

# **“EMPLOYING REGRESSION ANALYSIS TO ESTABLISH THE CORRELATION BETWEEN FOREIGN INSTITUTIONAL INVESTMENTS AND INDIAN MUTUAL FUNDS; INVESTIGATING THE EFFICACY OF INDIAN MUTUAL FUNDS AS SECURE INVESTMENT OPTION AS LINKED TO INVESTORS”**

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Foreign institutional investments (FIIs) have always been in news because of their huge volumes and their skill to make the market take violent twist and turns they are one of the hottest topics of conversation as well as study these days.

Mutual funds have been around for a long time. Both FIIs and mutual funds have a common linkage and that is the stock market It is common knowledge that FIIs can drive the market index up and down and this in turn results in the Net asset Value (NAV) of the mutual funds fluctuating FIIs have an immense influence on the stock market since the bulk of their investment is in the stocks that comprise the key indices and half of it is in the top five stocks that comprise the key indices. However, what is also a very important aspect of study is the probably impact of the FIIs on the mutual fund movements. Both the variables under concern have a bright side as well as dark side Whether the b righter side of the FIIs overshadows the darker side in terms of its impact on the mutual funds is the subject of study the conceptual framework deals with this whole ideas.

Questions arise regarding the efficacy of mutual fund investments and their correlation with FIIs. The investor needs to know this fine point and whether it will affect his choice of investment. The entire data on mutual fund flows and FII flows has been put to statistical tests. All this forms part of the findings and analysis.

This research caters to an extent to the investing class and presents the overall picture in the context of mutual funds. Whether the investors should invest in mutual funds or not given the FII flows and their impact on mutual funds in the subject matter of the recommendations and conclusions.

### **Mutual Fund Companies in India**

- √ ABN AMRO Mutual Fund
- √ Birla Sun Life Mutual Fund
- √ Bank of Baroda Mutual Fund
- √ HDFC Mutual Fund
- √ HSBC Mutual Fund
- √ ING Vysya Mutual Fund
- √ Prudential ICICI Mutual Fund
- √ Sahara Mutual Fund
- √ State Bank of India Mutual Fund
- √ Tata Mutual Fund (TMF)
- √ Kotak Mahindra Asset Management Company
- √ UTI Asset Management Company Private
- √ Reliance Mutual Fund (RMF)
- √ Standard Chartered Mutual Fund
- √ Franklin Templeton Mutual Fund
- √ Morgan Stanley Mutual Fund
- √ Escorts Mutual fund
- √ Alliance Capital Mutual fund
- √ Benchmark Mutual Fund
- √ Canbank Mutual Fund
- √ Chola Mutual Fund
- √ LIC Mutual Fund
- √ GIC Mutual Fund

### **The Indian Scenario**

India is one of the most attractive emerging markets today for foreign investment. The market of a country that presents a high-risk situation but also holds the potential for high returns characterizes and merging market. These markets are also marked by a high degree of volatility.

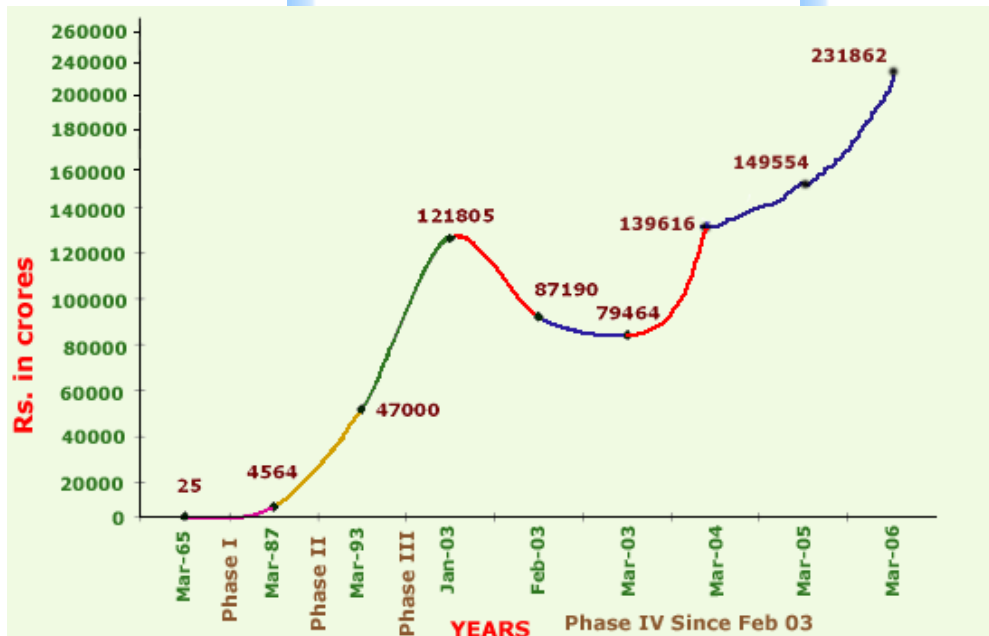


Figure – 5

The above chart shows the rise that has been witnessed in the number of FIIs registered with the stock market regulator in India-Securities Exchange Board of India (SEBI) was formed in 1988 and was given the responsibility of preparing a comprehensive set of guidelines for the regulation of the mutual funds.

