

**AN EMPIRICAL STUDY ON FUND FLOW FLUCTUATION AFTER RECESSION OF
GLOBALLY WITH INDIA INTO FII&FDI (2009-2013)**

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ABSTRACT:

When the global financial markets got affected with the recession in the year 2009, it has been observed that investment flows across the globe have taken different roots: Indian economy also got affected along with the global markets and external flows in form of fii & fdi also got effected. With this analysis how global fii & fdi flows got fluctuated and after recession Indian fii&fdi got influenced to global flows along with rupee depreciation. The analysis has been done to find out the effect on India with unit root testing by augmented dicky-fuller test and mann-whitney u test has been applied to find out the changes after recession period on global flows into fii/fdi & Indian fii/fdi.

KEYWORDS

BDI, GBI, Global fdi/fii, Indian fdi/fii, Indian inflation, World inflation, MSCI.

Introduction: The debt market is the market where fixed income securities of various types and features are issued and traded. Debt market is also known as fixed income for securities which are issued by Central and State Governments, Municipal Corporations and commercial entities like financial institutions, Banks, Public sector units, Public Ltd. Companies and also structured financial instruments. In Indian Economy debt market plays an important role like mobilization and allocation of resource in the economy, financing the development activities which are

initiated by the government, Transmitting signals for implementation of monetary policy, Facilitating liquidity management in tune with overall short term and long term objectives.

Market in which shares are issued and traded either through exchange or over the counter markets is known as equity market. It is one of the important areas of market economy as it provides companies with access to capital and investors with a slice of ownership in the company and the potential of gains based on the company's future performance.

Foreign institutional investment & foreign direct investments plays a vital role in Indian economy. Any fluctuations in dollar rate will have direct impact on FII's & FDI in India. The data which was compiled by Securities and Exchange Board of India (S.E.B.I) shows that after receiving record of 45.07 billion dollars between 2004 and 2007, Indian economy witnessed reversal in FII equity flows in 2008 with an out flow of 12.03 billion dollars due to global financial crisis. Global investors hit by financial sector meltdown started selling their holdings in Indian companies in order to ease the liquidity conditions given huge losses in home market and to look after safer investment in uncertain environments. If we observe the FII yearly trends in India, percentage changes in FII flows as follows in 2006, 2007, 2008, 2009 and 2010 with respect to -32%, 127%, -175, 261% and 66%. Currency fluctuation means any change in the value of money between two countries, this changes takes place every day. Generally rupee appreciation will happens when Indian economy is strong, and depreciation takes place when Indian economy weak. Rupee appreciation is considered bad for the companies where a major part of their revenue comes from exports, due to appreciation in rupee value the companies have to bare more expenses to import the product.

Difference between equity and debt instruments:

These are the some of the important differences:

1. Equity instruments allows a company to acquire funds without incurring a debt .where as debt , issuing a bond increases the burden of the company increases because it has to pay contractual interest payments must be paid , fixed rate of interest has to be paid regularly unlike dividends that cannot be reduced or suspended.
2. Those who purchase equity instruments (stocks) gain an ownership against the stock and have a right to vote at the general body meetings of the company, equity holders have claims on the future earnings of the firm. Bondholders do not gain ownership against the bonds or do not have any future profits or claims.
3. Bonds are considered to be less risky investments, first bond market returns are less volatile than stock market returns .second , bondholders are paid first before other expenses are paid shareholders are less likely to receive any compensation in this scenario .

Recession Impact on Indian Equity and Debt Market

As we know that Indian economy is more integrated with world economy through both current and capital accounts. Due to recession, financial crisis was generated in United States and other developed economies have adversely affected India. The financial crisis which was erupted in United States of America in august 2007 has developed into world’s biggest shock since the great economy has financial trouble has spread over to the real economy.

