Fiscal Deficit, Current Account Deficit, and Capital Flows in India : An Empirical Investigation Using Granger Causality Test

** N. Kubendran*

Abstract

The relationship between fiscal deficit and current account deficit has always been a debatable topic among the academicians in the field of economics and finance. In this context, the present study focuses on fiscal deficit, current account deficit, capital flows, and its sub components called debt and non-debt creating capital flows for analysis. The main aim of the study was to analyze the impact of fiscal deficit on current account deficit, capital flows, and its subcomponents. The present study employed the descriptive statistical techniques, Augmented Dickey-Fuller test, and Granger causality test. The empirical findings clearly proved the appropriateness of the twin deficit model for India. The Granger causality test found unidirectional causality between fiscal deficit and current account deficit. Also, the study found unidirectional causality between current account deficit and capital flows. Both the results implied that there was an influence of fiscal deficit on current account deficit, which in turn influenced capital inflows. The study observed bidirectional causality between current account deficit and non-debt creating capital flows, and no causality was observed between current account deficit and non-debt creating capital flows. It can be inferred that there was a direct relationship between fiscal deficit and current account deficit, which in turn influenced debt - creating capital influences into India. Therefore, this paper suggested that the Government of India should be careful in implementing expansionary fiscal policy. Also, the study suggested that the Government of India needs to focus more on fiscal discipline for economic stability and external sector sustainability.

Keywords : **fiscal deficit, current account deficit, capital flows, debt and debt management, Granger causality, model construction and estimation**

JEL Classification : C12, C51, E62, F21, F32, F47, F62

Paper Submission Date : June 27, 2018 ; Paper sent back for Revision : August 20, 2018 ; Paper Acceptance Date : August 28 , 2018

An analysis on twin deficits and capital flows occupy significance to measure the macroeconomic performances of India. To estimate the macroeconomic performances of India, in the context of internal and external sector sustainability, requires special attention on the nexus between twin deficits and its influence on capital flows, particularly debt and non-debt creating capital flows. The recent worldwide Eurozone crisis and stagnation has aggravated the necessity to analyze the relationship between fiscal deficit and current account balance (Bolat, Emirmahmutoglu, & Belke, 2014). Many empirical studies since 1970s have examined the twin deficit hypothesis and found mixed results. Keynesian view based on Mundell - Fleming open economy model observed that the increase in budget deficit would influence current account deficit positively (Malindretos & Arize, 2008 ; Rosenzweig & Tallman, 1993). According to the Ricardian equivalence hypothesis, there is no possible causal relationship between fiscal deficit and current account deficit (Barro, 1974; Buchanan, 1976; Khalid & Guan, 1999).

Based on the above - mixed implications, the present study attempts to test the twin deficit concept in the context of the Indian economy from 2000 to 2017. Apart from the above issues, the present study will investigate the effect of twin deficits on capital flows, specifically on debt and non - debt creating capital flows.

* *Associate Professor,* MBA Department, Presidency College, Bangalore - 560 024. Email : kubendran1979@gmail.com

Generally, the economists endeavoured to connect the effect of fiscal deficit on current account deficit via inflation and imports. Similarly, there will be an effect of current account deficit on capital flows. As long as the current account of a nation is strong and sustainable, it gives more confidence to domestic as well as foreign investors, which may boost capital inflows through an increase in the inflow of non - debt creating capital flows like foreign direct investment (FDI) and portfolio investments. Alternatively, the rising current account deficit will cause a decline in non-debt creating capital inflows, rise in capital outflows expecting higher exchange rate, and influence the inflow of debt-creating capital inflows to accommodate existing and rising current account deficit.

Current account deficits are mainly driven by debt creating capital flows compared to non-debt creating capital flows. This implies that if a nation continues to run current account deficit, it may force it to make painful adjustments by reducing domestic absorption and high-cost method of solving the current account deficit. Therefore, it is more useful to test cross correlation among the major macroeconomic variables called fiscal deficit, current account deficit, and capital flows.

Research Issues

Against this background, the present study addresses several policy issues and research questions. For instance :

(i) Do fiscal deficits have positive or negative or no correlation with current account deficit ?

(ii) Is there any simultaneous relation triumph between fiscal deficit, current deficit, and capital flows in India ?

(iii) Is current account deficit a cause of fiscal deficit or capital flows ?