These guidelines lay down the rules for the formation, administration and management of the mutual funds disclosure requirements are also mentioned. In November 1995, SEBI issued guidelines that were largely based on the ones issued earlier in 1992. These guidelines required the FIIs to obtain approval from the Reserve bank of India (RBI) under the Foreign Exchange Regulation Act, 1973. Once they received the approval, they could buy and sell securities, open bank accounts both rupee and foreign currency, and also were enabled to remit and repatriate funds. Full convertibility of Rupee was applicable for the FIIs. Over time, the scope for the FIIs has expanded by permission to additional categories of investors and by identification and recognition of other instruments where they can invest.

The flow has also been aided by the falling dollar. These flows have been cited as the prime reason for the Bull Run being witnessed in the Indian stock market. However, the appreciation of rupee in turn has the ability to hurt the exports. Thus there exists a paradoxical situation whereby a free market philosophy is professed on the one hand, while on the other hand a controlled regime is required. It has often been argued that the FIIs have brought with them “good” things such as transparency, liquidity and volumes.

Foreign Direct Investment (FDI) is any day better than investment by foreign investment (FII) the difference between FDI and FII is that FDI creates assets and generates jobs while FII is an investment in the existing stocks and shares where the Foreign Institutional Investors (FIIs) buy and sell shares of Indian companies to make profits; FII does not generate assets and does not create jobs.

In India the FII money is coming in a big way than FDI, while it is the other way round in china, which is our competitor in the international market for number of goods and services. Foreign Investment refers to investments made by residents of a country in financial assets and production process of another country.

### **Relevance of the study for the investors**

The issue is contentious since a huge proportion of the population is still devoid of easy access to capital markets for fruitful investments. Often, FIIs do not act rationally and excessive dependence on them can have disastrous consequences for the economy. FIIs are the first to flee in case of any undesirable circumstances and this necessitates the need for having a strong domestic support. The FII flows also have another dark side. They normally invest in the top-rung companies and this creates a buying pressure, which forced the indices upward, quite analogous to the rise in the price of a commodity due to a heightened demand This leads to a cascading effect on even the undeserving stocks among others and because of the heavy manipulation that follows, the promoters and operators manage to escape the scrutiny. As a result, the small investors who are looking for cheap bargains get maneuvered into such stocks.

The mutual funds pose a challenge to the banks of large and small cities because of their simplicity and convenience and thus have come to preponderate the Indian financial services scenario.

Investor education holds tremendous importance they need to be enlightened about the various schemes being offered by the different Mutual funds. All investors today can access all information about them (Economic Times Mutual Fund Report, 31 January 2005). Different categories of mutual funds have varied investment objectives. Similarly, different investors have different objectives of investing in these widely diverse mutual funds. These objectives could be as varied as earning capital gains, or regular dividend stream, or tax-saving purposes and so on. However, emphasis is to be laid on the need to realize that the market can prove to be highly erratic and volatile in the short run and significant amounts of money may be lost. Thus, the investors need to be aware of

the benefits of long-term investments and that is when they should turn to mutual funds.

The investors have to undertake certain important considerations before putting their hard-earned money into mutual funds. These can be listed as follows:

- √ Mutual funds are not simply short-term tools to speculate in the market. They fluctuate according to the changing market conditions but they cannot be used to enter and exit the market. Mutual funds are actually long term investment avenues for the investors. Also the investors need to ensure that a Systematic Investment Plan (SIP) is followed while placing their money in the mutual funds. This implies that a specified sum of money is invested on a regular basis each month for an extended period of time.
- √ The next most important factor to track a mutual fund is the Net Asset Value (NAV). Analogous to share prices, the mutual funds have an NAV, which is the value of the assets of the scheme after considering the liabilities; it is calculated per unit so that the investor knows how much each unit of the scheme is actually worth the NAV thus needs to be kept track of. It is declared by the mutual funds in the newspapers on a daily basis.

Among the other factors the investor must consider

- √ Portfolio of the scheme is crucial. This is because the performance of the scheme ultimately depends on its portfolio, its composition and how the fund manager manages and changes it. This is a very important indicator of the risk associated with the portfolio. The extent of diversification in the portfolio is also an indicator of the riskiness of investment.
- √ Finally, the cost aspect of the fund also requires consideration. Managing and administration of a fund requires a lot of costs and these are usually covered up from the investors through the NAV. The investors thus need to ascertain the costs involved in various schemes and a comparison with the other schemes can play a vital role in the final analysis of the expected return.

## **OBJECTIVES OF THE RESEARCH**

The objectives of this research are:

- √ To determine the correlation between the two variables- FIIs and the mutual funds,
- √ To establish the cause and effect relationship between the stock market index on the one hand and the mutual fund flows and FIIs on the other,
- √ To understand the impact of the foreign institutional investments on the movements of the Indian mutual funds,
- √ To analyze and evaluate the effectiveness of investing in the mutual funds.

