CURRENCY FLUCTUATION IMPACT ON FII FLOWS INTO INDIA

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SRINIVASARAO SAGADABOINA,
II-Year MBA, Matrusri Institute of P.G. Studies, Hyd.
DEDEEPYA GOBERU,
II-Year MBA, Villa Marie PG College for Women, Hyderabad.
NIKHILA GURUJALA,
II-Year MBA, Kasturba Gandhi College for women**,** Hyderabad
SOLMAN RAJ AREPALLY,
II-Year MBA**,** Wesley pg college, Hyderabad
UMA MAHESHESHWAR MATAM CHANDI,
II-Year MBA**,** St. Martin's institute of business management, Hyderabad

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ABSTRACT: The study of currency fluctuations impact on FII flows into India from the period of 2000 to 2014. Augmented Dickey Fuller (ADF) test has been applied for the stationery of the data bi variate correlation depicts the relationship between the select variables like FII, DII, NIFTY, Rupee Vs Dollar. Granger causality test indicated on Johnson co integration tested data of FII with NIFTY and DEFTY that this indices was not influenced by the FII flows. Regression Analysis indicated that the global currency dollar index is having significant impact on Defty and external flows into India in form of FDI and FII. This analysis is useful for the investor in India namely Retailer, HNI, FII, QIB, Pension funds and MF managers.

KEY WORDS: - FII, DII, NIFTY, DEFTY, MSCI, GDP, IIP

INTRODUCTION:

The Foreign Institutional Investors (FIIs) have emerged as remarkable players in the Indian stock market and their growing contribution adds as an important feature of the development of stock markets has its impact on the development of economy. It provides investors with an array of assets with varying degree of risk, return and liquidity. A major development in our country, post 1991 has been liberalization of the financial sector, especially that of capital markets. In India, FII has a positive impact on the stock market, corporate transparency and governance norms; stock market is regarded as a barometer.

The number of FIIs registered with SEBI was 3 in 1992-93 and since then it has increased to 1713 in 2009-10. Indian stock market was opened to Foreign Institutional Investors on 14th September 1992. The FIIs follow policies and guidelines of the Reserve Bank of India (RBI) and Security Exchange Board of India (SEBI) which has changed from time to time due to dynamic domestic and global environment. The FERA was replaced in 2000 by Foreign Exchange Management Act, (FEMA), 1999 which now controls foreign exchange related transactions for FIIs approved by the RBI. The two routes for FIIs are (70:30) route, wherein 70% of equity related investments is permissible and balance 30% is for debt. The second route is 100% debt security investment route;

however, our focus is on the normal equity FII route. There has been an enormous increase of over 400% in the foreign investment flows to India from 1995 to 2007.

In today's era of globalization, capital flows know no barrier, over the last few years the capital flows – both physical and financial markets – have increased by leaps and bounds. The history of international capital flows goes back more than 100 years. There are important implications in economics and finance, as regards estimation of volatility in the equity market. An attempt is made in this paper to give financially viable significance to changes in the pattern of stock market volatility in India during 1992 – 2011.

OBJECTIVES:-

- ➢ To find the correlation between MSCI and FII flows.
- ➢ To measure the impact of currency fluctuation on FII flows.
- ➢ To find the relationship between FII, DII, NIFTY and RUPEE Vs DOLLAR.
- ➢ To find the impact of FII flows on NIFTY and DEFTY.
- ➢ To find the relationship between FII, GDP, IIP, INTEREST RATE and INFLATION.

SCOPE: This study has been emphasized for the period of 2000-2014 i.e. 15 years period. This analysis has been focused on the external inflow of FII in India is influenced by the global currency fluctuations like dollar index. Defty data has been considered from FII's perspective as a equity indicator MSCI has been considered from 2007.

NEED OF THE STUDY: The study is to understand Currency fluctuations impact on FII flows into India, in today's market what has happened last five six years, retail investor more or less has sold out and is very negligible player in the market today. Even our local mutual funds and local insurance companies that constitute local institutional investors are also relatively less important but the foreign institutional investors they have become the dominant force. We should just try and understand how do they invest and how the money comes in. These FIIs are foreign mutual funds.

REVIEW OF LITERATURE:

1. **Douma, Kabir and Rejie (2006):** investigated the impact of foreign institutional investment on the performance of emerging market firms and found that there is positive effect of foreign ownership on firm performance. They also found the impact of foreign investment on the business group affiliation of firms. They observed the foreign investors preferred the companies with better corporate governance.