(iv) Is there any impact of current account deficit on debt and non-debt creating capital flows ?

It will be scholastically significant and occupationally expedient exploration to find credible and reasonable responses to the above inquiries. The relevance of the answer lays in providing the structural reforms with both growth foundations and justifications. The basic stimulus of this paper is to arrive at these policy inferences.

Review of Literature

This study focuses on oodles of theoretical and empirical studies relating to the nexus between fiscal deficit, current account deficit, and its effect on capital flows into the economy. Many scholars gave attention to twin deficits using various econometric techniques since 1970s. This study reviews major scholarly work relating to twin deficits and its links with capital flows to grasp research gaps. There are some systematic ways in which the researchers can classify literature for this study. Focus on twin deficits may be on one part, the effects of twin deficits on capital flows can be on the other part, finally, the dynamics of all variables can be reviewed simultaneously. This study did not limit to focus its literature only on one part of the above due to the relevancy of all aspects of exploratory research.

Most of the past studies have positively correlated twin deficits via inflation. However, that is not always true for all countries when the scholars tested the relevant hypotheses using various econometric techniques. Bolat et al. (2014) tested twin deficits for 27 countries in the European Union, and they found strong bidirectional causality between budget deficit and current account deficit for Belgium, Czech Republic, Denmark, Estonia, Germany, Italy, Spain, and UK. Also, they found that there was no correlation between budget deficit and current account deficit for nine countries in European Union. They are : Austria, France, Hungary, Ireland, Luxenburg, Netherland, Poland, Portugal, and Romania. Banday and Ranjan (2016) examined the link between budget deficit and current account deficit for India from 1990 - 2013. They differentiated the possible causalities in the short run

and in the long run. The study uses Wald-Granger casualty test and found that there existed bi-directional causality among the variables in the long-run ; whereas, the cointegration test results also conformed the long-run association among the variables, and vector error correction mechanism results claimed that there was no short-run relationship among the variables. The results indicated that the twin deficits hypothesis does exist in India.

Merza, Alawin, and Bashayreh (2012) investigated the twin deficit hypothesis for Kuwait for 17 years from 1993 to 2010 using the Granger causality test. They found a negative long-run relationship between current account and budget balance, which means, an increase in current account caused a decrease in the government budget surplus or an increase in the budget deficit. Finally, they concluded that the twin deficit hypothesis was not confirmed for the Kuwaiti case.

Calvo, Leiderman, and Reinhart (1996) evaluated the effect of capital inflows on the current account using standard open economy models called Irving Fisher's model. They found that a fall in interest rate will induce income and substitution effects for debtor countries, which results in a consumption boom and a widening in the current account deficit. For capital - importing countries, they found that the decline in interest rates reduced the present value of its debt and made further borrowing cheaper.

Mohanty and Mishra (2017) analyzed the reiterated effects of fiscal policy by using three alternative methods. The study found pro-cyclicality behavior of expenditure in case of India. Revenue expenditure, primary revenue expenditure, capital outlay, and total expenditure were established to be pro-cyclical at the Centre and the combined Centre - State level. Capital outlay was found to have more pro-cyclicality as related to other expenditure groups. However, State government's capital outlay did not have any cyclical relation with output.

Some of the famous scholarly works like the ones conducted by Chinn and Prasad (2003), Chinn and Ito (2007), and Gruber and Kamin (2009) found that the major factors influencing the current account balances over mid to long run were associated with a country's propensity to save in both the public and the private sector. These studies also focused on structural variables that explained saving and investment levels, but excluded near-term fluctuations in the internal capital movements and its impact on the current account balance.

Bosworth, Collins, and Reinhart (1999) investigated the relationship between capital flows and current account flows to developing countries. They also used 17 years of panel data from 1979 to 1995 for 58 developing countries to analyze the effect of capital flows on current account flows. They found that a large proportion of capital flows to the developing countries over the past two decades had been used to finance current account deficits.

Bogdan (2015) examined the macroeconomic and financial stability risks related with foreign borrowing by corporations and banks in emerging markets and its effects on debt-creating flows of Ukrainian economy by applying a multiple-regression analysis and judged the foreign debt position from the point of view of a 'safe' debt level. They found that the gross and net external debt liabilities of Ukrainian entities had exceeded the debt threshold of emerging markets. The study advocated spectrum of capital flow management to smoothen the capital flow swings and vulnerabilities.

