenario the small investors is concerned with whether prices exactly reflect their prospects about the present value of future cash flows.

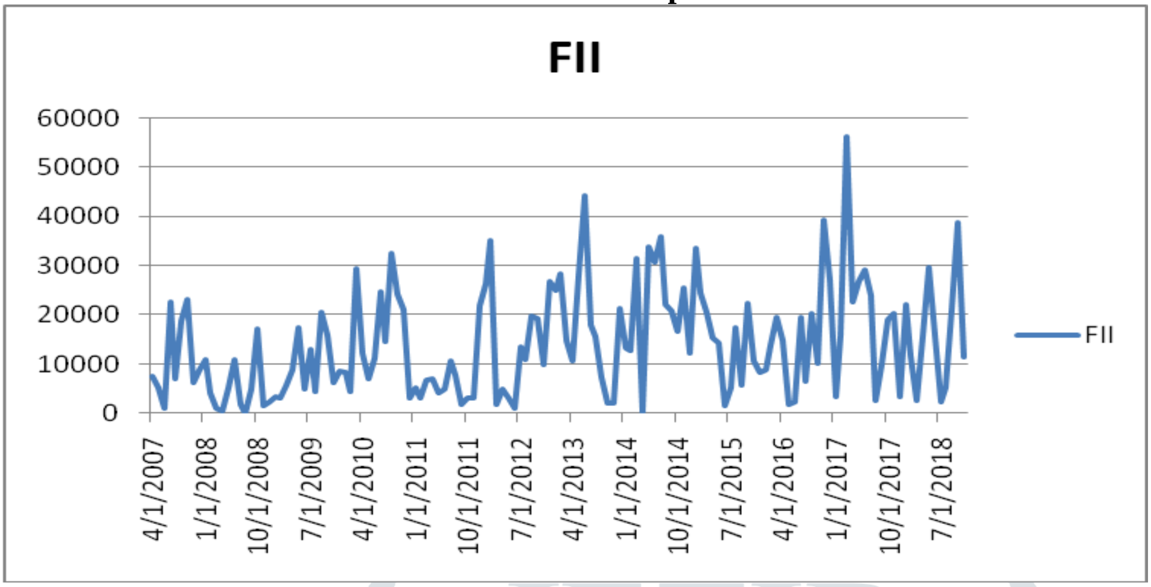
"The foreign investment is necessary for all developing nation as well as developed nation but it may differ from country to country. The developing economies are in a most need of these foreign investments for boosting up the entire development of the nation in productivity of the labour, machinery etc. The foreign investment or foreign capital helps to build up the foreign exchange reserves needed to meet trade deficit or we can say that foreign investment provides a channel through which developing countries gain access to foreign capital which is needed most for the development of the nations in the area of industry, telecom, agriculture, IT etc. The foreign investment also affects on the recipient country like it affects on its factor productivity as well as affects on balance of payments" (Agarwal, 2015).

We can also say that these investments, Foreign direct investment directly deals with the activities of production activities and usually the prevails for the long and medium term, on the other part FIIs investment usually prevails for the shorter period and hence this kind of investment is said to be as short term investment. Generally the investment in FIIs will be in capital markets such as money markets, stock markets and foreign exchange markets. FIIs play a major role in investing in the Indian stock market so that it can also get attracted to be the part of foreign inflows that also attracted to well regulate Indian stock market. In a nutshell, Foreign Institutional Investors means an institution that is inclined to make an investment in Indian capital markets, established in foreign countries.

In 1990-91, the government of India, analysed the monetary condition of the USA.and concluded that a chief trade is needed for speedy financial increase of the United States of America. For that, authorities allowed the liberalization policy and doorways have been opened for foreign organizations to put money into India in large numbers. The authorities additionally remodelled its commercial coverage as well as foreign policy to attract overseas exchanges. As the want grows for the foreign exchanges, the authorities accepted overseas portfolio investment in Indian capital market on the recommendation of Narsimhan Committee file on monetary device.