Mutual fund flows and FIIs can be regarded as independent variables whereas the Index can be taken as the dependent variable with the help of correlation and regression analysis, the causality between the index movements and the FII flows and Mutual fund flows can be established Also the two independent variables are interrelated, this will be proved with the help of this research.

## **SCOPE OF THE STUDY**

This report basically aims at studying the growth of Mutual Fund industry and the growth of Foreign Institutional Investments in India.

The impact of FII's investments on Mutual fund flows has been also an integral part of the study. The statistical models of correlation and regression have been used to bring out the dependency relation between the variables under study viz. the Index S & P CNX Nifty, FII inflows and the Mutual fund flows.

Historical month wise data for past years have been taken for the purpose of the study.

## **LIMITATIONS OF THE STUDY**

The limitations of the study are as follows:

- √ Historical month wise data for past years has only be taken for the study.

- √ Others factors apart from FII's flows affecting the Mutual Fund flows have not been researched and are out of scope of this study.

## METHODOLOGY

India has seen a steady growth in FII inflows since the opening up of its markets as a part to liberalization and since then there has been no looking back. The market environment has undergone a drastic change and has become much more creative and competitive thereby resulting in the growth of the issuers of securities and intermediaries these FII inflows have come to become the preponderant owners of the free float of most blue chip Indian stocks As a result of which, they have a major impact on the market volatility. It is this volatility that will be understood hereon.

### Analytical tools

The statistical models of correlation and regression have been used to bring out the dependency relation between the variables under study viz. The Index S&P CNX Nifty, FII inflows and the Mutual fund flows. With the help of the correlation statistic, the degree of correlation between the proposed variables can be understood and this further corroborates the results obtained from regression analysis.

### Data

For the proposed study the index considered is S&P CNX Nifty i.e. the National Stock Exchange (NSE) benchmark index. This is because NSE is the dominant stock exchange of India and the major chunk of FII activity takes place on this exchange. The data considered is monthly data of Nifty, FII flows and the mutual fund flows from January 2000 to December 2005. the period from 2000 to 2005 has been selected since this period captures some of the great peaks and dips in the Indian market. Also, this period marks some significant developments in the financial markets such as rolling settlements, derivatives etc.

The Data has been taken from Internet sites: [www.moneycontrol.com](http://www.moneycontrol.com), [www.nse.com](http://www.nse.com), [www.matualfundsindia.com](http://www.matualfundsindia.com) journals, books and internet.

## CONCEPTUAL FRAMEWORK

The main focus underlying any mutual fund is the Net Asset Value (NAV). The NAV of a mutual fund is the difference between its assets and liabilities It is an

indicator of a fund's worth This is very important for the investors since it is the NAV that determines the per unit price of the fund. The price per unit of the fund is obtained by dividing the NAV of the fund by the number of outstanding units. This NAV fluctuates constantly in accordance with the market.

The FIIs enter into the market and through the market they have an impact on the mutual fund movements. The market thus acts as lynch-pin in this setting whereby FIIs stand on one and mutual funds on the other. As far as the equity market is concerned, the entry of FIIs through mutual funds has turned out be a positive sign. However, this may not be a very positive sign for the mutual fund investor since he may have to satisfy himself with a lower return if the mutual fund diverts its attention to suit the requirements of these large investors. The investors might have to look for other profitable avenues for parking their money. The budget for the year 2004-05 has increased the FII limit in debt funds from US \$1 bn to US \$1.75 bn (CRISIL 2004). This has provided relief to the debt mutual funds who were already bearing the brunt of hardening of interest rates and the fear of losing out to other investment avenues due to a high dividend Tax therefore the directional impact of this budgetary measure has been upward.

What restricts the FII inflows to our country is the fact that there are very few companies that have a market capitalization in excess of Rs. 10,000 crore. This makes it important for the FIIs to hold stakes in mid-caps and this means going through the mutual fund route. This would also present more attractive prices for the exposures. The entry of FIIs into the mid-cap stocks becomes reason enough for the prices to touch the sky. Also, the overall perception about mutual fund performance improves and the fund managers are able to benchmark the performance against other institutional investors.