Bluedorn, Duttagupta, Guajardo, and Topalova (2013) analyzed the behavior of capital flows across countries using a newly constructed database of gross and net capital flows since 1980 for a sample of nearly 150 countries. They found that the private capital flows are typically volatile for all countries, advanced or emerging, across all points in time.

Manda (2014) conducted an empirical approach to capital flows and current account dynamics in Zimbabwe. The major objectives of the study were to determine whether Zimbabwe's current account deficit was sustainable or not and assessed how capital flows affected current account dynamics. The study used the inter - temporal balance model and Granger causality tests to assess the sustainability of current account deficit, capital account balance, and its sub components. The study found that the current account deficits violated the inter-temporal budget constraint, implying that Zimbabwe's current account deficits were not sustainable. The Granger causality test results indicated a unidirectional causality from current account to the capital account deficit, implying the

existence of underlying challenges in the economy. The study also found that no causality was found between FDI and the current account deficit. Simultaneously, the study also found a unidirectional causality from current account deficit to capital account for both short term and long term debt, indicating that the country was financing its deficits by accumulating debt.

Jain, Vijaykumar, and Jacob (2013) investigated the impact of economic reforms on the balance of payments of India. The study traced the balance of payment position from 1951 with regard to major external sector variables like exports, imports, current account deficit, and so on. Moreover, the study attempted to investigate whether there was a correlation between major variables in the balance of payments. The study found a positive impact of economic reforms on the balance of payments and strong correlation between the sub components of balance of payments.

Oeking and Zwick (2015) examined the relationship between capital flows and current account using Granger causality test. In this context, the study focused on the dynamics of the current account and its effect on different types of capital flows (portfolio flows, direct investment, and other investment flows) for selected OECD countries. The study found that the current account deficit generally Granger caused the capital flows and its components.

Research Gap

From the collected literature survey, other scholarly work, and debates available in the digital space, this study catches significance. A lot of research work has been done on twin deficits for almost all the countries by applying various tools and techniques, and they found mixed implications. Similarly, there are abundant studies that focused on the dynamics of current account deficits and its impact on capital flows of many countries, including India. Based on the observations from the literature survey, the study found that there is no scholarly work done in the past relating to the nexus between fiscal deficit, current account deficit, and capital flows, particularly the effect of twin deficits on capital account and its sub components, namely debt creating capital flows and non-debt creating capital flows. Hence, this study occupies significance in the context of public finance and international economics.

Objectives of the Study

- To correlate trends between fiscal deficit, current account deficit, and capital flows in India from 2000 to 2017.
- To probe into the relationship between fiscal deficit and current account deficit.
- To focus upon the effects of current account deficit on capital flows into India.
- To analyze the effect of current account deficit on debt and non-debt creating capital flows into India.

Period of the Study and Sources of Data

To apply econometric techniques, the present study chose 17 years of quarterly data from 2000 to 2017 (68 data points). In the context of twin deficits, a lot of scholarly works have been done for several countries for the period from 1980 to 2000. Similarly, there are some studies which explained the dynamics of current account performances and capital flows for the same period. For these reasons, the present study chooses the period after 2000 till date. The present study uses annual secondary data for analysis for the entire study period. The major sources of data for this study were obtained from *Handbook of Statistics on Indian Economy* and Bulletin published by Reserve Bank of India. Short term data relating to the external sector were collected from the official

website of Securities and Exchange Board of India (SEBI), Department of Industrial Policy and Promotion, and the Department of Commerce, Government of India.

Research Methodology

To study the correlation between twin deficits and its impact on capital flows, this study first uses a descriptive statistical method using trend line analysis. In order to verify the linkages between fiscal deficit, current account deficit, capital flows and its sub components like debt creating capital flows and non-debt creating capital flows, the study also uses empirical analysis by employing Augmented Dickey Fuller (ADF) test and Granger causality test. To ensure the consistency of data, the study first uses ADF test by using a template to check stationary conditions. After that, the Granger causality test will be employed to study the two - way relationship between fiscal deficit and current account deficit, current account deficit and capital flows, current account deficit and debt-creating capital flows, and current account deficit and non-debt creating capital flows.