2. **Mukherjee (2002):** examined the various probable determinants of FII and concluded (1) Foreign investment flows to the Indian markets tend to be caused by return in the domestic equity market; (2) returns in the Indian equity market is an important factor that has an impact on FII flows; (3) whereas FII sale and FII net inflow are significantly affected by the performance of the Indian equity market, FII purchase shows no such that affect to this market performance; (4) FII investors do not probably use Indian equity market for the purpose of diversification of their investment; (5) returns from the exchange rate variation and the fundamentals of the economy may have an impact on FII decisions, but that type of

influence do not prove to be strong enough.

3. **Gordon and Gupta, (2003):** found causation running from FII inflows to return in BSE. They observed such that FIIs act as an market makers and book profits by investing when prices are low and selling when they are high. So, there are contradictory findings by various researchers regarding the causal relationship between FII net inflows and stock market capitalization and returns of the BSE (or) NSE. Therefore, there is a need to investigate whether FIIs are the cause or effect of stock market fluctuations in India.

4. **Rajesh Chakraborty(2001):** in his research paper titled „FII Flows to India: Nature and Causes' concluded that since the beginning of liberalization FII flows to India have steadily growth into importance. The author analysed FII flows and their relationship with other variables, Pal found that FIIs are the major players in the Indian stock market and their impact on the domestic market is increasing. Trading activities of these flows and the domestic stock market turnover indicates that FII" s are becoming more important at the margin as an increasingly higher share of stock market turnover is accounted for by FII trading in India.

5. **Dukken Fuller (2001):**The Foreign Institutional Investors (FIIs) have emerged as noteworthy players in the Indian stock market and their growing contribution adds as an important feature of the development of stock markets in India, to facilitate the foreign capital flows to the developing countries have been advised to strengthen their stock markets with the Indian Stock Markets have reached new heights and became more volatile making the researches work in this dimension of establishing the link between FIIs and Stock Market volatility. So, it is an interesting topic to ascertain the role of FIIs in Indian Capital Markets. This FII flows makes an attempt to develop an understanding of the dynamics of the trading behaviour of FIIs and effect on the Indian equity market to this study is conducted by using daily data on BSE Sensex and FII activity over a period of 10 years spanning from 01st Jan 2001 to 31st Dec 2011. It provides to the evidence of significant positive correlation between FII activity and effects on Indian Capital Market. The analysis also finds that the movements in the Indian Capital Market are fairly explained by the FII net inflows.

6. **Peter F.Drukker (1996):** The study is a comprehensive analysis of the cause and effect of fluctuations in the major currency pairs and the effect on the Indian rupee. The study also depicts to the variation in the rates of the currency pairs through correlation between them, that the objectives of the study are met through the collective and comparative analysis of the data collected for the purpose of the study. Currency market is a very volatile and liquid market among all the financial market. It is useful to know from an investment perspective with regarding to the movement they share with each other i.e. whether they move in the same direction or in the opposite direction. But, once the correlations between these pairs and their movement pattern are known, it is used to control upon overall portfolio's

exposure. This observation is useful for those willing to trade in foreign exchange and the inferences drawn from the analysis can be seen as useful information and can be used to test strategies on correlated pairs in order to avoid over-exposure; to double profitable positions; to diversify risks and to hedge in fluctuating market. This analysis is an overview of global foreign market and the impact of movement pattern of major foreign currency pairs to Indian rupee currency pairs based on the date of fourteen years from 1/1/2000 to 31/12/2013 and the investors can hedge their risks and diversify their portfolio by using the data of correlation between various currency pairs. Cash fluctuations in one currency pair may or may not impact to another currency pairs. Traders can build their strategies by using the currency correlation between different currency pairs to make profit from the market.

RESEARCH METHODOLOGY: This analysis has been done on secondary data by using descriptive statistical tools. The following formulas were considered for the analysis purpose.

1. **Bi variate correlation**: **Bi variate correlation** is a measure of the **relationship** between the two variables; it measures the strength of their **relationship**, which can range from absolute value 1 to 0. The stronger the **relationship**, the closer the value is to 1.