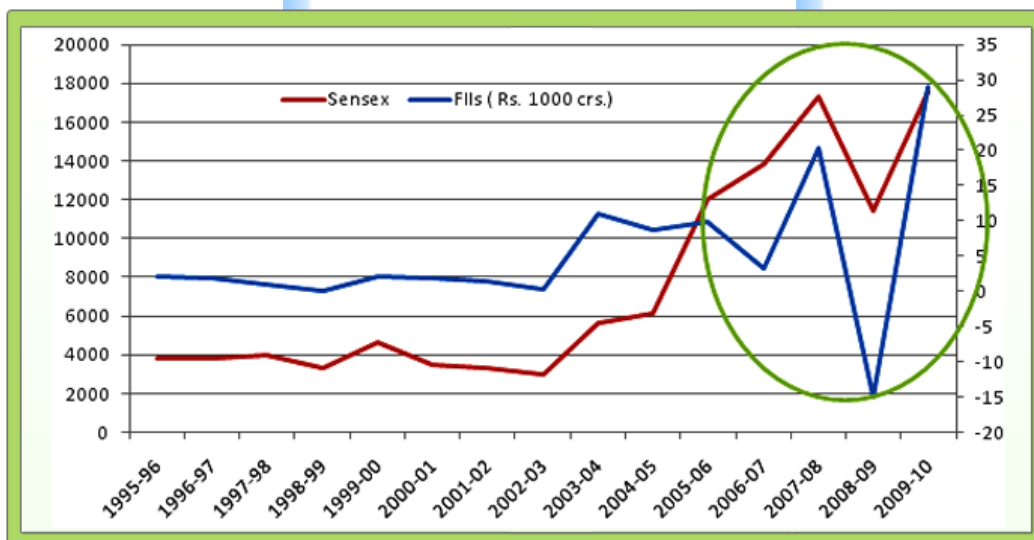
However, the impact on an individual investor is very different. The FII flows into the country have been stable for quite a long time. This means that the mutual funds are forced to hold on to the large-cap stocks even if they are considered fully valued. This happens because the FIIs are very much interested in liquidity. As a result the funds are not able to provide a good return to the individual investor who may then shift focus to investing directly in mid-cap stocks. This impact cannot be ignored since the size of FII inflows is increasing by the year.

Thus, the FII impact on Indian mutual funds cannot be distinctly ghettoized as positive or negative. It is a matter of serious study and research to reach a final conclusion. The FIIs are a very important class in their own since they are the driving factors behind liquidity and market sentiment. While liquidity assumes importance in the short to medium term, the market composition becomes



important in the long term and around the world, it is liquidity and market composition that drive the prices.

The entire effect can be understood more explicitly with the help of the following diagram.



**Figure- 6**

The FIIs can be looked at as behemoth entities that infuse liquidity into the markets and present a picture that puts the retail investors in an awestruck state little do they know that they might suffer from the adversities of FII inflows/ Just like there are two sides to every coin the FIIs have a bright as well as dark side.

Shareholding pattern that has been observed in the market by researchers suggest that the FIIs are largely buyers and that the mutual funds and retail investors should help complete the transaction by selling what the FIIs want to purchase The investors need the FIIs to buy stocks that they have to sell. They are not in need of a direction from the FIIs.

Thus, the FIIs, mutual funds and the individual investors are all part of the same circle.

Looking at the brighter side of the FII impact on the mutual funds, it can be very rightly said that the positive effect is that the FIIs present themselves as buyers of what the mutual fund have to sell thereby escalating their NAVs. Once the NAVs soar, the fund becomes all the more attractive for the individual investor. The NAV is a reflector of the fund's performance and a rising NAV

shows good signs for the fund and therefore becomes a good investment avenues. Also, for the retail investor too the FIIs pose as profitable buyers.

The other positive effect that the FIIs have is on the market in terms of improved brokerage for capital market intermediaries.

However, the sheer size and scale of these foreign investments results in a crowding out of the domestic investors.

Problem that is faced with large fund sizes is that the fund managers resort to spreading the investments or assets over a large number of stocks since investing a huge amount in one stocks will make the share price soar. This move bears resemblance to an index fund, which is a portfolio of investments that are weighted in the same manner as a stock exchange index in order to create a mirror image. In such a situation the individual investor not only ends up paying an extra amount for the active management but also gets exposed to the volatilities of the market stocks (large-cap).

Turning toward smaller-sized funds, fund managers indicate their preference for such funds since it makes it easier for them to quickly move in and out of the stocks. However a small-sized fund has its own drawbacks firstly, a very good short-term performance can be exhibited by the fund because of a few successful stocks. This could have a huge impact on the fund's performance since these new funds do not have a very long or experienced history associated with them. The investor might get attracted to such a fund and unknowingly places himself in the hands of an inexperienced manager. Secondly, the small size means that there is a low level of diversification by the fund. This places the fund at the perils of the share price volatility and a sharp drop in the share price of one stocks will have a mammoth negative effect on the fund's portfolio. Finally, since the size is small, the benefits of economies of scale cannot be reaped by the fund and this results in a higher management expense ratio for the fund.

In deciding which fund to invest in the investors need to look at the cash holdings of the fund. If a large proportion of the fund portfolio is held in cash then it is an indication to the investor that the manager is having a hard time, managing the fund. Also, the cash holdings of the fund need to be compared with its past cash holdings. If more and more investors are withdrawing their investments, it reflects the fact the asset base of the fund is shrinking and that it is losing money.

The point that needs to be reiterated is that FII volatility can bring about volatility in the mutual fund operations since the NAVs are linked directly with the highs and lows of the market. The funds that are affiliated to FIIs (private funds) exhibit patterns etched out by the FIIs. The domestic funds may or may not follow the pattern but more often than not, they also end up treating the same path. The sectors that are given preference by the FIIs form a substantive portion of the net assets under the mutual funds' management. The Unit Trust of India has also shown its involvement in sectors such as information technology (IT), fast moving consumer goods (FMCG) and Pharmaceuticals all of which have been given preference by the FIIs.