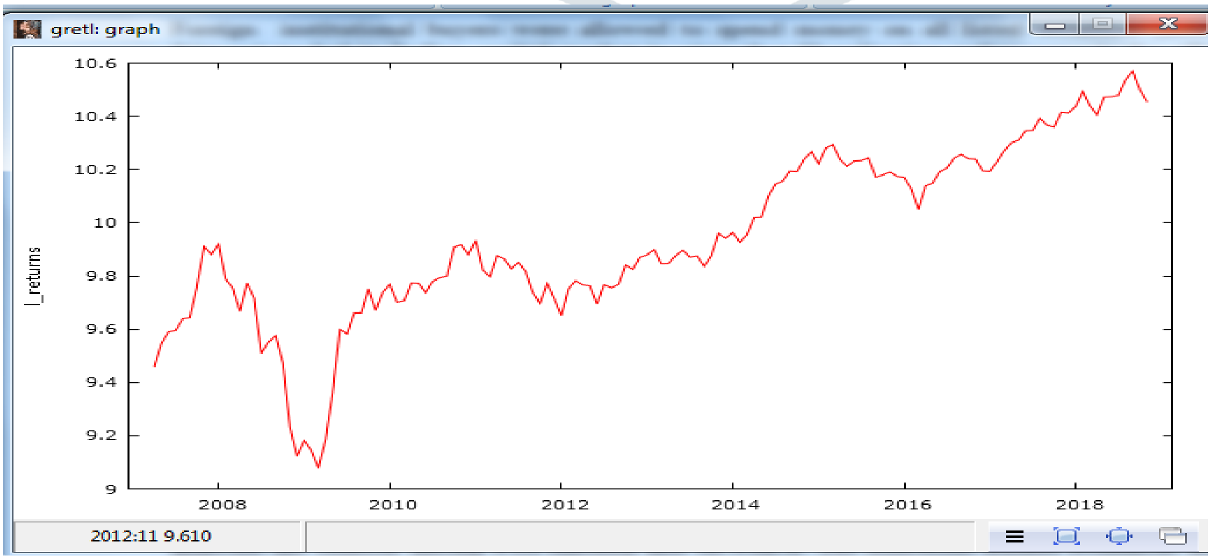
From September 14, 1992 with some regulations, foreign Institutional buyers had been allowed to invest in all the securities such as stocks, debentures and warrants of listed corporations traded on the number one and secondary markets. Dr. Manmohan Singh as a finance minister announced the idea inside the budget of 1992-ninety three, that FIIs are allowed to invest thru pension price range and other extraordinary direction in Indian Capital market. presently, entities eligible to invest under the FII route are as follows: As FII: foreign places pension funds, mutual budget, funding consider, asset control business enterprise, nominee organization, financial institution, institutional portfolio supervisor, college finances, endowments, foundations, charitable trusts, charitable societies, a trustee or strength of legal professional holder integrated or installed outside India offering to make proprietary investments or with no unmarried investor conserving more than 10 according to cent of the shares or devices of the fund. Sub-bill are the sub account is usually the underlying fund on whose behalf the FII invests. the subsequent entities are eligible to be registered as sub-bills, viz. partnership firms, personal corporation, public agency, pension fund, investment consider, and people.