As we know that Bombay Stock Exchange (B.S.E) is the oldest stock exchange across the world and National Stock Exchange (N.S.E) is best in terms of sophistication and advancement in technology. The Indian stock exchange picked up after the opening up of the economy in the early nineties, due to this there was a collapse in the stock market price. As a result sensx fell from its closing peak of 20873 on January 2008 to nearly 8000 in October – november2008 and the average of sensx for financial year 2008-2009,2009-2010,2010-2011 was respectively 9708.5,17527.8,17558.7.

Indian fii&fdi share in global fii&fdi flows and their performance after recession (yoy):

Year	Global FII	Indian FII	% of Indian FII in global FII	Global FDI	Indian FDI	% of Indian FDI in global FDI
2010-2011	18.181	6.890	0.00000000412	-47.119	-22.481	0.0000251
2011-2012	-38.181	-34.955	0.00000000479	-37.401	1.771	0.0000264
2012-2013	-12.727	2.913	0.00000000537	-21.694	7.982	0.0000134

Table (1.1)

When the financial markets got effected with the global recession in the year 2009 across the globe fii flows and fdi flows took different directions. It has been observed that first two years after recession both fii&fdi of global markets witnessed growth but later two years fund flows got narrowed which got effected the flows into Indian markets. During the four years tenure after recession fdi flows into Indian market severely got effected (yoy) this figures going into negative zone. Globally fii&fdi flows still going downside but Indian figures are showing different picture for the year (2012-2013).

India’s market share global flows in fii&fdi after 2009

Year	Over all percentage change	Percentage
April2009-March2013	% change of Indian fii from global fii	0.00000000464984
2009 to 2012	% change of Indian fdi from global fdi	0.0000219521

Table (1.2)

The above table is giving the information on India share in external fund flows of global fii&fdi segments. India’s share of fdi globally is more than the Indian fii investments in comparison with global fii figures. This information gives the confidence to the investor’s feternity that Indian economy is more viable for the fdi rather than the fii investments.

Performance of global debt and equity with the Indian debt equity indices after recession

Base 2009 calculation	Year- %	World Bond Index (WBI) (112.12)	Indian Bond Index (IBI) (125.3)	MSCI (27.1)	Nifty (4645.7)	World Inflation (WI) (1.37)	Indian Inflation (II) (10.83)
2010-2011		6.824600777	-4.04171	26.8021	20.19725	3.89005484	0.11819021
2011-2012		11.57981458	-6.40417	27.8421	12.94745	4.71736712	-0.18097876
2012-2013		18.00931691	-4.23014	20.7635	18.90861	32.116	-0.14127423

Table (1.3)

After recession global markets got melt down investors across the globe shifted their investments into the safer heavens i.e., debt market securities it has been proven with the above information that wbi constantly moving upside (yoy) but during the same period ibi had given negative returns. World equity markets had performed constantly above (20%) but Indian equity markets performance is slightly lower in comparisons with global bench mark.

Objectives of the study:

- To study the rupee fluctuation on external flows into equity and debt markets.
- To measure the global Fii and Fdi flows impact on Indian Fdi and Fii flows.
- To know the global economy impact on global fdi and Fii flows.
- To measure the performance on Indian equity and debt market in comparison with global debt and equity market.

Scope of the study:

- The study has been focused for the (48 months) i.e. from (April 2009 to march 2013).
- The analysis has been focused on flows of funds into equity and debt market into India.
- The study has been initiated after the global recession period.
- The study has been confined to test the effect of currency and performance of Indian debt and equity market along with the global markets.

Limitations of the study:

- Analysis has focused after recession currency fluctuations impact.
- In global FDI figures some of the countries equity flows were also included.
- Some of the countries may considered CPI or WPI or PPI to measure the inflation India is adopting CPI method in global inflation figures all the countries inflation average figure has been considered.
- For this analysis we have considered bench marks for the following indicators (global equity index, MSCI, PIMCO global Bond index, BDI global economic indicator).
- The analysis is the study has not considered day to day fluctuations of the equity, bond and currency. All the figures have been averaged annually.
- This article is not considered the various micro and macro economic factors which can influence external flows into India like,(government regulations, GDP, IIP etc).
- Global interest rates are not considered for the global debt flows into India.