Mutual funds have the capability to create trends whereas an individual investor can only follow the trend. However the behavior of FIIs and therefore mutual funds makes it possible to say that the very logic underlying the mutual funds, that mutual funds are wise investors because they undertake a thorough market research, has been turned around a bit. The entry of FIIs has not led to a deepening of the market; rather it has resulted in concentration on few select sectors. This could have the impact of bringing down the stability base of the market.

## **RESEARCH FINDINGS AND ANALYSIS**

### **Regression analysis**

Regression analysis is used primarily for the purpose of prediction. The main aim of this statistical tool is to predict the values of a dependent variable (response variable) based on the values of one or more independent variables (explanatory variables).

Using the Index – S & P CNX Nifty as the dependent variable (Y) and the FII inflows and Mutual Fund flows as the independent variables (X1 and X2 respectively), a regression analysis was carried out to determine the extent to which the index is dependent on the FII inflows and mutual fund flows.

The entire analysis was looked at in two parts.

### **Case I**

In this case, the lag variables were not been taken. The variables were defined as follows:

Dependent variable: Nifty

Independent variables: FII inflows and Mutual fund flows

The hypothesis was framed as follows:

**H<sub>0</sub>: FII inflows and Mutual Fund flows have a significant impact on the nifty variations.**

**H<sub>1</sub>: FII inflows and Mutual Fund flows do not have a significant impact on the nifty variations.**

Firstly, a simple regression was carried out so as to evaluate the effect of FII flows on the nifty volatility. This yielded the Adjusted R square value of: **0.224**

This meant that 22.4% of the variation in the nifty could be explained by the FII inflows.

Next mutual fund flows were introduced as an additional independent variable. Regression analysis with these two independent variables yielded the value of Adjusted R Square to be: **0.8413**

This implied that 84.13% of the variation in nifty could be explained by FII inflows and mutual fund flows taken together.

This marked an increase over the previous value and was indicative of the fact that mutual fund flows did have much affect on the nifty movements

The regression equation thus obtained can be written as:

$$Y_i = -119.83 + 0.0273 X_1 + 0.0123 X_2$$

Here,

$\beta_0$  is 119.83, which implied that even if the FII inflows and mutual fund flows were not taken into account, the nifty moved to the tune of -119.83 units.

$\beta_1$  is 0.0273, which implied that if mutual fund flows were kept constant, for a 1-unit change in the mutual fund flows, the nifty changed by 0.0273 units.

$\beta_2$  is 0.0123, which implied that if FII inflows are kept constant, for a 1-unit change in the mutual fund flows, the nifty changed by 0.0123 units

**F-Value** is close to zero which confirms that the regression equation is linear and Impact is significant.

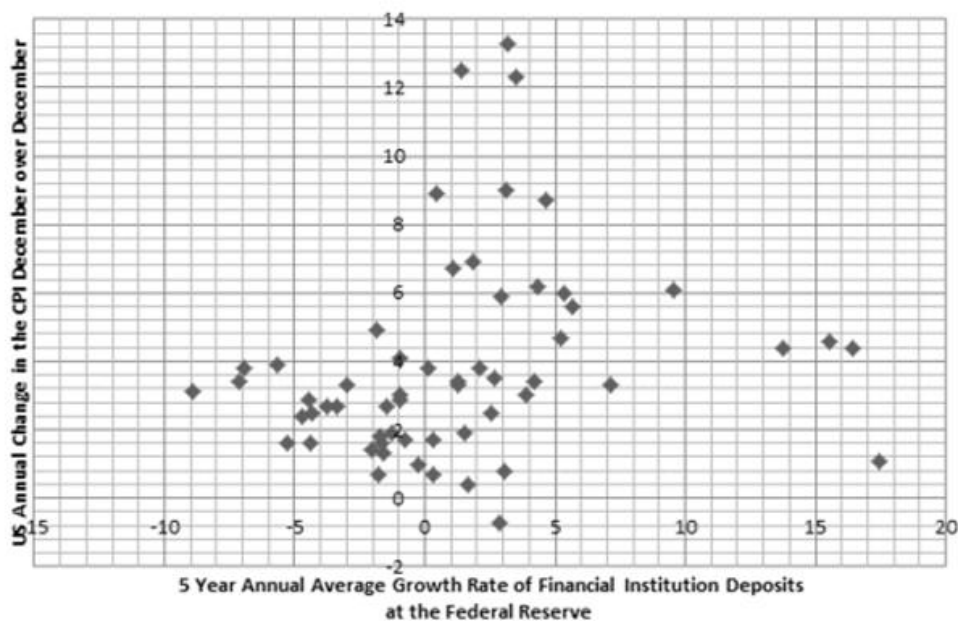
Moreover **p values** of both the independent variables are less than 0.05 which clearly shows that both FII and Mutual Funds Flows have impact on dependent variables.

Together, **FII inflows and Mutual fund flows explained a significant percentage of the variation in the index (84.13%)**.

Therefore the null hypothesis was accepted. FII inflows and Mutual Fund flows have a significant impact on the nifty variations.

This was also corroborated by the correlation coefficient 'r', which calculated the degree of correlation between the nifty values and FII inflows.