↳ **Causality Test Between Fiscal Deficit, Current Account, and Capital Flows :** To test for causality between fiscal deficit, current account deficit, capital flows, debt creating capital flows, and non - debt creating capital flows, the following model developed by Engel and Granger, (1987) will be used. The models are :

(i) Fiscal Deficit (FD) and Current Account Deficit (CAD)

$$FD_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i} FD_{t-i} + \sum_{i=1}^{n} \beta_{2i} CAD_{t-i} + u_{1t}$$
$$CAD_t = \beta_3 + \sum_{i=1}^{n} \beta_{4i} CAD_{t-i} + \sum_{i=1}^{n} \beta_{5i} FD_{t-i} + u_{2t} \quad (1)$$

(ii) Current Account Deficit (CAD) and Capital Flows (CF)

$$CAD_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i} CAD_{t-i} + \sum_{i=1}^{n} \beta_{2i} CF_{t-i} + u_{1t}$$
$$CF_t = \beta_3 + \sum_{i=1}^{n} \beta_{4i} CF_{t-i} + \sum_{i=1}^{n} \beta_{5i} CAD_{t-i} + u_{2t} \quad (2)$$

(iii) Current Account Deficit (CAD) and Non - Debt Creating Capital Flows (NDCCF)

$$CAD_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i} CAD_{t-i} + \sum_{i=1}^{n} \beta_{2i} NDCCF_{t-i} + u_{1t}$$
$$NDCCF_t = \beta_3 + \sum_{i=1}^{n} \beta_{4i} NDCCF_{t-i} + \sum_{i=1}^{n} \beta_{5i} CAD_{t-i} + u_{2t} \quad (3)$$

(iv) Current Account Deficit (CAD) and Debt Creating Capital Flows (DCCF)

$$CAD_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i} CAD_{t-i} + \sum_{i=1}^{n} \beta_{2i} DCCF_{t-i} + u_{1t}$$
$$DCCF_t = \beta_3 + \sum_{i=1}^{n} \beta_{4i} DCCF_{t-i} + \sum_{i=1}^{n} \beta_{5i} CAD_{t-i} + u_{2t} \quad (4)$$

In the above equations, FD is fiscal deficit, CAD is current account deficit, CF is capital flows, DCCF is debt creating capital flows, NDCCF is non - debt creating capital flows, β, and *u* are coefficients and error terms, respectively.

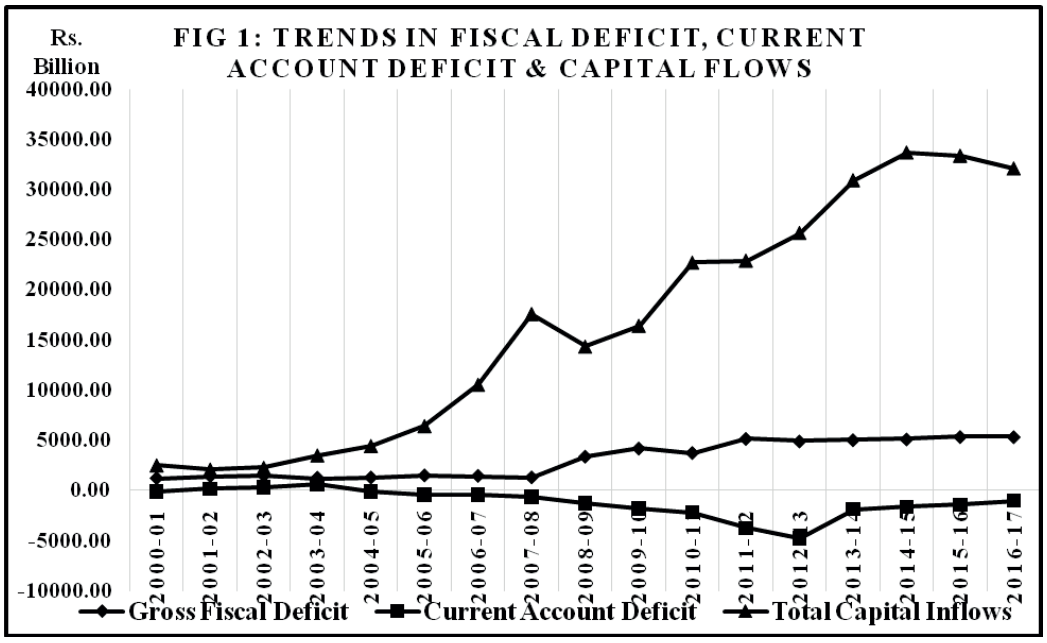
In the Granger causality test, the directional relationships between two variables are very sensitive which can be used efficiently by using the optimal number of lags in the model. It can be inferred from the computed statistical values, based on the given equations, if the beta coefficients become zero or less than the conventional

