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Impact of Foreign Direct Investment Inflows on Capital Account of India's Balance of Payments

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Abstract

Transfer of capital from one country to another has been unrestricted in the present era of globalisation. The capital transfer may take one form or the other. One of the forms of capital transfer is Foreign Direct Investment Inflows (FDI Inflows) and it is an integral determinant of Capital for developing countries. FDI means the investment of funds by a foreign entity (particularly a Transnational or Multinational Company) by creating new equity base in host or home economy or vice versa. As FDI Inflow is a macroeconomic variable, it is represented in the balance sheet of the country known as Balance of Payments (BOP). The balance of payments of a country is a systematic record of all economic transactions between the residents of the reporting country and residents of foreign countries during a given period of time. To identify the happenings in the international payments, a record of the transactions between countries is necessary. The record of such transactions is made in the balance of payments account. The paper aims to measure the impact of FDI Inflows on Capital Account of India's BOP. The time period for the study is 1991-1992 to 2014-15.

Keywords: FDI Inflows, Capital Account, Granger Causality, Vector Auto Regression

1. Introduction

When India got Independence in 1947, at that time the Inward FDI in India was by United Kingdom. Just after Independence the task for Indian government was to move on a path of Industrialization. The initial process of Industrialization was supported by domestic as well as international investors. Gradual liberalization was followed by the opening up of the economy by the Indian government in 1991. These changes owing to the liberalization policy has considerable impact on the FDI position of the country both Inward FDI flows and Outward FDI flows. In the aftermath of the 'debt crisis' of the early 1980s, the view that

'Foreign Direct Investments' (FDI) has a more salutary effect on the Balance of Payments (BOP) of developing countries than debt finance became widespread. This was quite apart from the other benefits of FDI, such as greater productivity, better quality, lower costs, etc. which were taken to be axiomatic. The obvious outcome of such a perception has been a sustained pressure by the multilateral aid agencies and Organisation for Economic Co-operation and Development (OECD) governments on developing countries to actively encourage FDI as an integral part of their BOP management strategy. Several countries consider inviting and attracting FDI Inflows as a directional strategy towards achieving economic development. The primary reason being that FDI comprises of movement of Capital, managerial skills and technology transfer (Egbo, 1998).

During the fiscal year 1990-91, India witnessed a BOP crisis owing to accelerated increase in external debt and a political uncertainty about the leadership. In the view of such development, India's credit rating at the international level deteriorated and it became difficult for the country to fetch foreign financing. This resulted in heavy outflow of foreign reserves and the remittances of NRI's. The only option left for the country was to take funds from IMF under emergency situation. With this background, New Economic Policy (NEP) was adopted in 1991 and with it there was substantial improvement in BOP position of India but yet it has not solved all the problems.

2. Conceptual Framework

2.1 Foreign Direct Investments (FDI)

FDI refers to the investment of funds by a foreign entity (particularly a Transnational or Multinational Company) by creating new equity base in host or home economy or vice versa. Several definitions of FDI, all giving same notion are found in the existing literature. FDI is investment that is made to acquire a lasting management interest (usually 10 % of voting stock) in an enterprise and operating in a country other than that of the investors (Jhingam, 2008; World Bank, 1996; Sen, 1995). FDI is cross border investments in which a resident in one economy acquires a lasting interest in an enterprise in another economy. FDI is identified when the foreign investor acquires at least 10 % or more of the ordinary shares or voting rights of an enterprise abroad. To qualify as an FDI, the investment must be made by one investor or by a "related group" of investors (IMF, 2003). FDI reflects the objective of obtaining a lasting interest by a resident entity in one economy other than that of the investor. The lasting interest implies the existence of a long term relationship between the direct investor and the enterprise and a significant degree of influence on the management of the enterprise (OECD, 2008). FDI includes both Inflows and Outflows, the former referring to flow of equity funds into the host country and the latter referring to flow from the home country. FDI Inflows includes not only merger and acquisitions and new investment but also reinvested earnings and loans and similar capital transfer between parent companies and their affiliates.