Using the correlation function,  $r = 0.4846$ . This was a small value indicating a low degree of correlation between the two variables this could also be seen from the scatter diagram.

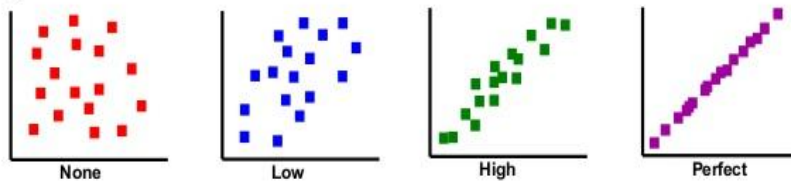


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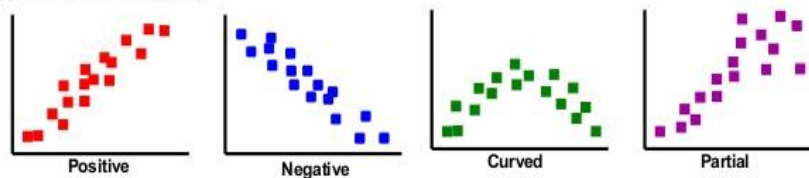
Figure 7

## Scatter Diagram - How do I use it? - Correlation

### Degrees of correlation:



### Types of correlation:



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**Figure 7.1**

### Case II:

In this case analysis is done to establish any causal relation between FII flows and Mutual Fund Flows.

Dependent variable: Mutual Fund Flows

Independent variables: Mutual Fund Lag Variables and FII flows

The hypothesis could be framed as follows:

**H<sub>0</sub>: FII flows have a significant impact on Mutual Fund Flow.**

**H<sub>1</sub>: FII Flows does not have a significant impact on Mutual Fund Flows**

Firstly, the Mutual fund flows were regressed with there first period lag variable.

This yielded the value of adjusted R Square as: **0.95165**

This meant that 95.2% of the variation in the Mutual fund could be explained by the first period lag variable.

Next, the second period lag variable was introduced and the regression analysis was carried out.

The value of Adjusted R square was: **0.95288**

This indicated that 95.3% of the variation in the mutual fund flows could be explained by the two lag variables taken together.

Now, third Pd Lag variable was introduced and the regression analysis was carried out.

The value of Adjusted R square was: **0.95266**

This value was the less than the preceding value and therefore indicated that the value of Adjusted R square had stopped increasing.

It was at this point that the new independent variable – the FII flows was introduced to see Whether FII flows had any causal effect on Mutual Fund flows.

The regression analysis that followed yielded the value of adjusted R Square to be: **0.953053**

This implied that 95.3% of the variation in the Mutual Fund could be explained by the two lag variables and the FII flows taken together. The third lag variable was not included in the analysis since that was the point where the Adjusted R square stopped increasing. This value marked an increase over the previous value thereby implying that the FII did have a causal relationship with the mutual fund flows.

The regression equation obtained can be written as:

$$Y_i = 1978.67 + 1.2052X_1 - 0.2183X_2 + 0.3502X_3$$

Here,

$\beta_0$  is 1978.67, which implied that even in the absence of the independent variables, the Mutual Fund flows did change by 1978.67 units.

$\beta_1$  is 1.2552, which implied that keeping all the other lag variables and FII constant, with a 1-unit change in lag variable, there was a change in the Mutual Fund by -1.2052 units.

$\beta_2$  is (-)0.2183, which implied that keeping all the other lag variables and FII constant, for a 1-unit change in the lag variable, there was a change in the mutual fund by (-)0.2183 units.

$\beta_3$  is 0.3502, which implied that keeping all the other lag variables with a 1-unit change in FII flows, there was a change in the Mutual fund by 0.3502 units.

**F-Value** is close to zero which confirms that the regression equation is linear and impact is significant.

Moreover **p values** of first and third the independent variable (Mutual Fund first Pd. Lag and FII Flows) is less than 0.05 which clearly shows that both FII and First Pd.

Lag have impact on dependent variable (Mutual Funds)

As the p value of second variable is more than .05, it shows that it does not have a significant impact on the dependent variable and it can be dropped.

Thus, it **could be said that the FII flows have significant impact on Mutual fund flows.**

Therefore, the null hypothesis was accepted.

This was also corroborated by the calculation of the correlation coefficient 'r'.  $r=0.3767$ . This was indicative of the fact that correlation did exist between the two variables.

Correlation analysis produced a correlation coefficient of 0.485, which implies that there is a relationship between the FIIs (independent variable) and the Nifty (dependent variable). Simple regression analysis between FIIs and Nifty index produced the result that **22.4%** of the variations in the Nifty can be explained by the FIIs. This is not a very significant figure. Multiple regression analysis taking FIIs and mutual funds as the independent variables and Nifty as the dependent variable came out with the finding that coefficient of determination is **0.841**. This implied that only **84.1%** of the variation in the volatility in Nifty could be explained by the two independent variables. Also, it was found out that correlation



analysis between FIIs and Mutual Funds produced the result that **0.3767** of correlation exist between the two and high correlation exists between Nifty and Mutual Fund Flows (**0.9066**).

