

# An Analytical Study on Impact of FII on Indian Economy – With Special Reference to Indian Forex Reserves

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## Introduction

Foreign reserves pave the way for economic growth by serving import bills, supporting foreign investment and external debt short-term means. Foreign currency reserve management is the responsibility of any country's central bank. These reserves composition relies on the country's monetary policy and specifications. The post-independence era of India shown a decline in capital and reserves due to the fresh formation of policies and government. At the end of December 2017, the IMF reported that world debt reached \$ 182,00,000 Cr. The debt pressure hit almost all the emerging economies including China. India seems to be better among them with Debt/ GDP reached 125%, whereas China was having Debt/GDP as 247%.

## Advantages of forex reserves

- To meet the essential financial needs for payments of imports, international financial obligations like commercial debts.
- To strengthen domestic country market in global trading.
- To arrest the crisis situation.
- To enhance the investor confidence
- To develop infrastructure and to invest in riskless projects.
- To adjust foreign exchange rate.

RBI being a custodian of these reserves, can invest these reserves in a kind of proposals like:

- Deposits with commercial banks
- Sovereign bonds(of maturity < 10 years)

- Deposits with other central banks & bank for international settlements(BIS)
- Other instruments / institutions approved by directors of the central bank.

## Sources of Indian forex reserves

The developing economies encouraged holding of foreign exchange reserves after the East Asian crisis. Central banks of these countries are also formulating strategies to optimum utilization of these resources and to minimize the costs associated with holding them for the long period. India followed a traditional approach till the balance of payment crisis happened during 1991. This allows India to maintain forex reserves to cover the imports for a short period saying 3 to 4 months. Later on, the chairmanship of Dr. C. Rangarajan, the higher level committee on Balance of payments recommends that the country must maintain the forex reserves in quantum so that to support the imports for a few months along with supplementing the payment issues and liability obligations. The post -economic reforms period mitigate these problems by means of the foreign capital in to the Indian capital market. The Forex reserves begun to rally after the inviting the Foreign Institutional Investors to take part directly/indirectly in to Indian stock market. The FDI policy towards FII encouraged to grow more capital for the capital deficient companies in India. Whenever these FII flows to Indian capital market, the forex reserves began to touch the high. The only drawback noticed here by the researcher is that “whenever FII investments leaving from the India, they carry away the lumps of their dollar investments, which in turn creates a deficit of foreign currency assets”.

Forex reserves and foreign investments goes hand by hand in manner such that it seems to be an interdependent relation exists among the two.

**Table 1: Imports covered by forex reserves of India during pre and post economic reforms**

Financial Year	import cover of reserves (in months)	Financial Year	import cover of reserves (in months)
1970-71	4.8	1991-92	5.3
1971-72	5.2	1992-93	4.9
1972-73	5.2	1993-94	8.6
1973-74	4.4	1994-95	8.4
1974-75	2.9	1995-96	6
1975-76	4.2	1996-97	6.5
1976-77	7.4	1997-98	6.9
1977-78	9.9	1998-99	8.2
1978-79	9.2	1999-00	8.2
1979-80	7.3	2000-01	8.8
1980-81	5	2001-02	11.5
1981-82	3.3	2002-03	14.2
1982-83	3.6	2003-04	16.9
1983-84	4.1	2004-05	14.3
1984-85	4.5	2005-06	11.6
1985-86	4.5	2006-07	12.5
1986-87	4.4	2007-08	14.4
1987-88	3.8	2008-09	9.8
1988-89	2.4	2009-10	11.1
1989-90	1.9	2010-11	9.5
1990-91	2.5	2011-12	7.1
		2012-13	7
		2013-14	7.8
		2014-15	8.9
		2015-16	10.9
		2016-17	11.3
		2017-18	10.9

Source: www.dbie.org

**Review of literature**

**Yutaka Kurihara (2016)** examined the relationship between a) stock prices and b) foreign reserves, exchange rates and interest rates in Asian emerging and developing markets. Empirical findings indicate that these four factors do not have cointegration interactions. The effect of foreign reserves on stock prices is positive but the inverse is not correct. In addition, exchange and interest rates likely did not influence stock prices. In these nations, the accumulation of foreign reserves is essential. As it can deliver economic development and financial stabilization. Which target so often fluctuating stock-price movements Financial and economic situations have changed significantly since the 1980s.

According to **Rajib das and Siddhartha Nath (2015)**, Indian reserves are adequate to satisfy demand. There have also been instances where stocks fell below shown by econometric models, but not by optimization models. In order to improve the status of its overseas assets, it is also vital to look for the accessibility of various other foreign currency substitutes such as IMF funds, currency swaps, and contingency resources.

**Objectives**

- To study the trend of foreign exchange reserves during pre and post economic reforms.
- To evaluate the impact of FII on Forex reserves.