Graph No. 1



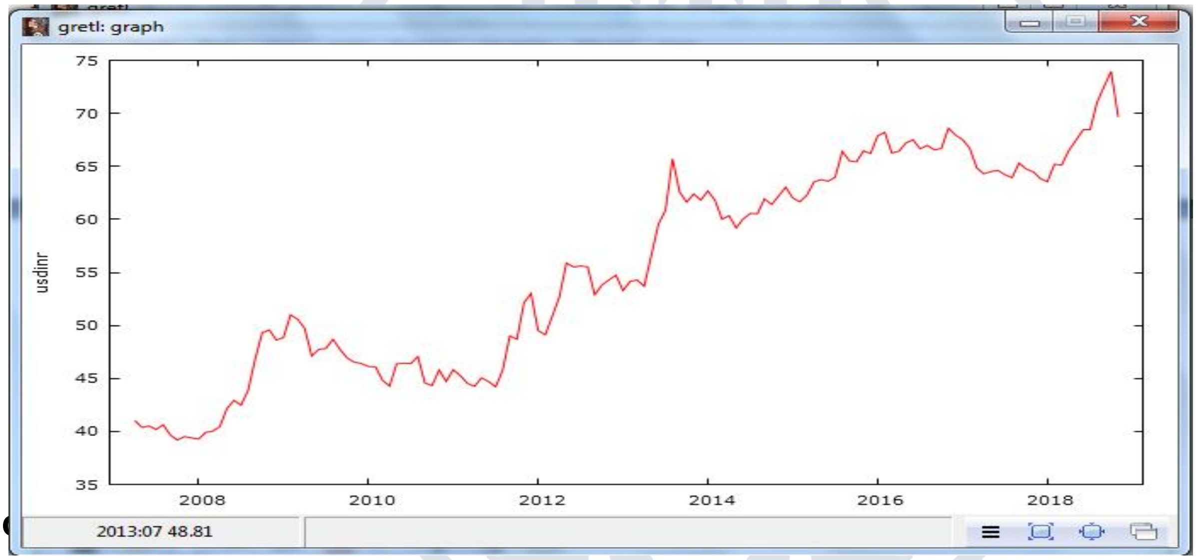
FIIs registered with SEBI fall below the two classes on is ordinary FIIs which means that people who are required to invest not less than 70 % in their investment in equity-related instruments and 30 % in non-fairness devices and other class being 100 % debt-fund FIIs- those who are accredited to make investments most effective in debt units.

Foreign institutional buyers were allowed to spend money on all listed securities (debt and fairness) traded in Indian capital market in view that liberalization policy came in the effect in 1992 and because then there has been continuous improvement to construct the Indian economic system more liberal with the world financial system. Foreign capital inflows have its blessings in addition to drawbacks (execs and cons) closer to the improvement of recipient economy. FIIs additionally termed as terrible climate pal because of its conduct of investment in any economy. The investment made by way of the foreign institutional investors attracted by means of favourable environment of the US like properly-regulated inventory marketplace, government guidelines, trade price, and macroeconomic aggregates and so on. FIIs investment also pose excessive chance to the home economic system as well as properly economic financial system of recipient us of a due to its behaviour of outflows which ends up in upward push of inflation, volatility in alternate fee in addition to the inventory markets.



Graph-2 BSE Sensex

In this current paper, an attempt has been made to analyse the determinants of FIIs in India. several researches on FIIs counselled that, those inflows largely determined via the overall performance of stock market and macroeconomics aggregates of the host united states of America. As a result, on this paper, an effort has been made to analyses those determinants which are as follows: FIIs are allowed to go into into recipient united states of America (India) handiest thru stock exchanges. FIIs invested in forms i.e. equity and debt. FIIs have the most important impact on the rise or fall of SENSEX and in this gift paper the effort has been made to analyses the relation among FIIs funding and SENSEX. The numerous studies evidences display that once there may be effective investment by FIIs the SENSEX boom and vice-versa. BSE-SENSEX has been selected for this study to analyse the relationship among FIIs investment inflows and volatility in BSE SENSEX. The opposite determinant on this look at is change fee (greenback charge). This macroeconomic variable represents the nominal charge of alternate of the Indian Rupee against one unit of foreign money. For foreign currency we select US bucks, because it has remained to be most dominating foreign money used for buying and selling and investment in the India. In this paper, we used rupee dollar (INRUSD) to symbolize the moves in foreign exchange foreign money market, at the same time as for equity marketplace, every year common statistics for BSE SENSEX has been used. The yearly records on net FIIS statistics has been gathered from the SEBI website from 1993-2015. For FIIs funding, we've got decided on the internet funding in fairness as well as debt inside the Indian economic system in this studies paper.



Review of literature:

A thorough evaluation of literature related to studies inside the field of foreign investment specifically foreign Institutional investors has been made studied right here in order to figure the uniqueness of the existing have a look at. The Researcher has consulted numerous journals, newspapers magazines, annual report of SEBI and Ministry of Finance, RBI, and dissertations and the work of the different researchers in place of foreign investment.

Alam and Alam (2014) analyses the overall performance of foreign institutional investments inside the Indian inventory marketplace. After staring at the movement of FIIs movement and the effect of the buying and selling of foreign Institutional traders on the performance of Indian capital market and through examining the empirical relation among inventory market go back and FII flows, it is discovered that the FII net inflows are correlated with the SENSEX and explains the actions inside the Indian capital marketplace.