Review of literature:

Philippe Jorion: This paper examines the pricing of exchange rate risk in the U.S. stock market, using two factor and multi-factor arbitrage pricing models. Evidence is presented that the relation between stock returns and the value of the dollar differs systematically across industries. The empirical results, however, do not suggest that exchange risk is priced in the stock market. The unconditional risk premium attached to foreign currency exposure appears to be small and never significant. As a result, active hedging policies by financial managers cannot affect the cost of capital, and other reasons must explain why firms decide to hedge.

Jorion (1991) empirical investigation of the sensitivity of the stock prices of US multinationals to changes in dollar exchange rates is seminal in empirical investigation of exchange rate exposure. His empirical results indicated that the sensitivity of stock prices to changes in exchange rate is not significant at any accepted level of significance.

Luetherman (1991) tested the hypothesis that an exogenous real home currency depreciation enhance the competitiveness of home country manufacturers vis a vis foreign competitor. His finding did not support that hypothesis. Firms did not benefit from a depreciation of the home country. On the contrary a significant decline in their market share of industry was found in a depreciation of the home currency.

Bodnar and Gentry (1993) examined the relationship between exchange rate changes and industry portfolio returns for Canada, Japan and the United States between 1979 and 1988. The study revealed that less than half of the industries display significant exchange rate exposure at the 10% significant level in these countries.

AlDiab, Zoubi, and Thornton (1994) examine the impact of changes in the dollar exchange rate on daily security returns of US multinational companies. The study made use of an event study methodology for the period 1978 to 1987, and concluded that the stock prices of Multinational Companies are not greatly affected by changes in exchange rates or that the relationship is weak.

Donnelly and Sheehy (1996) examine the relationship between changes in trade-weighted nominal exchange rate and the monthly abnormal returns of portfolio of the UK's 39 largest exporting firms during the period 1978 to 1992. The study finds a contemporaneous negative relationship between the foreign exchange changes and the abnormal returns of UK exporters.

Fang and Loo (1994) investigate the effect of unanticipated changes in the US trade-weighted exchange rate on US industries' common stock returns over the period 1981 to 1990. The study recorded significant negative betas for the mining, food and beverage, chemical, petroleum and

utilities industries, whereas, positive exchange rate risks betas are observed in retail and apparel, machinery, transportation equipment, department stores, and miscellaneous industries.

Glaum, Brunner and Himmet (2000) examined the economic exposure of German corporations to change in DM/US dollar exchange rate. They found that German firms are significantly exposed to changes in DM/US dollar rate.

Krishnamoorthy (2001) examines whether the industrial structure is an important determinant of the exchange rate exposure of US industry portfolio returns over 1995 –1997 period. The study indicated that industries that are classified as being globally competitive and those that serve the consumer sector of the economy have significant levels of exposure.

Joseph (2002) examined the impact of foreign exchange rate changes and interest rate changes on UK firms during the period 1988 to 2000. He considers two different measures of foreign exchange rate impacts, along with a measure of interest rate changes. The findings show that industry returns are more negatively affected by interest rate changes than by foreign exchange rate changes.

Empirical investigation:

G. FII - Global foreign institutional investors(x), **G. FDI** - Global foreign direct investment(x1), **BDI**- Baltic dry index(x6), **MSCI** - Morgan Stanley All countries Index(x4), **GBI** - Global bond index(x10), **IBI** - India bond index(x11), **I. FDI** - Indian foreign direct investment(x2), **I. FII** - Indian foreign institutional investment(x3), **Nifty- 50B(x5)**, **W.I.**- World inflation(x7), **I.I.**-Indian inflation(x8), **Rupee vs. dollar(x9)**.