2.2 Balance of Payments (BOP)

According to Kindleberger (1985), "The balance of payments of a country is a systematic

record of all economic transactions between the residents of the reporting country and residents of foreign countries during a given period of time". For the purpose of identifying the happenings in the international payments governments keep record of the financial matters between countries. The record of such transactions is made in the balance of payments account (Lipsey & Chrystal, 2007). BOP is further divided into two major parts, namely:

The current account (CA), which includes the recording of all transactions related to trade in goods and services and also includes transfers. On the other hand, capital account records transactions related to financial assets, foreign investments, short term and long term lending. In short, capital account shows changes in the country's foreign assets and liabilities.

The capital account (KA), that consists of its transactions in financial assets in the form of short term and long term lending and borrowings and private and official investments. In other words, the capital account shows international flow of loans and investments, and represents a change in the country's foreign assets and liabilities. Long term capital transactions relate to international capital movements with maturity of one year or more and include direct investments like building of a foreign plant, portfolio investment like the purchase of foreign bonds and stocks, and international loans. On the other hand, short term international capital transactions are for a period ranging between three months and less than one year (Jhingam, 2008).

3. Review of Literature

The review of existing literature shows a mixed response towards the impact of FDI on components of BOP, though very few studies are available on the causal relationship. In addition to it, FDI Inflows has not been taken up specifically to measure its impact on BOP. Empirical evidence with respect to causality between FDI and Trade has shown contradictory results ranging from uni-directional causality to bi-directional causality and even no causality between the two variables (Pramadhani, Rakesh & Driffield, 2007). The bivariate causality tests carried out by Thornton (1996) and Abdulnasser and Manuchehr (2000) shows a uni-directional Granger Causality from exports to economic growth. In this context, focusing only on trade may not be appropriate (Goldberg & Klein, 1999). This refers to the need of measuring the impact of FDI Inflows on BOP. The effects of Foreign Direct Investment on home and host economies have been the subject of much writing (Dunning, 1981, 1993; Enderwick, 1985, Hufbauer & Adler, 1968; Ietto-Gillies, 1992; Reddaway, 1967, 1968; UNCTAD, 1992, 1997). The empirical results indicate that FDI has a negative effect on current account and a positive effect on capital account. FDI and its impact have drawn attention of scholars but lately. Chakraborty and Basu (2002) suggest that GDP in India is not Granger caused by FDI and the causality runs more from GDP to FDI. Still it does not build a relationship between FDI Inflows and BOP. Fry, Claessens, Burridge and Blanchet (1995) suggested that the more liberal is a country's foreign exchange system the more likely is FDI to be independent showing a null impact on BOP. Baye and Jansen (1995) observed the patterns of macroeconomic variables and concluded that FDI will have a positive impact on private investment and growth but the caution point is that it can also have an adverse effect

on BOP. This study focused on Thailand. Sahoo and Mathiyazhagan (2002) suggested that there is a long-run relationship between Gross Domestic Product (GDP), FDI, and Export (EX) and also argued that FDI does not matter in the growth of the economy, but export contributes to the growth in India. Out of the several studies focussing on the case of developing countries, majority of them concludes that FDI has significant positive impact on economic growth. The economic impact of FDI on the level of economic activity has been widely investigated in recent years across different countries. Results from studies suggest that FDI Inflows can crowd-in or crowd-out domestic investment depending on the specific elements of the economy. However, overall FDI has a positive impact on economic growth. The key factors in determining the magnitude of the impact included availability of resources, stock of human capital etc. (Hossain, 2007). In recent years, however, the lustre has worn somewhat thin on this prescription, principally due to emerging empirical evidence which suggest that FDI may have a more positive impact on the BOP of the originating country than on that of the recipient country (Sen, 1995). The empirical observation that profits on FDI often climb quite steeply after an initial period of unprofitability suggests that FDI should not generally be viewed as a means of financing Balance of Payments needs over the medium term (World Bank, 1993). There is of course an enormous body of literature on the microeconomic dimensions of FDI, particularly on the behaviour of trans or multinational corporations, but this is of limited relevance to the BOP implications.