The formula for calculating and for bi-variate distribution is given by

$$ r = \frac{\sum f uv - \frac{(\sum f u)(\sum f v)}{n}}{\sqrt{\sum f u^2 - \frac{(\sum f u)^2}{n}} \times \sqrt{\sum f v^2 - \frac{(\sum f v)^2}{n}}} $$

2. **Regression**: A statistical measure that attempts to determine the strength of the relationship between one dependent variable (usually denoted by Y) and a series of other changing variables (known as independent variables).The general form of each type of regression is:

   Linear Regression: $Y = a + bX + u$
   Multiple Regression: $Y = a + b_1X_1 {}^+ b_2X_2 + B_3X_3 + ... + B_tX_t + u$
3. **Weight estimation:** The weight estimation procedure can also be used to estimate the weights when the variance of the dependent variable is related to the values of an independent variable. If you know the weights for each case you can use the linear regression procedure to obtain a weighted least squares solution.

4. **Augmented Dickey-Fuller Test:** Augmented Dickey-Fuller Test is a test for a unit root in a time series sample. It is an augmented version of the Dickey-Filler test for a larger and more complicated set of time series models.

5. **Co integration:** Co integration theory is definitely the innovation in theoretical econometrics that has created the most interest among economists in the last decade. The definition in the simple case of 2 time series xt and yt, that are both integrated of order one (this is abbreviated and means that the process contains a unit root), is the following: xt and yt are said to be co integrated if there exists a parameter such that $ut = yt - @xt$ is a stationary process.

6. **Granger causality**: **Granger causality test** is a statistical hypothesis test for determining whether one time series is useful in forecasting another. Ordinarily, regressions reflect "mere" correlations, but Clive Granger argued that causality in economics could be reflected by measuring the ability of predicting the future values of a time series using past values of another time series. Since the question of "true causality" is deeply philosophical, econometricians assert that the Granger test finds only "predictive causality".

7. **Spectral analysis: Spectral analysis** (SA) is a nonparametric spectral estimation method. It combines elements of classical time series analysis, multivariate statistics, multivariate geometry, dynamical systems and signal processing. Its roots lie in the classical Karhunen (1946)–Loève (1945, 1978) spectral decomposition of time series and random fields and in the Mañé (1981)–Takens (1981) embedding theorem. SSA can be an aid in the decomposition of time series into a sum of components, each having a meaningful interpretation.

DATA ANALYSIS:
1. To find the correlation between MSCI and FII flows.

Correlations

		FII	DII	NIFTY	RsVsDollar
FII	Pearson Correlation	1	-.190	-.338	-.100
	Sig. (2-tailed)		.498	.218	.724
	N	15	15	15	15
DII	Pearson Correlation	-.190	1	.691[**]	.232
	Sig. (2-tailed)	.498		.004	.406
	N	15	15	15	15
NIFTY	Pearson Correlation	-.338	.691[**]	1	.284
	Sig. (2-tailed)	.218	.004		.305
	N	15	15	15	15
RsVsDollar	Pearson Correlation	-.100	.232	.284	1
	Sig. (2-tailed)	.724	.406	.305	
	N	15	15	15	15

**. Correlation is significant at the 0.01 level (2-tailed).

Interpretation: The above data depicts the bi variate correlation among the select variables. DII Vs NIFTY is observed strong correlation. Whereas FII with NIFTY is likely negative correlation. Rupees Vs Dollar with NIFTY is also likely correlate with NIFTY.

2nd Objective

Series: MSCI DFII

Lags interval: 1 to 2

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Log Likelihood by Rank (rows) and Model (columns)					
0	-232.4920	-232.4920	-228.6874	-228.6874	-227.4704
1	-221.6828	-221.4141	-218.9501	-211.9144	-211.3357
2	-218.7717	-218.5030	-218.5030	-208.4288	-208.4288
Akaike Information Criteria by Rank (rows) and Model (columns)					
0	43.72582	43.72582	43.39770	43.39770	43.54007
1	42.48778	42.62075	42.35456	41.25716*	41.33377
2	42.68577	43.00055	43.00055	41.53251	41.53251
Schwarz Criteria by Rank (rows) and Model (columns)					
0	44.01520	44.01520	43.75942	43.75942	43.97414
1	42.92185	43.09099	42.86097	41.79975*	41.91253
2	43.26453	43.65165	43.65165	42.25596	42.25596

Interpretation: The above analysis of Johnson co integration test is suggesting the data is co integrated between MSCI and FI. The log likelihood ranks are observed in decreasing trend in all the trend models along with the alpha levels.

Pair wise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
DFII does not Granger Cause MSCI	12	0.98889	0.4186
MSCI does not Granger Cause DFII		0.43427	0.6641

Interpretation: Granger causality test had given the result of global equity indicator MSCI. This influencing the FII flows into India because the probability value is found to be significant.