More over FII along with Mutual fund Lag variable as Independent variables did have a significant impact of around 95.31% on the Mutual Fund Flows.

## **CONCLUSION**

To conclude, it can be said that mutual funds still remain the safest investment option, FIIs or no FIIs. This holds true especially for small investors who have little knowledge about the market. As established by the analysis FIIs do have a affect on the mutual funds flows, but investors need not worry about losing there money due to FII flows volatility. The advantages associated with mutual fund investments more than offset the negative effects that can be witnessed in the face of FIIs. It should not be forgotten the mutual funds are not only of equity type there are bond mutual funds as well as money market mutual funds Investments in such funds provide the investors with the safety they need to be assured of along with a decent level of returns, thus, mutual funds cannot be written off. They are very much on the scene and that too in a big way.

FII's have both positive and negative aspect associated to it but after the evaluation it is seen that FII volatility do not negatively impact the mutual fund flows to a great extent and there is no need for the investor to panic

Efforts should be made in order to enhance investors confidence in Mutual funds and steps should be taken in order to increase the domestic funds in the stock market so that these large domestic funds provide a counter-balance to FIIs. Even FIIs are major sellers during a particular month, Mutual funds can be the major buyers and this would avoid too much volatility of stock markets and thus safeguarding the interest of the retail investors.

## **SUGGESTIONS FOR FURTHER WORK**

This project report only covers the impact of FII's flows on Mutual Fund flows using statistical tools.

Further research could be done on the various other factors that affect the Mutual fund flows and ultimately affect the investors Apart from FII, other micro and macro economic variable factors could be taken into consideration and what is there impact on the Stock market and Mutual fund flows.

**Hypothesis Test**

**Case – 1**

**Nifty Regressed with FII Flows**

<i>Regression Statistic</i>	
Multiple R	0.484624305
R square	0.234860717
Adjusted R Square	0.223930155
Standard Error	408.7253.55
Observations	72

**ANOVA**

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	3589476.226	3589476	21.48661	1.6051E-05
Residual	70	11693949.11	167056.4		
Total	71	15283425.33			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	1304.951064	60.13704836	21.69962	8.46E-33	1185.0116	1424.891	1185.012	1424.891
X Variable 1	0.079387227	0.017126423	4.635365	1.61E-05	0.04522968	0.113545	0.04523	0.113545

**Nifty Regressed with FII Flows and Mutual Fund Flows**

<i>Regression Statistic</i>	
Multiple R	0.919655155
R Square	0.845765603
Adjusted R Square	0.841295041
Standard Error	184.8316854
Observations	72

**ANOVA**

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	12926195.45	6463098	189.1855	9.8232E-29
Residual	69	2357229.883	34162.75		
Total	71	15283425.33			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-119.839097	90.37305279	-1.32597	0.789223	-300.121161	60.45734	-300.121	60.45734
X Variable 1	0.027322966	0.008360658	3.26804	0.00169	0.01064391	0.044002	0.010644	0.044002
X Variable 2	0.012316476	0.000745016	1653.182	1.08E-25	0.01083021	0.013803	0.01083	0.013803

**Case – 2**

**Mutual fund flows Regressed with First Pd. Lag**

<i>Regression Statistic</i>	
Multiple R	0.9758806
R square	0.9523429
Adjusted R Square	0.9516522
Standard Error	7012.1077
Observations	71

**ANOVA**

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	6.78E+10	6.78E+10	1378.841533	2.43589E-47
Residual	69	3.39E+09	49169655		
Total	70	7.12E+10			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-227.53224	3470.749	-0.06556	0.94792	-7151.48468	6696.42	-7151.48	6696.42
X Variable 1	1.0129809	0.078	37.13276	2.43589E-47	0.958558876	1.067403	0.958559	1.067403

**Mutual Fund Flows Regressed with First and second Pd. Lag**

<i>Regression Statistic</i>	
Multiple R	0.9768559
R square	0.9542474
Adjusted R Square	0.9528816
Standard Error	6956.5165
Observations	70

**ANOVA**

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	67624409737	3.38E+10	698.6986	1.33E-45
Residual	67	3242339188	48393122		
Total	69	70866748925			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	1092.0073	3593.724093	0.303865	0.762172	-6081.1	8265.113	-6081.1	8265.113
X Variable 1	1.2076155	0.120625656	10.01127	6.13E-15	0.966846	1.448385	0.966846	1.448385
X Variable 2	-0.2082706	0.126730852	-1.64341	0.104984	-0.46123	0.044685	-0.46123	0.044685

**Mutual Fund Flows Regressed with first, second and third Pd. Lag**

<b>Regression Statistic</b>	
Multiple R	0.977602
R square	0.955706
Adjusted R Square	0.952662
Standard Error	6941.881
Observations	69