Research Methodology:

Correlation: Correlation is a statistical measure that indicates the extent to which two or more variables fluctuate together. A positive correlation indicates the extent to which those variables increase or decrease parallel; a negative correlation indicates the extent to which one variable increases as the other decreases.

$$r = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{(n \sum x^2 - (\sum x)^2)(n \sum y^2 - (\sum y)^2)}}$$

Mann Whitney u test:

It is the alternative test to the independent sample t-test. It is a non-parametric test that is used to compare two population means that come from the same or identical population, it is also used to test whether two population means are equal or not or 1st sample are higher than the observations of 2nd sample

Formula:

$$U = n_1 n_2 + \frac{n_2(n_2 + 1)}{2} - \sum_{i=n_1+1}^{n_2} R_i$$

Where:

U=Mann-Whitney U test, N₁ = sample size one ,N₂= Sample size two, R_i = Rank of the sample size,

H₀ - Null hypothesis

H₁ - Alternative hypothesis

Small sample test:

- If calculated value < the table value (reject null hypothesis).
- If calculated value >table value (accept null hypothesis).

Weibull: The Weibull distribution is worldwide used to model Life Data. The distribution can handle increasing, decreasing or constant failure-rates and can be created for data with and without suspensions (non-failures).

The Weibull Probability Density Function (PDF) is:

$$f(t) = \beta \cdot \frac{t^{\beta-1}}{\eta^\beta} \cdot e^{-\left(\frac{t}{\eta}\right)^\beta}$$

Augmented Dickey-Fuller test (ADF):

The unit root test is then carried out under the null hypothesis $\gamma = 0$ against the alternative hypothesis of $\gamma < 0$. once a value for the test statistic

$$DF_\tau = \frac{\hat{\gamma}}{SE(\hat{\gamma})}$$

is computed it can be compared to the relevant critical value for the Dickey–Fuller Test. If the test statistic is less (this test is non symmetrical so we do not consider an absolute value) than the (larger negative) critical value, then the null hypothesis of $\gamma = 0$ is rejected and no unit root is present.

Data analysis:

	X	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X	1	-0.01478	-0.72111	0.886697	-0.24242	0.088575	0.069434	-0.23531	0.944189	-0.34919	-0.46144	0.552316
X1	-0.01478	1	0.586588	0.21105	-0.94145	-0.81431	-0.65276	-0.86822	-0.13656	0.28335	-0.38024	0.801168
X2	-0.72111	0.586588	1	-0.35459	-0.28527	-0.31068	-0.71627	-0.49788	-0.8692	0.756567	0.417126	-0.00886
X3	0.886697	0.21105	-0.35459	1	-0.3383	0.128915	-0.38993	-0.57783	0.686095	0.114567	-0.17315	0.590543
X4	-0.24242	-0.94145	-0.28527	-0.3383	1	0.872993	0.433851	0.786928	-0.17995	0.017631	0.652524	-0.94258
X5	0.088575	-0.81431	-0.31068	0.128915	0.872993	1	0.101614	0.440792	0.007418	0.257688	0.733168	-0.72397
X6	0.069434	-0.65276	-0.71627	-0.38993	0.433851	0.101614	1	0.876379	0.376368	-0.88134	-0.38257	-0.33861
X7	-0.23531	-0.86822	-0.49788	-0.57783	0.786928	0.440792	0.876379	1	0.016073	-0.54483	0.103079	-0.74992
X8	0.944189	-0.13656	-0.8692	0.686095	-0.17995	0.007418	0.376368	0.016073	1	-0.63739	-0.63228	0.483227
X9	-0.34919	0.28335	0.756567	0.114567	0.017631	0.257688	-0.88134	-0.54483	-0.63739	1	0.767715	-0.14614
X10	-0.46144	-0.38024	0.417126	-0.17315	0.652524	0.733168	-0.38257	0.103079	-0.63228	0.767715	1	-0.72741
X11	0.552316	0.801168	-0.00886	0.590543	-0.94258	-0.72397	-0.33861	-0.74992	0.483227	-0.14614	-0.72741	1

Table (1.4)

Interpretation:- In the above table depicts the picture of correlation between the fund flows with global economy. After recession it has been observed that global fii flows moved against the global fdi, in the same period global fii funds got increased tremendously comparison with the global fdi flows. Global fii’s flows moved along with the global economy i.e., bdi but these funds influenced the global equity index negatively.