Thus, capital inflows which comprises of FDI Inflow are a good source of improving the BOP position (Nag & Mukherjee, 2012). Balance of Payments is a matter of concern for emerging economies given the history of their development (Kulkarni & Kamaiah, 2015). Ranjan and Nachane (2004) developed a model of India's BOP divided into five equations including (a) current account of BOP (b) capital account of BOP and external debt (c) output and price determination (d) money supply and bank credit (e) fiscal sector including market borrowings. He reached to a conclusion that the exchange rate adjustment would not lead to substantial improvements in macroeconomic conditions. Both FDI and FPI, apart from market efficiency contribution help to finance the deficit of BOP and preserve the foreign currency reserves (Ahmad, Yang & Draz, 2015).

It was also highlighted that FDI normally has a significantly higher Capital Account entry associated with it than the corresponding Current Account entry (Sen, 1995). Catao and Milesi-Ferretti (2013) has seen crisis in the light of debt rescheduling by the emerging economies and on the basis of IMF assistance program related to debt. This directly is related to Capital Account of BOP. Against the background of the liquidity crisis of BOP before 1991 liberalisation, management of the Capital Account has assumed critical importance in the overall framework of macroeconomic decision making in India (Ranjan & Nachane, 2004). The Capital Account of India has shown a rising trend since 1990's as highlighted by Kaur, Yadav and Gautam (2012). Achieving macroeconomic stability through BOP is the pre-condition for optimising external sector policies affecting trade, exchange rate and the management of reserves. The policies to be adopted with respect to Capital Account of BOP must include the understanding on the issues such as characteristics of capital flows (FDI Inflows), cost consideration (including transfer pricing) and modalities of monetary and fiscal

policies in the interests of macroeconomic stability (Ranjan & Nachane, 2004). With the changing composition and dimensions of capital flows, the focus is rapidly shifting towards individual constituents in the Capital Account. As an example to cite, in recent years, the Capital Account has been dominated by flows such as FDI, PI (including GDR issues), commercial borrowings and non- resident deposits. Though, it is a fact that traditionally for India the major item in Capital Account was external aid. The model of Capital Account of BOP developed by Ranjan and Nanchane (2004) focused on two interactive channels through which the Capital Account of BOP impacts the rest of the economy. However, it is assumed that Capital Account would supplement domestic savings to raise gross investment in the economy which would further affect output growth. When and if capital inflows (FDI particularly) are large such inflows are absorbed by RBI which leads to a rise in the foreign exchange reserves and subsequently to money supply accelerations. Ultimately, it was concluded that in context of India, Capital Account is adversely affected as a result of slowdown in world income which also resulted in less inflows of foreign savings into India. Thus, when the world GDP declines, though real growth rate of India is not affected the impact of the same can be felt on other parameters like capital inflows (FDI Inflows), reserves, money supply, inflation and revenue collection of the government of India (Ranjan & Nachane, 2004).

4. Econometric Models and Estimation Methods

In order to decide the causality or impact between the relevant variables Toda and Yamamoto (1995) non causality approach would be followed. This would be along with the application of the direct approach without the Difference Stationary Process (DSP) and would be using the data in levels. However, it does not mean that order of integration of the series would not be checked. The estimation approach used in this study has been captured by Lutkepohle (2007). Variables used in the study are described in Appendix 1. A simple X Granger cause Y if Y can be better predicted using the histories of both X and Y than it can by using the history of Y alone.

With respect to the study, the combination to be studied is FDI Inflows (FDII) and Capital Account Balance (KAB). The absence/presence of Granger causality will be tested using the following set of equation:

Set 1: FDII and KAB

$$FDII_t = a_0 + a_1 FDII_{t-1} + .. + a_p FDII_{t-p} + b_1 KAB_{t-1} + .. + b_p KAB_{t-p} + \mu_t \quad (1.1)$$

$$KAB_t = c_0 + c_1 KAB_{t-1} + .. + c_p KAB_{t-p} + d_1 FDII_{t-1} + .. + d_p FDII_{t-p} + v_t \quad (1.2)$$

The hypotheses for equation 1.1 are as follows:

H_0: Capital Account Balance does not Granger cause FDI Inflows

H_A: Capital Account Balance Granger cause FDI Inflows

Maintained/ Mathematical hypotheses for the same are as follows:

H_0: $b_1=b_2=\ldots=b_p=0$

H_A: $b_1\neq b_2\neq\ldots\neq b_p\neq 0$

The hypotheses for equation 1.2 are as follows:

H_0: FDI Inflows does not Granger cause Capital Account Balance

H_A: FDI Inflows Granger cause Capital Account Balance

Maintained/ Mathematical hypotheses for the same are as follows:

H_0: $d_1=d_2=\ldots=d_p=0$

H_A: $d_1\neq d_2\neq\ldots\neq d_p\neq 0$

The first step in the procedure is to find out the order of integration of the series FDII and KAB by using both Augmented Dicky Fuller unit root test (Dicky & Fuller, 1981) and Kwiatowski Phillips Schmidt Shin unit root test (Kwiatowski, Phillips, Schmidt & Shin, 1992). The various models and hypothesis for ADF test are as follows:

Model A: Check for Stationarity (Neither intercept nor trend)

$$\Delta y_t = \gamma y_{t-1} + \sum P_i \Delta y_{t-i} + \epsilon_t$$

Model B: Check for Level Stationarity (Only Intercept in the equation)

$$\Delta y_t = \mu + \gamma y_{t-1} + \sum P_i \Delta y_{t-i} + \epsilon_t$$

Model C: Check for Trend Stationarity (Intercept and Trend in the equation)

$$\Delta y_t = \mu + \beta t + \gamma y_{t-1} + \sum P_i \Delta y_{t-i} + \epsilon_t$$

Where in all cases H_0: $\gamma = 0$ of a unit root time series

H_A: $\gamma < 0$ of a stationary time series

As there are differences in asymptotic distribution of the different unit roots, for a cross check, KPSS test would also be used. Remember, that while the null hypothesis of ADF is non stationarity, the null hypothesis of KPSS is stationarity. In KPSS only two models are available:

Model A: Check for Level Stationarity (Only Intercept)

$$y_t = a_0 + \varepsilon_t$$

Model B: Check for Trend Stationarity (Intercept and Trend in the equation)

$$y_t = a_0 + \beta t + e_i$$

Where in all cases H_0: $\sigma_\mu^2 = 0$ of a stationary time series

H_A: $\sigma_\mu^2 \neq 0$ of a unit root/non stationary series

Thus, combining the results of ADF and KPSS is the ideal method in checking for stationarity and deciding the order of integration (Kocenda & Cerny, 2014). Once the integrated order is confirmed, Vector Auto Regression (VAR) model would be developed for the two sets in levels of the data. VAR models in time series analysis may be traced to Sims (1980). It is the most appropriate approach in case of two variables interacting with each other when there is no ex ante information that which of them is exogenous. The following are the equations for unrestricted VAR model:

Set 2: FDII and KAB

$$FDII_{1t} = b_1 + \alpha_{12} KAB_{2t} + \sum_{i=1}^{P}\left(\gamma_{11}^{(i)} FDII_{1t-i} + \gamma_{12}^{(i)} KAB_{2t-i}\right) + \mu_{1t} \quad (2.1)$$

$$KAB_{2t} = b_2 + \alpha_{21} FDII_{1t} + \sum_{i=1}^{P}\left(\gamma_{21}^{(i)} FDII_{1t-i} + \gamma_{22}^{(i)} KAB_{2t-i}\right) + \mu_{2t} \quad (2.2)$$

For estimating the VAR model, determination of number of lags p would be done on minimizing the Akaike Information Criteria (AIC), Hannan-Quinn Information Criteria (HQIC) and Schwarz Bayes Information Criteria (SBIC). Additionally, there should be no serial correlation in the model and this would be judged through residual statistics (LM serial correlation test). Inverse roots of AR Characteristic polynomial would additionally determine whether the VAR model is stable or not. Cross checking of the results would also be performed with the help of Johansen's methodology of cointegration. If the two series are found to be cointegrated while Granger causality suggest otherwise, the results of causality would not be considered reliable. However, if the two series are not cointegrated, the Granger causality results cannot be cross checked and the results would be considered reliable.