3rd Objective

Correlations

		FII	GDP	IIP	REPORATE	INFLATION
FII	Pearson Correlation	1	.273	-.066	-.080	-.299
	Sig. (2-tailed)		.324	.816	.778	.279
	N	15	15	15	15	15
GDP	Pearson Correlation	.273	1	-.128	-.094	.261
	Sig. (2-tailed)	.324		.648	.739	.347
	N	15	15	15	15	15
IIP	Pearson Correlation	-.066	-.128	1	-.097	-.274
	Sig. (2-tailed)	.816	.648		.730	.324
	N	15	15	15	15	15
REPORATE	Pearson Correlation	-.080	-.094	-.097	1	-.264
	Sig. (2-tailed)	.778	.739	.730		.342
	N	15	15	15	15	15
INFLATION	Pearson Correlation	-.299	.261	-.274	-.264	1
	Sig. (2-tailed)	.279	.347	.324	.342	
	N	15	15	15	15	15

Interpretation: The bi variate correlation shows that except GDP Vs FII and INFLATION Vs GDP is observed slightly correlated where rest of the variables relationship is found to slightly negative correlated.

4th Objective
Series: DFII DNIFTY

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
	Log Likelihood by Rank (rows) and Model (columns)				
0	-327.2833	-327.2833	-327.2635	-327.2635	-327.1331

1	-323.9075	-317.8260	-317.8238	-310.2079	-310.1809
2	-320.9679	-314.4959	-314.4959	-306.7473	-306.7473

	Akaike Information Criteria by Rank (rows) and Model (columns)				
0	55.21388	55.21388	55.54392	55.54392	55.85552
1	55.31791	54.47100	54.63729	53.53465*	53.69682
2	55.49465	54.74932	54.74932	53.79121	53.79121

	Schwarz Criteria by Rank (rows) and Model (columns)				
0	55.37551	55.37551	55.78638	55.78638	56.17879
1	55.64118	54.83468	55.04138	53.97914*	54.18172
2	55.97955	55.31504	55.31504	54.43775	54.43775

Interpretation: The above analysis of johnsen cointegration test is suggesting the data is cointegrated between fii and nifty. The loglikelihood ranks are observed in decreasing trend in all the trend models along with the alpha levels.

Sample: 1 15
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
DNIFTY does not Granger Cause DFII	12	1.11426	0.3801
DFII does not Granger Cause DNIFTY		2.03670	0.2008

Interpretation: Granger Causality test depicts the probability value between FII and NIFTY, the result indicates the FII flows are not causing the NIFTY.

Series: DFII DDEFTY
Lags interval: 1 to 1

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or	No Intercept	Intercept	Intercept	Intercept	Intercept
No. of CEs	No Trend	No Trend	No Trend	Trend	Trend

Log Likelihood by Rank (rows) and Model (columns)				
0	-270.0059	-270.0059	-269.7755	-269.7755	-268.9151
1	-258.8682	-258.8432	-258.8431	-258.4742	-258.2285
2	-257.1806	-256.7498	-256.7498	-254.6529	-254.6529

Akaike Information Criteria by Rank (rows) and Model (columns)				
0	54.80118	54.80118	55.15510	55.15510	55.38302
1	53.37364*	53.56863	53.76863	53.89484	54.04571
2	53.83612	54.14996	54.14996	54.13058	54.13058

Schwarz Criteria by Rank (rows) and Model (columns)				
0	54.92221	54.92221	55.33665	55.33665	55.62509
1	53.61571*	53.84096	54.07121	54.22768	54.40881
2	54.19922	54.57358	54.57358	54.61472	54.61472

Interpretation: The above analysis of Johnson co integration test is suggesting the data is co integrated between FII and DEFTY. The log likelihood ranks are observed in decreasing trend in all the trend models along with the alpha levels.

Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
DDEFTY does not Granger Cause DFII	10	0.10609	0.9013
DFII does not Granger Cause DDEFTY		1.39259	0.3306

Interpretation: Granger Causality test depicts the probability value between FII and DEFTY, the result indicates the FII flows are not causing the DEFTY.