Fund flows in to the global debt market got increased after the recession period it has been observed that first two years after the recession flows went upside along with the market but (2012-13) year flows into debt market went down-side. After the recession period global flows into Indian market had witness in opposite direction where y on y fund flows went upside globally but in India fund flows drastically went down-side.

Data modeling with Weibull analysis:

Rupee V/S Dollar	Equity(\$billion)
47.444067	193.59709
45.56155	201.41398
47.921475	76.057759
54.409108	213.51833

Table (1.5)

True=1 False=5.12978

The above analysis on rupees v/s dollar effect on equity markets the weibull analysis has been applied and it has proven true that the data modeling between the currency impact to equity fund flow into India got influenced with the currency fluctuations after recession period .

MANN WHITNEY U -TEST FOR GLOBAL FLOWS AND INDIAN FLOWS

Year	Global FII average	Indian FII (\$ billion)
2009-2010	5.5 Trillion	250.5724267

2010-2011	6.5 Trillion	267.8393294
2011-2012	3.4 Trillion	162.9845144
2012-2013	4.8 Trillion	257.8719602

Table (1.7)

Year	Averages	Sort	Rank	r1	r2	n1	n2
Indian FII 2011-2012	162.9845144(\$billion)	162.9845144	1	26	10	4	4
Indian FII 2009-2010	250.5724267(\$billion)	250.5724267	2				
Indian FII 2012-2013	257.8719602(\$billion)	257.8719602	3				
Indian FII 2010-2011	267.8393294(\$billion)	267.8393294	4				
Global FII 2011-2012	3.4 Trillion	3.4 Trillion	5				
Global FII 2012-2013	4.8 Trillion	4.8 Trillion	6				
Global FII 2009-2010	5.5 Trillion	5.5 Trillion	7				
Global FII 2010-2011	6.5 Trillion	6.5 Trillion	8				

Table (1.8)

Null hypothesis = $b_1 = b_2$ $b_1 =$ Global FII & $b_2 =$ Indian FII
 Alternative hypothesis = $b_1 > b_2$ (r1 is global fii flows, r2 is Indian fii flows).
 Level of significance 0.05 One tailed test (small sample).

u1=	0
u2=	16

Here calculated value is $u_1 = 0$, because it is the lowest value
 Critical value = 1 (table value). Hence, calculated value = 0, Critical value = 1.
 Therefore, calculated value < critical value, hence reject null hypothesis & accept alternative hypothesis.
 Hence, global fii flows is greater than the Indian fii flows. It has been observed with the analysis that the fii flows into Indian markets influenced by the global flows.

MANN WHITNEY U -TEST FOR GLOBAL FDI AND INDIAN FDI

Year	Global FDI (Averages in million \$)	Indian FDI (average in million \$)
2009	5889558779	2258.167

2010	6971983876	1750.5
2011	8721368564	2298.166667
2012	18254907138	2438.417

Table (1.9)

Year	Averages	Sorted	Rank	r1	r2	n1	n2
Indian FDI 2010	1750.5	1750.5	1				
Indian FDI 2009	2258.167	2258.167	2				
Indian FDI 2011	2298.166667	2298.166667	3				
Indian FDI 2012	2438.417	2438.417	4				
Global FDI 2009	5889558779	5889558779	5	26	10	4	4
Global FDI 2010	6971983876	6971983876	6				
Global FDI 2011	8721368564	8721368564	7				
Global FDI 2012	18254907138	18254907138	8				

Table (1.10)

Null hypothesis= $b_1=b_2$, b_1 = Global FDI & b_2 = Indian FDI
 Alternative hypothesis= $b_1>b_2$, (r_1 is global fdi, r_2 is the Indian fdi.)
 Level of significance is 0.05
 One tailed test (small sample).

u1=	0
u2=	16

Here, calculated value is $u_1=0$, because it is the lowest value.
 Critical value=1 (table value).
 Hence, calculated value= 0
 Critical value=1.
 Therefore, calculated value <critical value .hence, reject null hypothesis & accept alternative hypothesis.
 Hence, global fdi is greater than the Indian fdi. With the above analysis it has been observed that the Indian fii flows were influenced along with global fdi flows.