5. The Data

The secondary data is collected from Department of Industrial Promotion and Policy (DIPP), Government of India; UNCTAD Database and Reserve Bank of India database. FDI Inflows data has been taken from DIPP and UNCTAD while the Balance of Payments data from RBI database. The FDI data previous to financial year 2000-01 was not available on DIPP database. On the other hand, though the data from 1991 was available on UNCTAD, it was on annual basis while the financial/fiscal year for India's macroeconomic variables is April 1 of one year to 31st March of next year. Thus, the UNCTAD data was transformed into the financial/fiscal year data. For this it was assumed that FDI Inflows were distributed evenly in

an annual year. Because the data is annual, it is to be noted there is no such problem of seasonality. Thus, the annual data from 1991 to 2000 was transformed into the data from 1991-1992 to 1999-2000. The equation used for transforming the data is as follows:

$$fdii_t = fdii_{t+1} \div 12 \times 3 + fdii_{t-1} \div 12 \times 9$$

Where:

t = period, e.g. 1991-1992

t+1 = latter year, e.g. 1992 for the above period

t-1 = previous year, e.g. 1991 for the above period

The matrix of the data for three variables is presented in Appendix 2.

6. Impact of FDI Inflows (FDII) on Capital Account Balance (KAB) of India's BOP

The trend in FDII and KAB needs to be discussed. During the period 1991-92 to 2014-15, the FDII and CAB data has shown myriad trends. While the FDI Inflows has been consistently increasing with fluctuation and downfall in few selected years, the rate of increase appears to be more after 2006-07. Figure 1 highlights the trends in the levels of the data of FDI Inflows and KAB. As it is clear from the graph, KAB has shown substantial fluctuation in 2008-09 and 2012-13. These changes may be traced to policy changes from time to time and particularly year 2008-09 may be linked to world economic crisis due to which there was a setback to the flow of cross border capital. The descriptive of the two series shows the mean value of US$ 16010.26 million for FDII and US$ 30784.38 million for KAB with a maximum value of US$ 46556 and US$ 106585 million, respectively. The minimum value of FDII and KAB in the sample period is US$ 119.25 million and US$ 3876 million. The prob. value of Jarque-Bera shows that FDII series is normally distributed (0.1735) and KAB series is also normally distributed (0.0855). The other descriptive can be looked at in Appendix 4.

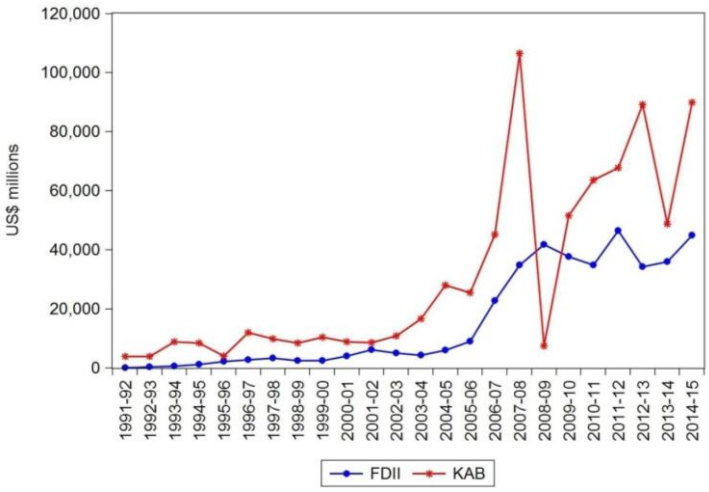

Figure 1. FDII and KAB

Source: Prepared by the researcher

Both the time series FDII and KAB, have been checked with ADF and KPSS unit root tests in order to find the integrated order individually and after that the maximum integration of both the series. First, the FDII series is checked for integration order. For the same, first the type of unit root model needs to be selected and conformed. The best way is to check whether there is trend or not in the series. If there is trend which comes out to be significant, than the unit root model used would be model C (both intercept and trend).