value of 0.05 and the computed *F* - statistics is low for the first hypothesis in the equation (1), it indicates that the lagged fiscal deficit does not possess in the regression (accepting the null hypothesis). This means fiscal deficit does not Granger cause current account deficit, similarly for other beta coefficients in the first hypothesis of the rest of the equations. When we move to the second hypothesis which states that the current account deficit does not Granger cause fiscal deficit, if the computed *F* - statistic is low or *p* - value is less than the conventional value, we can reject the hypothesis and can infer that current account deficit does cause fiscal deficit. Similar results can be derived for other beta coefficients in the second hypothesis of rest of the equations.

An Analysis on the Nexus Between Fiscal Deficit, Current Account Deficit, and Capital Flows into India

To trace out the effect of fiscal deficit on balance of payments variables of India in the 21st century, the present study has employed two methods for analysis. The first method is a qualitative method in which the study uses year-on-year trend line analysis to evaluate the nexus between the selected variables. The second method is a quantitative approach in which the study uses 68 data points (quarterly data for statistical reliability) and applied Augmented Dickey-Fuller test and Granger causality test to find the causal relations between the same variables. In order to explore precise inferences, applications of both of these methods are inevitable.

(1) Descriptive Analysis of the Inter - Linkages Between Fiscal Deficit, Current Account Deficit, and Capital Flows : After the advent of major economic reforms in India in 1991, there has been a huge change in the trends of macroeconomic variables like fiscal deficit, current account deficit, and capital flows. Since then, the government has introduced various reforms intermittently in the domestic economy as well as in the external sector. Apart from these, there are several other conditionalities imposed by IMF, IBRD, and other international institutions that integrate the Indian economy with the rest of the world since the 1990s. Due to which, the impact of domestic economic policies on major macroeconomic variables brings attention to the context of economic stability and external sector sustainability.



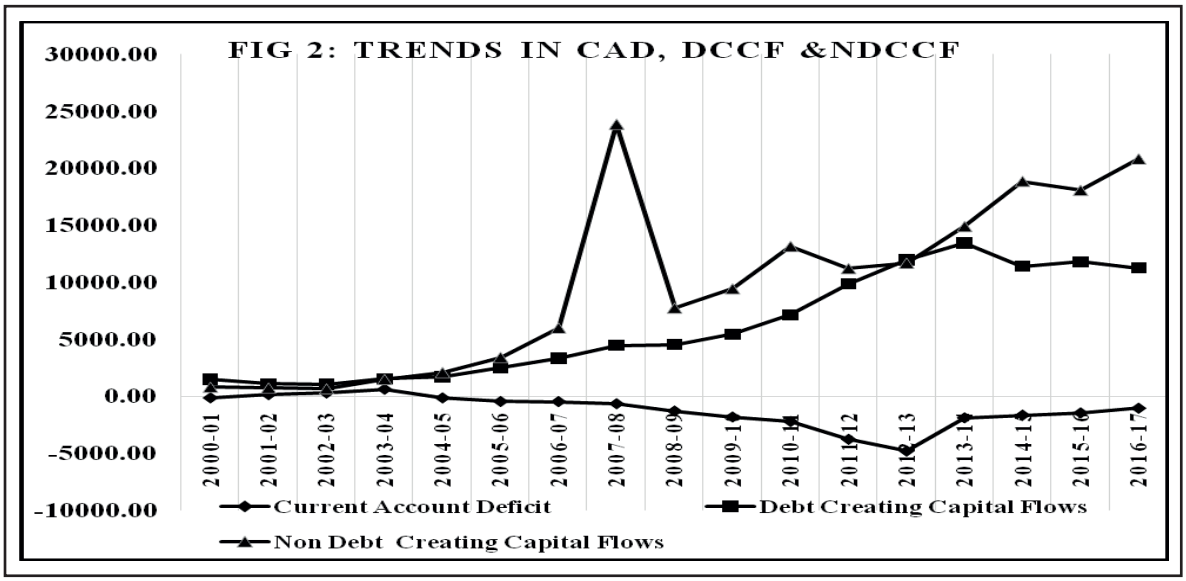
It can be observed clearly from Figure 1 that the fiscal deficit and current account deficit are almost parallel from 2000-01 to 2007-08. From 2007-08 to 2012-13, we can observe an inverse relationship between fiscal deficit and current account deficit. During the same period, a continuous rise in fiscal deficit and current account deficit was a cause of the sub-prime crisis and Eurozone crisis. From 2012-13 to till date, India's current account deficit improved faster, but the fiscal deficits almost constant averaged above 3% of GDP. Hence, it can be inferred that there is a positive relationship between fiscal deficit and current account deficit for some period from 2012-13 to 2016-17. So, the study discovers mixed implications in the context of twin deficits for India.