ADF analysis to find impact on fund flows

Augmented Dickey-Fuller Test Equation on rs v/s dollar with Indian fdi
 Dependent Variable: D(X9)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X9(-1)	0.615627	3.297268	0.186708	0.8825

C	-26.5978	154.9279	-0.17168	0.8918
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Null Hypothesis: X has a unit root

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.3284	0.4693

With the above augmented dickey fuller analysis we reject the H0 null hypothesis that the probability value is more than the t-statistic where currency fluctuation with the dollar didn't effected the Indian fdi flows.

Augmented Dickey-Fuller Test Equation on global fii v/s global fdi
 Dependent Variable: D(X)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X(-1)	-1.25766	0.946747	-1.3284	0.4108
C	6.222636	5.011502	1.241671	0.4316

Null Hypothesis: X1 has a unit root

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.43811	0.0959

With the above analysis on global fii with fdi : the adf analysis rejecting the H0 null hypothesis the probability value is more than the t- statistic which indicate global fii flows influence is not there on global fdi flows.

Augmented Dickey-Fuller Test Equation
 On Dependent Variable: D(X1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1(-1)	-1.33828	0.38925	-3.43811	0.1802

C	9.90E+09	3.24E+09	3.059465	0.2011
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Adf analysis on rupee vs. dollar with Indian bond index

Dependent Variable: rupee. Vs. dollar

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-150.543	59.46193	-2.53176	0.2395
X11	1.008228	0.373708	2.697902	0.226

Currency with- international & national

Null Hypothesis: X9 has a unit root

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	0.186708	0.8895

The above analysis of adf on currency fluctuation impact on Indian bond index performance it has been observed (H1) alternate hypothesis is accepting because probability value is less than the t-statistic value.

FINDINGS: With the above analysis of currency fluctuations effect on equity and debt market flows in India after recession, it has been observed the following findings during the (48 months) period.

- It has been observed that the global fii & Indian fii flows went upside during the first two years i.e., (2009-2010), (2011-2013) fii flows recorded negative figures except (2012-2013) Indian fii flows recorded positively.
- Global fdi flows went down side after recession but Indian fdi flows behaved differently (2011-12 to 2011-2013) investments through fdi started flowing positively in India.
- It has been observed that after recession from the year (2009) flows into debt market went upside till (2013) and the global bond index had given positive returns (yoy) where has during the same period Indian bond index had lost its shine and it has given negative returns.
- After recession with the analysis we have found that global equity index (msci) had given (24%) avg returns (yoy), during the same period Indian equity market had given(16%) avg returns (yoy).
- We have found that global inflation went upside (yoy) but during the same period Indian inflation figures went downside in spite the inflation figures not coming down below

(7%) after recession Indian rupee got depreciated along with the global economy, during the 48 months rupee got depreciated 14.68% with dollar.

- We have found that global fii flows dominated after recession with the global fdi and it has got slightly negative correlation but msci is not influenced by the global fii flows which indicate markets across the global are not depending on external funds.
- Indian flows into fdi market were not effected by the global fdi flows after the recession period but it has been observed Indian fii flows got influenced not only with currency depreciation but also with global fii flows.

It has been found with the help of augmented dicky-fuller test that global fii flows went upside after recession but later fund flows went downside these funds got influenced with global fdi flows because investments got shifted into securities direction globally.

CONCLUSIONS:

I conclude the analysis on currency fluctuations effect on equity and debt market flows in India after recession (2009-2013), fund flows into India got influenced by the currency depreciation along with the global fii flows into securities market; Indian fdi flows got influenced by the global fdi flows and also with the negative economic picture of India. Globally it has been observed that investments are going into china in fdi form but India had failed to attract the both the funds (fii&fdi). There is a further scope to do research to find the exact impact on external fund flows into India.

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