Table 1. Unit Root Test for FDII (ADF Test)

Data	Critical Value	Level of Sig.	Absolute t-statistic	Prob.
Level	4.3943	1%	1.8848	0.6310
	3.6122	5%		
	3.2431	10%		
1st Order Difference	4.4163	1%	4.28	**0.0133**
	3.6220	5%		
	3.2486	10%		

*****bold values indicate stationarity

Source: Computed by researcher using eviews9

Table 2. Unit Root Test for FDII (KPSS Test)

Data	Asymptotic Critical Value	Level of Sig.	LM Statistic
Level	**0.2160**	1%	0.1324
	0.1460	5%	
	0.1190	10%	
1st Order Difference	**0.2160**	1%	0.0688
	0.1460	5%	
	0.1190	10%	

*****bold values indicate stationarity

Source: Computed by researcher using eviews9

The series indicates when FDII is checked for unit root with ADF test (deterministic trend model) the output of trend shows the prob. value to be 0.0452 which is less than 5%. Thus, the null hypothesis of "no significant trend" is rejected and alternative hypothesis of trend is accepted. Thus, the dynamics of the series can be captured with a unit root model including intercept as well as trend. Table 1 and Table 2 gives the unit root test results for ADF and KPSS. It is clear from Table 1 that FDII series is non-stationary at all levels and prob. value is also more than 5% when the data is level. Thus, there is a need for difference stationary process (DSP). The first order difference stationarity check results shows that FDII I(1) is stationary as the prob. is less than 5% (0.0133) and absolute t-statistic is more than critical values at 5% and 10%.

The same series is checked for unit root with the help of KPSS where null hypothesis is of

stationarity. The results are shown in Table 2. The level data shows that series is non stationary at only 10% level but stationary at 1% level and 5% level. The null hypothesis of stationarity is rejected when the LM statistic is more than the appropriate critical value. The two results of ADF and KPSS if combined seems contradictory and thus requires reconciliation. A close look to the KPSS result show that at 5% level the values are close enough to decide that 5% seems to be a typical unit root (meaning just in the middle of stationary series and non- stationary series). In practice, it is common to have a series as non stationary by ADF and stationary by KPSS though the opposite is not common. The decision here taken is to further go for differencing and then again checking unit root by KPSS. Thus, at first order differencing unit root testing, the series FDII is stationary at all levels because at all levels the LM statistic is less than the appropriate critical value. Combining the results of ADF and KPSS, it is concluded that FDII is of order 1 by ADF and order 0 or 1 (much stronger) by KPSS. Thus, as reconciliation, FDII is integrated of order 1. Moving on to check the series KAB for finding the order of integration. The series is checked for both ADF and KPSS. Table 3 and Table 4 represent the results of the test.

Table 3. Unit Root Test for KAB (ADF Test)

Data	Critical Value	Level of Sig.	Absolute t-statistic	Prob.
Level	**4.3943**	1%	5.2092	**0.0017**
	3.6122	5%		
	3.2431	10%		

*****bold values indicate stationarity

Source: Computed by researcher using eviews9

Table 4. Unit Root Test for KAB (KPSS Test)

Data	Asymptotic Critical Value	Level of Sig.	LM Statistic
Level	**0.2160**	1%	0.1258
	0.1460	5%	
	0.1190	10%	

*****bold values indicate stationarity

Source: Computed by researcher using eviews9

ADF test shows that the data of KAB series is stationary at all levels as the t value is more than the absolute critical values thus rejecting the null hypothesis of "unit root series". Another thing to be noted is that both trend and intercept were selected while performing the ADF and the trend was found to be significant with Prob. of 0.0003. Thus, it proves that appropriate model to be adopted is intercept and trend model. On the other hand, the same result is shown by KPSS test. According to its results, the series is stationary at all levels because the LM statistic is less than the appropriate critical value except at 10% level of significance. Even if first order differencing is used it will have no alteration in the decision of maximum order of integration (m) for both the series. Hence, the m for FDII and KAB is 1,

i.e. FDII is I(1) and KA is I(0).

With this maximum m the VAR model (1,1) is setup and the estimates are shown with r^2 value of 0.9117 (Appendix 5). After setting up the VAR, tests for serial correlation and number of lags are performed. Serial correlation at three lags show that at two lag out of three there is no serial correlation in the model. Thus, this stand that there is no serial correlation in the VAR is accepted. The lag order selection criteria in Table 5 shows lag 1 minimizes the AIC, SC and HQ values and thus the VAR model (1,1) and lags by information criteria is same.