Ahmad, Ashif and Ahmed (2005), made a company degree evaluation of FII's role within the Indian equity marketplace. At the combination stage, FII investments and NSE Nifty appear to have a sturdy bi-directional causality. At the company stage, FIIs are influencing fairness returns in particular in the government owned agencies. He also showed that there has been little or no destabilizing impact of FII flows on person equity returns of the companies during their duration of study.

Aggarwal, Klapper and Wysocki (2005) discovered that foreign investors desired the companies with higher corporate governance. Investor protection is bad in case of corporations with controlling shareholders who've capacity to expropriate property. The block shareholders have an effect on the price of the company and influence the personal advantages they obtain from the company. Organizations with such shareholders will discover it pricey to elevate outside funds.

Batra Amit (2003) tried to increase an understanding of the dynamics of the buying and selling behaviour of FIIs and returns in the Indian fairness market. Daily and month-to-month information were analysed to explore the buying and selling behavior of FIIs and the impact of their trading biases upon inventory market balance. The author found that there is strong proof that FIIs had been nice feedback investors and fashion chasers on the aggregate degree on a daily basis. But, there is no proof of high quality feedback buying and selling on a month-to-month basis.

Bhattacharya and Jaydeep (2005), determined the lead and lag interrelationship between the Indian inventory marketplace, net overseas institutional funding and change charge. by way of employing the Granger non-causality take a look at through taking BSE sensitive index as proxy for the Indian stock marketplace and the indices of real powerful exchange fee (REER) of the Indian Rupee for the exchange rate for a period of thirteen years commenced from Jan. 1993 to March 2005, they advocate that inventory prices could seize records on neither the FIIs nor the trade price. Investors can consequently apply profitable buying and selling policies to earn supernormal income. Additionally FII cannot seize information on trade rate thus including to the opportunity of software of worthwhile trading policies. beneath the occasions, the Indian inventory marketplace appears to be bearing the underlying pressure now not currently seen at the floor. The implementation of profitable buying and selling strategy might also at any point of time generate over-enthused investment and this, if coupled with market overreaction, may additionally result in a destabilized gadget. A point additionally to be mentioned here is the cutting-edge attention of FII budget inside the IT and Banking area, which in any occasion of float reversals may additionally get worse the state of affairs.

Banerjee and Sarkar (2006), have tried to version and forecast inventory return volatility within the index returns of the NSE, the use of excessive frequency intra-day records protecting a duration from June 2000 thru January 2004 by way of the use of the GARCH version. Main findings of this take a look at are: (a) existence of volatility clustering in the Indian inventory market; (b) proof of leverage effect on volatility; (c) the alternate in quantity of change positively affecting marketplace volatility; and (d) participation of FIIs within the Indian stock market no longer ensuing in considerable growth in marketplace volatility.

Bohra and Dutt (2011) pursuits at know-how the behavioral sample of FII with the aid of identifying the last decade trend evaluation of FII funding in India, and attempts to give the correlation among FII turnover and turnover of different man or woman organizations of stocks in BSE SENSEX. the author observed a superb correlation among stock market and investment of FII's in a relation that SENSEX follows the funding behavior of FII's, however there may be a few exception visible in yr 2005 and 2008. It additionally suggests that fantastic or poor motion of FII's results in a primary trade/shift within the sentiments of domestic or related buyers in marketplace and indicates the coverage implication that the authorities can consciousness on home financial policies to stabilize the inventory market.

Bose Suchismita and Coondoo Dipankor (2004) take a look at the effect of FII coverage reforms on FII portfolio flows to the Indian stock markets. Given the risky nature of capital flows to emerging markets seen in the early 1990s, FIIs funding in India, which started in Jan 1993, referred to as for special regulatory interest. The consequences of this look at help to assess the effect of Liberalization in addition to strengthening of policy framework for FII flows in the submit-Asian crisis duration and unearths that the Liberalization policies that elevated the club of FII classes and their scope of investments inside the Indian market. at the entire writer, reveals that these rules mainly render FII funding more sensitive to domestic marketplace returns and lift the inertia of FII flows.