<b>ANOVA</b>					
	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3	6.76E+10	22528288648	467.4916758	6.46E-44
Residual	65	3.13E+09	48189710.77		
Total	68	7.07E+10			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-532.613	3743.963	-0.14225906	0.887315423	-8009.82	6944.593	-8009.82	6944.593
X Variable 1	1.235313	0.123008	10.04255569	7.52364E-15	0.98965	1.480977	0.98965	1.480977
X Variable 2	-0.40273	0.191439	-2.10369404	0.039279131	-0.78506	-0.0204	-0.78506	-0.0204
X Variable 3	0.181352	0.129052	1.405265435	0.16470396	-0.07638	0.439086	-0.07638	0.439086

**Mutual fund Flows Regressed with First, second Pd. Lag and FII Flows**

<b>Regression Statistic</b>	
Multiple R	0.977289121
R square	0.955094027
Adjusted R Square	0.953052846
Standard Error	6943.866204
Observations	70

**ANOVA**

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3	6.77E+10	2.26E+10	467.912552	2.15257E-44
Residual	66	3.18E+09	48217278		
Total	69	7.09E+10			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	1878.672334	3655.851	0.513881	0.609051489	-5420.46763	9177.812	-5420.47	9177.812
X Variable 1	1.20521463	0.120426	10.00794	7.31125E-15	0.964775143	1.44565	0.964775	1.44565
X Variable 2	-0.21832386	0.129821	-1.72151	0.089842451	-0.47153011	0.034882	-0.47153	0.034882
X Variable 3	0.350293572	0.314023	1.115501	0.036808119	-0.2766742	0.977261	-0.27667	0.977261

**APPENDICES**

Months wise data for the past years (Jan'00 to Dec'05)

	<b>Mutual Funds (Rs. in crore)</b>	<b>FII (Rs. crore)</b>	<b>In Nifty</b>
Jan'00	1015.65	196.6	1607.8
Feb'00	1070.43	3084.1	1686.58
March'00	1130.05	1198.8	1605.66
April'00	1052.33	2586.7	1469.03
May'00	1040.32	252.7	1312.65
June'00	1077.28	934.8	1451.74
July'00	1030.89	1404.8	1545.62
August'00	1028.49	1217.4	1350.94
Sept'00	974.62	218.3	1371.27
Oct.'00	968.37	64.4	1201.27

Nov'00	995.20	905.4	1240.59
Dec'00	993.26	635.1	1291.43
Jan'01	1045.35	4273.3	1316.96
Feb'01	1024.35	1863.8	1371.91
March'01	905.87	1765.6	1214.47
April'01	931.01	1978.8	1116.41
May'01	967.95	676.1	1159.44
June'01	979.53	1179.7	1107.56
July'01	989.69	477.7	1077.98
August'01	993.36	504.7	1069.01
Sept'01	918.11	-1410.5	949.43
Oct.'01	945.71	884.4	953.92
Nov'01	9984.41	3.8	1031.62
Dec'01	1018.22	227.9	1075.87
Jan'02	1041.15	699.3	1087.2
Feb'02	1068.14	2336.8	1038.17
March'02	1005.94	329	1159.33
April'02	1028.31	-122.9	1120.74
May'02	1022.31	46.2	1079.8
June'02	1007.03	866	1065.9
July'02	1023.93	238.3	1034.7
August'02	1076.21	174.1	977.6
Sept'02	1069.29	332.4	987.12
Oct.'02	1131.53	-875.1	955.12
Nov'02	1213.93	737.7	992.26
Dec'02	1226.00	647.9	1074.04
Jan'03	1218.05	977.3	1073.48
Feb'03	871.90	428.2	1055.84
March'03	794.64	962.8	1016.38
April'03	892.38	992.5	965.08
May'03	981.24	3060.5	963.2
June'03	1047.62	3461.8	1068.59
July'03	1128.41	2160.9	1050.01
August'03	1210.40	2227.5	1261.13
Sept'03	1217.78	4175.5	1369.03
Oct.'03	1267.26	6722.8	1502.4
Nov'03	1323.66	3594.1	1580.02

Dec'03	1400.93	6381.9	1740.06
Jan'04	1453.72	3869.4	1906
Feb'04	1456.57	2673.5	1848.67
March'04	1396.16	6444.3	1779.63
April'04	1540.24	6719.5	1848.45
May'04	1540.18	-3546.4	1640.2
June'04	1558.45	-273.6	1906.1
July'04	1577.47	713.2	1568.08
August'04	1556.86	2609.7	1615.3
Sept'04	1531.08	2575.3	1691.56
Oct.'04	1479.95	2028	1794.98
Nov'04	1495.21	8185.3	1873.94
Dec'04	1505.37	10139.7	2024.67
Jan'05	1522.80	-316.6	1977.83
Feb'05	1532.53	9209.4	2067.39
March'05	1496.00	7926.6	2069.23
April'05	1584.22	-1475.5	1987.1
May'05	1679.78	-1385.8	2002.28
June'05	1645.46	5258.2	2134.29
July'05	1759.18	7760.2	2236.7
August'05	1957.84	4631.8	2357.56
Sept'05	2016.69	4458.4	2511.71
Oct.'05	2002.09	-2760.4	2486.79
Nov'05	2045.19	1874.2	2574.67
Dec'05	1992.48	8360.6	2772.61