Table 5. VAR Lag order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-493.6072	NA	1.27e+17	45.05520	45.15438	45.07856
1	-466.1340	47.45366*	1.50e+16*	42.92127*	43.21883*	42.99137*
2	-464.0751	3.181892	1.82e+16	43.09774	43.59367	43.21456
3	-458.4803	7.629350	1.62e+16	42.95275	43.64705	43.11631
Endogenous variables: FDII KAB Exogenous variables: C * indicates lag order selected by the criterion						
LR: sequential modified LR test statistic (each test at 5% level)						
FPE: Final prediction error						
AIC: Akaike information criterion						
SC: Schwarz information criterion						
HQ: Hannan-Quinn information criterion						

Also the Inverse Root graph shows that model is stable as the values are less than unity (Appendix 3). Additionally, for having a cross check at the end of the analysis the cointegration test on the two series is conducted. The Johansen cointegration test shows that there is 1 cointegration at 5% level of significance by Trace test as well as by maximum eigenvalue test. As cointegration has been found between FDII and KAB, it means that the final results must show Granger causality between FDII and KAB at least one way (Appendix 6). If VAR model does not approves at least one Granger causality, it would be presumed that VAR model has been misspecified.

Next step is to re-estimate VAR model with additional lag m (Appendix 5) followed by VAR Granger causality (Block Exogeneity Wald Test). The output of Granger causality is shown in Table 6 and Table 7,

Table 6. VAR Granger causality for FDII

Excluded	Chi-sq.	df	Prob.
KAB	5.1655	1	**0.0230**

*****bold values indicate rejection of H_0

Source: Computed by researcher using eviews9

Table 7. VAR Granger causality for KAB

Excluded	Chi-sq.	df	Prob.
FDII	5.2846	1	**0.0215**

*****bold values indicate rejection of H_0

Source: Computed by researcher using eviews9

The H_0 for Table 6 is that KAB does not Granger cause FDII and this null hypothesis is rejected as the Prob. is less than 5% level of significance. Therefore, Capital Account Balance Granger cause FDI Inflows. Similarly, the null hypothesis of Table 7 is also rejected and alternative hypothesis is accepted which means that FDII Granger cause KAB. This proves that there is a bi-directional causality between FDII and KAB. The result does not stand contrary to cointegration and therefore must be accepted.

7. Conclusion

The discussion and analysis on the variable Foreign Direct Investment Inflows and the component of balance of payments Capital Account Balance (KAB) shows that there is an impact of Foreign Direct Investment Inflows on Capital Account Balance. However, the difference being, there is bi-directional causality between Capital Account Balance and Foreign Direct Investment Inflows. This means that Foreign Direct Investment Inflows impact the Capital Account Balance in India as well as the Capital Account Balance also impacts the Foreign Direct Investment Inflows. This proves the point that Foreign Direct Investment Inflows are very important macroeconomic variable for an emerging economy like India.

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Appendix

Appendix 1. Variable Description

Variable	Description
FDII	Foreign Direct Investment Inflows of India in US$ millions
KAB	Capital Account Balance of India's BOP in US$ millions