Chakrabarti Rajesh (2006) focuses upon the contribution of overseas funding in Indian fairness marketplace as well as percentage in GDP of the country. the writer also attempts to show the relationship among FII flows and go back inside the Indian market with the help of cumulative FII investment and the SENSEX from Jan 1993 to June 2006 and unearths that FII equity investment and the stock market overall performance in India have been carefully interlinked. it is also located that the FII flows are believed to have a fantastic effect on the u . s . a .'s improvement, so much in order that encouraging FII flows authorities represent an expert institution (2002, which said in 2004) to indicate approaches to perform this intention. Lastly the author concludes that, FII flows should be considered now not in isolation however as part of an incorporated coverage package for all capital receipts keeping in thoughts their function in the overall macroeconomic shape.

David wood worker companion Mayer, Brown, Rowe and Maw LLP (2005) tested the regulatory framework established via Indian authorities for three separate funding avenues: overseas direct funding; investment via overseas institutional traders; and funding by overseas task capital traders. In keeping with them even though those investment alternatives have created ample avenues for foreign investment in India, but they nevertheless remain issue to many conditions and restrictions which maintain to impede foreign investment in India.

Khan Masood Ahmad, Shahid Ashraf and Shahid Ahmed (2005) tested the relationship between foreign institutional investments and inventory marketplace returning India for the duration of 2002-04 and discovered the outcomes that FIIs have been interested in India as an critical investment vacation spot. FIIs funding in positive Indian corporations suggests majority shareholding while as a percent of the floating inventory it's also significant. The waft of FIIs price range appears to be attracted by means of the Indian fairness return.

Mishra P.k., Das okay.B., and Pradhan B.B., (2009) assessed the overall performance of the Indian capital marketplace by empirically reading the impact of internet equity investment by using FIIs on inventory returns. This have a look at affords the proof of nice correlation between FII net flows into India and inventory market return and also found that the moves in the Indian capital market are fairly explained with the aid of the FII net inflows.

Mohan T. T. Ram (2005) determined that FII investment is considered as compensating in some way for the highly low stage of overseas direct investment (FDI) and as a welcome sign of global hobby inside the Indian economy and observed that in India, volatility in portfolio inflows has been modest compared to other emerging markets and the actual problem caused by versions in FII inflow from year to year is not inventory market volatility but problems involved in management of cash deliver and exchange price.

Singh Bhupinder (2005) examined the results of great macro-economic variables, inflation and change rate on the inflows of foreign Institutional funding in India and tried to expand a theoretical framework to investigate the inter-relation among foreign Institutional funding, inflation and exchange charge. The look at advised that the power of the monetary system of the is gauged by way of the quality of overseas capital inflows. The monetary system has to be strong to thrust back any damaging impact bobbing up from the volatility of capital flows. It need to be ready with good enough help measures like foreign exchange reserves, relaxed balance of payments function to negate the impact of risky capital flows. it's miles best then that the damaging effect of contemporary international improvement like oil costs hike can be minimized.

Li and Jeong-Bon (2004) observed that foreign investors have a tendency to keep away from shares with excessive pass company holdings. They counselled that FII are in all likelihood to be green processors of public information and are interested in eastern corporations with low information asymmetry.

.**Objectives of the study:**

- To explore the causal relationship between foreign institutional investors (FIIs) and Indian stock market (SENSEX)
- To examine the connection between foreign institutional investors (FIIs) and exchange rate (INRUSD)

Need of the Study:

This paper attempts to analyze the impact of currency fluctuations on the investment by the foreign investment investors and the role played by the FIIs in the development of Indian capital market. Since 1993, when liberalization policies came in to effect and Indian market opened for foreign investment, the FIIs become the driving force for the overall development of economy as well as pose threat in the development.

Data methodology and model specification:

The monthly data for the period of 2007-2018 i.e. 10 years of FIIs, SENSEX and Exchange rare (INRUSD) is taken to study. The researcher focused on the FIIs net investment in India (both equity and debt) and their effect on SENSEX and the its influence on fluctuations of exchange rate (INRUSD). The data was gathered from official website of BSE, RBI. The variables which are studied in the research are FIIs investment and causal relationship between FIIs, exchange rate with SENSEX being a measure of volatility of Indian share market and exchange rate as a measure of major macro-economic variables.