**Formulation of Hypothesis**

**H<sub>1</sub>**: there is a long-run association between FII and Forex reserves

**H<sub>2</sub>**: There exists a short-run association between FII and Forex reserves

**H<sub>3</sub>**: There is causality from FII to Forex reserves

**Research methodology**

Researcher adopted purposive sampling while choosing the sample and period of study. Forex reserves were chosen as endogenous and FII investments were chosen as exogenous variable. Researcher selected post-economic reforms period for study as the FII investments were started to India since 1992 September. “E views” software has adopted to test the association and causality between FII and Forex reserves. Granger causality tests, VAR and VECM were used to test the causation and association among the variables.

**Data presentation and analysis:****Table 2: Forex reserves and FII since economic reforms**

Financial year	FII Total (in Cr.Rs)	Foreign exchange reserves (in Cr.Rs)
1992-93	13	30744
1993-94	5127	60420
1994-95	4796	79780
1995-96	6942	74384
1996-97	8575	94932
1997-98	5958	115905
1998-99	-1584	138005
1999-2000	10122	165913
2000-01	9933	197204
2001-02	8763	264036
2002-03	2689	361470
2003-04	45765	490129
2004-05	45881	619116
2005-06	41467	676387
2006-07	30840	868222
2007-08	66179	1237965
2008-09	-45811	1283865
2009-10	142658	1259665
2010-11	146438	1361013
2011-12	93726	1506130
2012-13	168367	1588420
2013-14	51649	1828380
2014-15	277461	2137640
2015-16	-18176	2378740
2016-17	48411	2398200
2017-18	-38930	2760850

Source: RBI statistics and NSDL reports

The above table illustrates the year-wise FII investments and the forex reserves since 1992. The continuous growth in forex reserves resembles the Indian economic growth. FII investments has fluctuations during the period of Asian Financial crisis (2008-09), U S sub-prime crisis (2008-2009) and period of general elections (2013-14).

Tests involved to analyse the impact of FII on Forex reserves:

- Preliminary testing of data
- Tests of association (VAR/VECM and WALD tests)
- Granger causality test
- Tests for residuals

**Preliminary tests**

These tests include stationary tests, differencing methods. The Forex reserves and FII investments are found to be non-stationary. After differencing once, they converted in to stationary. They are having same level of stationary. After getting the differenced series of these variables, researcher chosen the VAR and WALD tests to test the association among the variables.

**Test for association**

The stationary time series data then proceed for testing the association in both long-run as well as short run. This process involves various stages including selection of lag length, test for cointegration among the variables and finally they were tested for association. Here the lag length of the variables obtained as 6 by AIC criteria.

**Table 3: Johansen co-integration test**

Number of co-integrating equations	Eigen value	Max-eigen statistic	Critical value	Probability
No cointegrating equation	0.9346	51.8203	17.1476	0.0000
At most one cointegrating equation	0.0388	0.7524	3.8414	0.3857

The maximum eigen values test also concluded the variables have one co-integration equation. The statement of “at most one co-integration equation” was achieved as the p- value related to the statement is 0.3857>0.05. The variables are now got eligibility to test further using Vector Error Correction Model (VECM).

The Estimated equation of Forex reserves on FII expressed as below.

$$D(FXR)= C (1)*(FXR(-1)-11.7748*FII(-1)-53090.16*@TREND (92)+453841.47)+ C (2)*D (FXR (-1)+C (3)* D(FII(-1))+C (4)* D(FXR(-2))+ C (5)* D(FII(-2))+ C(6)*D(FXR(-3))+C (7)*D (FII(-3))+C (8)*D (FXR(-4))+C (9)*D (FII(-4))+C (10)*D (FXR(-5))+C (11)*D (FII(-5))+C (12)*D (FXR(-6))+C (13)*D (FII(-6))+C (14)+C (15)* @TREND(92)$$

**Table 4: Long-run association between FII and Forex reserves**

Coefficient	Value of Coefficient	Standard error	T-Static	Probability
C (1)	0.8927	0.3802	2.3477	0.0787
C (2)	-0.5498	0.2215	-2.4812	0.0681
C (3)	8.8744	3.9008	2.2750	0.0853
C (4)	-1.17067	0.4974	-2.3533	0.0782
C (5)	7.6870	3.6451	2.1088	0.1026
C (6)	-0.4285	0.2702	-1.5860	0.1879
C (7)	9.8323	3.2492	3.0260	0.0389
C (8)	-0.2651	0.3734	-0.7101	0.5168
C (9)	10.1678	2.1601	4.7068	0.0093
C (10)	0.04144	0.6819	0.0607	0.9545
C (11)	3.7687	0.8986	4.1938	0.0138
C (12)	-2.9298	0.5918	-4.9503	0.0078
C (13)	1.5736	0.9697	1.6226	0.1800
C (14)	-358918	163860	-2.1904	0.0937
C (15)	49039.8	17395	2.8191	0.0479
R-square 0.9827				
Durbin-Watson statistic 3.4216				

Source: Researcher analysis in E views 10 version

From the above table, researcher eliminate the coefficients which are not significant in explaining the association among the variables. The elimination depends upon the priorities given by the p- values. The coefficients having p-value greater than 0.05 are eliminated. The coefficients still significant after elimination process are marked in the above table as C (7), C (9), C (11), C (12) and C (15). The coefficients associated with the lag values of FII variable are tested for short-run association by WALD test.