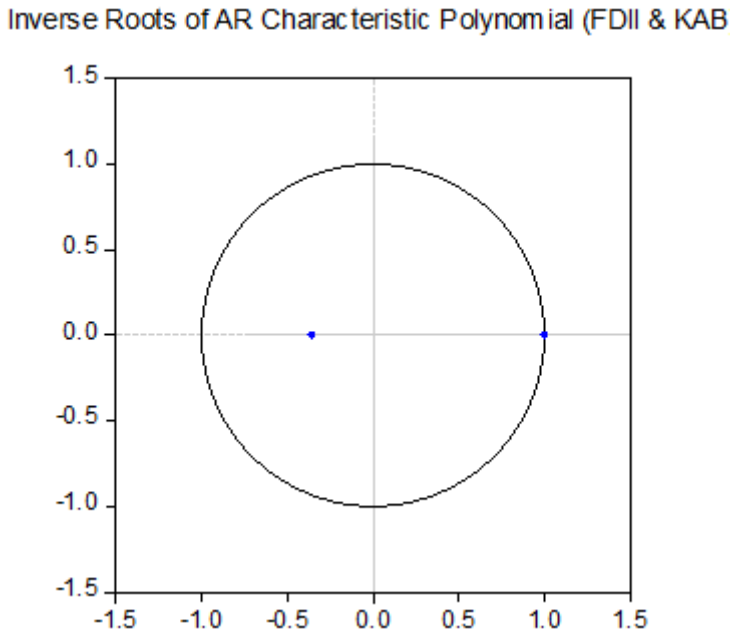
Appendix 2. Matrix of FDII & KAB of India (US$ millions)

Year	FDII	KAB
1991-92	119.25	3915
1992-93	322	3876
1993-94	642.5	8894
1994-95	1268.25	8502
1995-96	2244.5	4089
1996-97	2798.5	12007
1997-98	3372.5	9844
1998-99	2516.75	8437
1999-00	2522.998	10444
2000-01	4029	8840
2001-02	6130	8551
2002-03	5035	10840
2003-04	4322	16736
2004-05	6051	28022
2005-06	8961	25470
2006-07	22826	45203
2007-08	34843	106585
2008-09	41873	7395
2009-10	37745	51634
2010-11	34847	63740
2011-12	46556	67755
2012-13	34298	89300

2013-14	36046	48787
2014-15	44877	89959

Source: UNCTAD, DIPP, RBI; Transformed through eviews

Appendix 3. Additional Figures



Appendix 4. Summary Statistics

Descriptive	FDII	KAB
Mean	16010.26	30784.38
Median	5543	11423.5
Maximum	46556	106585
Minimum	119.25	3876
Std. Dev.	17303.47	31680.18
Skewness	0.638389	1.099676
Kurtosis	1.631331	2.888209
Jarque-Bera	3.503414	4.849644
Probability	0.173478	0.088494
Sum	384246.2	738825
Sum Sq. Dev.	6.89E+09	2.31E+10
Observations	24	24

Source: Computed by researcher using eviews9

Appendix 5. VAR Models Output: FDII & KAB

Default VAR (p lag)

Standard errors in ( ) & t0statistics in [ ]

	FDII	KA
FDII (-1)	0.828832	1.739406
	(0.10920)	(0.42168)
	[7.58993]	[4.12497]
KAB (-1)	0.119649	-0.180690
	(0.06112)	(0.23599)
	[1.95775]	[-0.76565]
C	1013.457	11112.55
	(1534.46)	(5925.25)
	[0.66047]	[1.87546]

Source: Computed by researcher using eviews9

RE-estimated VAR (n lag)

Standard errors in ( ) & [ ]

	FDII	KA
FDII (-1)	0.718977	2.422610
	(0.26281)	(1.05385)
	[2.73576]	[2.29882]
KAB (-1)	0.150727	-0.192651
	(0.06632)	(0.26593)
	[2.27278]	[-0.72443]
C	438.9640	11880.99
	(1704.95)	(6836.78)
	[0.25746]	[1.73780]
FDII (-2)	-0.093814	-0.596999
	(0.22001)	(0.88224)
	[-0.42640]	[-0.67669]
KAB (-2)	0.099986	-0.089447
	(0.07419)	(0.29750)
	[1.34771]	[-0.30067]

Source: Computed by researcher using eviews9

Appendix 6. Cointegration Test Output: FDII & KAB

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 critical value	Prob.
None	0.610904	27.59061	25.87211	0.0303
At most 1	0.225598	5.880261	12.51798	0.4757
Result: Trace test indicates 1 cointegratingeqn(s) at the 0.05 level				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 critical value	Prob.
None	0.610904	21.71035	19.38704	0.0226
At most 1	0.225598	5.880261	12.51798	0.4757
Result: Max-Eigenvalue test indicates 1 cointegratingeqn(s) at the 0.05 level				

Source: Computed by researcher using eviews9