To prove the stationarity of data Augmented Dickey Fuller test is used and to find out the causality between the two variables granger causality test has been applied on FIIs and exchange rate and SENSEX, OLS model has been used in the study.

Augmented Dickey-Fuller test has been used to find out the data is stationary or not for the exchange rate and Granger causality test applied on FIIs investment and exchange rate to find out the causal relationship between these two. For finding out the relationship between FIIs and SENSEX, OLS model has been used in this study.

Regression equation looking at relationship between BSE SENSEX and FII flows is:

$$\hat{Y} = \alpha_t + \beta_t + \alpha_{(t-1)} * y_{(t-1)} + \ldots + e_t$$

The results of ADF test has been depicted as follows:

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Augmented Dickey-Fuller test for l_returns
testing down from 6 lags, criterion AIC
sample size 138
Unit-root null hypothesis: a = 1
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test with constant
including one lag of (1-L)l_returns
estimated value of (a - 1): -0.0189194
test statistic: tau_c(1) = -1.11987
asymptotic p-value 0.7103
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Model: OLS, using observations 2007:04-2018:11 (T = 140)
Dependent variable: l_returns

	coefficient	std. error	t-ratio	p-value	
const	8.52080	0.0991495	85.94	4.69e-121	***
usdinr	0.0249142	0.00182987	13.62	3.11e-027	***
FII	2.88094e-06	1.65844e-06	1.737	0.0846	*

Mean dependent var	9.943060	S.D. dependent var	0.323722
Sum squared resid	5.622001	S.E. of regression	0.202575
R-squared	0.614048	Adjusted R-squared	0.608414
F(2, 137)	108.9833	P-value(F)	0.245672
Log-likelihood	26.39544	Akaike criterion	-46.79088
Schwarz criterion	-37.96596	Hannan-Quinn	-43.20470
rho	0.926396	Durbin-Watson	0.149206

Cointegrating regression -
OLS, using observations 2007:04-2018:11 (T = 140)
Dependent variable: FII

	coefficient	std. error	t-ratio	p-value	
const	-2766.78	5083.77	-0.5442	0.5872	
usdinr	303.953	90.2906	3.366	0.0010	***

Mean dependent var	14089.50	S.D. dependent var	10777.44
Sum squared resid	1.49e+10	S.E. of regression	10397.90
R-squared	0.075888	Adjusted R-squared	0.069191
Log-likelihood	-1492.555	Akaike criterion	2989.109
Schwarz criterion	2994.992	Hannan-Quinn	2991.500
rho	0.250990	Durbin-Watson	1.496207

It is very clear from depicted information that FII causes macroeconomic variables like currency exchange rate it is observed from the above table that FII causes macroeconomic variables like exchange rate as presented in table that the F-statistic is 3.366 and the p-value is 0.0010 that is less than critical value i.e. 0.05 which implies that the null hypothesis is rejected i.e. it proves that FII causes Exchange rate. As far as causality relationship is concerned, a unidirectional causality or one-way causality is found from FII towards exchange rate. In running the regression analysis, SENSEX yearly averages have been taken as the dependent variable and the net investment flow by FIIs are considered as the independent variable. To test the causal relationship between net FII investment and SENSEX, OLS model fitted with the econometric technique of ordinary least square (OLS) has been done. Regression equation looking at relationship between BSE SENSEX and net FII flows is:

$$Rt = \alpha + \beta FIIt + \varepsilon\, t$$

Where *Rt* is the SENSEX based monthly averages *t; FII* is the net investment flow by FIIs at time *t;* α and β are constants; **ε *t*** is the noise;
Thus by applying linear regressions on net FII investment and SENSEX value the following summary table has emerged.

Conclusion:

It can be determined from the above desk that all explanatory variables, taken together set up a dating nearly 60.8 percent (R2 = 0.608) of the whole variables within the capital market place of India in every year. Which means that whatever adjustments have been fell inside the SENSEX for length underneath study the FII is accountable as much as 60.8%. This means that there are many different macro-financial elements that have circuitously affected the SENSEX in India. therefore, it can be inferred that consistent with the model made on the idea of linear regression, FII funding have truly affected the SENSEX cost however no longer definitely from the coefficients of the version as proven above.

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