**Table 5: WALD (Short-run association) test between FII and Forex reserves**

Test Statistic	Value	Degrees of freedom	Probability
F-Static	18.0741	(6,4)	0.0072
Chi-Square	108.4448	6	0.0000

Source: Researcher analysis in E views 10 version

The p-value corresponding to Chi-square is 0.000 which is <5%. So, researcher can reject H<sub>0</sub>, which means that the above coefficients are not zero and there exist short-run association between FII and Forex reserves.

**Table 6: Coefficient values and errors obtained for short-run association**

Coefficients	Value	Std. Error
C (3)	8.8744	3.9008
C (5)	7.6870	3.6451
C (7)	9.8323	3.2492
C (9)	10.1678	2.1601
C (11)	3.7687	0.8986
C (13)	1.5736	0.9697

Source: Researcher analysis in E views 10 version

**Rectified equation of Forex reserves on FII**

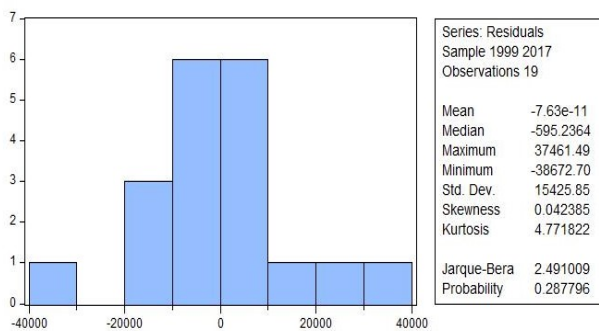
$$D(FXR) = C(1) * (FXR(-1) - 11.7748 * FII(-1) - 53090.16 * @TREND(92) + 453841.47) + C(7) * D(FII(-3)) + C(9) * D(FII(-4)) + C(11) * D(FII(-5)) + C(12) * D(FXR(-6)) + C(15)$$

**Table 7: Tests for residuals**

A) Breusch-Godfrey serial correlation			
F-Static	218.3778	Prob. F (2,2)	0.0046
R <sup>2</sup> (observed)	18.9133	Prob. Chi-square (2)	0.0613
Test for Heteroskedasticity			
F-Static	3.7729	Prob. F (10, 296)	0.0001
R <sup>2</sup> (observed)	34.7073	Prob. Chi-square (10)	0.0582

Source: Researcher analysis in E views 10 version

The p-values for the above tests are >0.05, so researcher cannot reject H<sub>0</sub>, rather accept H<sub>0</sub>. So, this model has free from serial correlation up to 6 lags, and they are Homoskedastic, which is a good sign for the test.



Source: Researcher analysis in E views 10 version

**Graph 1: Normality curve for the residuals**

The above graph shows that the residuals of the test are following normal distribution.

**Table 8: Pairwise Granger Causality test between FII and Forex reserves**

Null Hypothesis	Observations	F-Static	Probability
FII does not Granger cause Forex reserves	20	2.6689	0.0125
Forex reserves does not Granger cause FII	20	4.2645	0.0395

: Researcher analysis in E views 10 version

As the p values of both the statements are below 0.05, the hypothetical statements mentioned in the above test are rejected by the researcher. It shows that FII does cause Forex reserves and Forex reserves does cause FII. The bi-directional causality exists here among FII and Forex reserves.

**Discussion and findings**

All the above tests show that FII and Forex reserves have both sort-run and long-run association and they are having bi-directional causality among them. This is also theoretically explained as FII creates an efficient forex reserves with their capital inflows and when they are leaving from the Indian capital market, they take off their dollar currency nominated capital from India. On the other hand, Forex reserves of country attracts more foreign capital by providing more confidence to the investors. If the forex reserves of the country got exhausted or unable to pay even for the imports, the investors will leave that country and choose a safe destination in which they can be served with secure to their investments.

**Conclusion**

Foreign Institutional Investors are very sensitive to the market conditions and the economic indicators. The most of the foreign capital is by the means of FIIs. They will serve the economy by aiding the capital deficit companies with their investments to enhance the productivity and as a result, they are causing the economic growth. They are not only bringing the capital to India; they are providing an efficient quantum of Foreign currencies by means of their investments. so, FII must be encourages and eased their access to attract more investments across the globe (especially from developed economies) to Indian capital market. This will enhance the productivity and as a result, more employment and let the India become a leading country across the globe.

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