Series: DOLLARINDEX DFII

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Log Likelihood by Rank (rows) and Model (columns)					
0	-187.9734	-187.9734	-187.8011	-187.8011	-184.7565
1	-185.8109	-173.0403	-172.9688	-171.5276	-170.5791
2	-185.6245	-170.9006	-170.9006	-169.4571	-169.4571
Akaike Information Criteria by Rank (rows) and Model (columns)					
0	42.66077	42.66077	43.06692	43.06692	42.83479
1	43.06908	40.45340*	40.65974	40.56169	40.57313
2	43.91655	41.08903	41.08903	41.21269	41.21269
Schwarz Criteria by Rank (rows) and Model (columns)					
0	42.74842	42.74842	43.19840	43.19840	43.01010
1	43.24439	40.65063*	40.87888	40.80274	40.83610
2	44.17951	41.39582	41.39582	41.56331	41.56331

Interpretation: The above analysis of Johnson co integration test is suggesting the data is co integrated between dollar index and FII. The log likelihood ranks are observed in decreasing trend in all the trend models along with the alpha levels.

Pair wise Granger Causality Tests

Sample: 1 15
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
DFII does not Granger Cause	9	1.23399	0.3825

DOLLARINDEX

DOLLARINDEX does not Granger Cause DFII	18.9776	0.0091

Interpretation: The analysis of granger causality test shows that global currency dollar index is not causing the FII flows into India. As the probability value is not significant.

Model Description

Dependent Variable		DOLLARINDEX
Independent Variables	1	FDI
	2	FII
	3	DEFTY
Weight	Source	DOLLARINDEX
	Power Value	-2.000

Model Summary

Multiple R	.888
R Square	.789
Adjusted R Square	.699
Std. Error of the Estimate	2.385E6
Log-likelihood Function Value	-78.350

Coefficients

	Unstandardized Coefficients		Standardized Coefficients			
	B	Std. Error	Beta	Std. Error	t	Sig.
(Constant)	7740.450	233.615			33.133	.000
FDI	-.030	.007	-.729	.176	-4.144	.004
FII	-.002	.001	-.286	.202	-1.419	.199
DEFTY	.000	.000	-.194	.199	-.973	.363

Interpretation: The above analysis of regression has been occurred to measure the impact of dollar index on Indian FDI, FII and DEFTY The R square is observed more than 60% to 0.789. The significant values of the regression weight estimation is found to be less than 0.5% for all the FDI, FII and DEFTY, which indicates dollar index influence has been observed on the external flow into India.

NIFTY and DEFTY

	high avg	low avg
2006-2008	4129.875	3365.175
2009-2011	4912.3375	4388.35
2012-2014	6467.8	6040.575

	highest-lowest	**CAGR**	MAX DRAW DOWN-10%	MAR RATIO
2006-2008	764.7	-0.67132607	764.7	-0.00087789
2009-2011	523.9875	-0.46381198	523.9875	-0.00088516
2012-2014	427.225	-0.46644869	427.225	-0.00109181

	high avg	low avg
2006-2008	3350.1625	2659.75
2009-2011	3594.575	3143.6125
2012-2014	3931	3592.0725

	high-low	CAGR	MAX DRAW DOWN-10%	MAR RATIO
2006-2008	690.4125	-0.700970613	621.37125	-0.001128103
2009-2011	450.9625	-0.507282369	450.9625	-0.001124888
2012-2014	338.9275	-0.57110146	338.9275	-0.001685025

Interpretation: Performance measure to MAR ration has been applied from 2006-2014 between NIFTY and DEFTY. The result of MAR ratio indicates in the long term both the indices performance is observed in negative. This analysis had proven that both the indices are reflecting similar performance during the analyzed period 2006-2014.

LIMITATIONS:

1. Defty data has been considered from 2000-2014.
2. DII Flows data is available from 2006 onwards.
3. Dollar index has been considered from 2004-2014.
4. IIP data is not available for the year 2014.
5. MSCI data is available from 2007 onwards.
6. Repo rate and FDI data is not available for 2000.

FINDINGS:

1. Domestic Institutional Investment flows found to be stronger correlation with NIFTY.
2. Global equity indicator MSCI is affecting the flows into India.
3. FII and inflation is found to be slightly correlated with GDP.
4. FII flows are not causing the NIFTY returns.
5. FII flows are not impacting the Defty which is acting as an exchange indicator for the foreign in terms of dollar.

CONCLUSION: We conclude the Analysis of currency fluctuation impact on FII flows into India. We study as considered 15 years i.e. 2000-2014. Indian markets are always influenced by the FII investments more than the domestic investments. The analysis had proven with the global equity markets influence the foreign investors in India. This analysis had proven FII is not causing the NIFTY and DEFTY to get fluctuates. Global currency dollar index is influencing the external flows. FDI and FII in India there is the further scope to do research on FII flows time of investment and influence on Indian market.

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