For the trends in capital flows and its correlation with current account and fiscal deficit, it would be interesting to classify the entire study period into three sub periods, namely; period one from 2000 - 01 to 2007- 08 ; period two from 2007- 08 to 2008 - 09 ; and period three from 2009 - 10 to 2016 -17, respectively. In the first period, the capital flows increased considerably from ₹ 2475 billion to ₹ 17,579 billion. During the same period, the trends in current account deficit and fiscal deficit were almost parallel and averaged low rate of ₹ 80 billion (0.1% of GDP) and ₹1300 billion (3.3% of GDP). In period one, current account turned to be surplus for 3 consecutive years from 2001- 04, the average growth rate of GDP was at 7.1%, and high level of forex reserves together increased the inflow of capital into India.

During period two, there was a huge downturn in the current account as well as the capital account which also induced fiscal deficit to a larger extent of above 5% of GDP. All the above issues are the causes of global financial crises. Period three appears to be interesting as far as the trend lines are concerned. This is the period where capital flows increased tremendously in the initial retro from ₹ 14,324 billion in 2008 - 09 to ₹ 33,679 billion in 2014-15, and later it started declining. At the same time, the rate of fiscal deficit was also high and the current account deficit started improving nearer to surplus in 2017. It implies that the fiscal deficit is not directly related to capital flows, but the current account flows have some positive correlation to attract capital flows into the economy.

Based on the above observation with facts and literature, I observe that there is a direct correlation between current account deficit and capital inflows into the economy. Also, there is a perception that the current account deficit will always put a burden on the nation by influencing high level of debt - creating capital flows than non-debt creating capital flows. In order to test the perception or the hypothetical statement, this study compares trends in current account with the trend in debt and non - debt creating capital flows.

It is observed from the Figure 2 that there are not much differences between the trends in current account deficit and capital inflows for the first 4 years from 2000 - 01 to 2003 - 04.It can be seen clearly from the Figure 2 that



there is a strong and inverse relationship between current account deficit and capital flows since 2003 - 04. It implies that the current account deficit induces the inflow of capital into the Indian economy, particularly in the form of debt-creating capital flows via the high degree of short-term debts and NRI deposits. This study observes that the inflow of non - debt creating capital flows are highly volatile than debt creating capital flows.

It is also observed that the non - debt creating capital flows are positively correlated to the growth rate of GDP and better performances of current account variables, but the debt creating capital flows have a strong inverse relation with current account, which implies the interference of the government in influencing accommodating capital flows. From 2012-13 to till date, current account deficits decreased drastically ; simultaneously, the debt creating capital flows increased and non - debt creating capital flows decreased. This implies that the better performances of current account induced non-debt creating capital flows directly and debt - creating capital flows inversely into India.

(2) Empirical Analysis on the Inter - Linkages Between Fiscal Deficit, Current Account Deficit, and Capital Flows in India : The present study uses the Augmented Dickey - Fuller method to check stationary conditions which can be seen from the Table 1. By applying the ADF test, the study can observe several findings in relation to the objectives of the study. So the ADF test was conducted for fiscal deficit, current account deficit, capital flows, and its sub components called debt creating capital flows and non - debt creating capital flows. After the ADF test, Granger causality test will be employed for the selected variables if it satisfies the necessary conditions.

ADF test results : The statistical inferences illustrated in the Table 1 show that the data sets for fiscal deficit, current account deficit, capital flows, debt creating and non-debt creating capital flows are found to be stationary at their first differences, and it can be used to employ Granger causality test for further investigations.

Table 1. Augmented Dickey Fuller Test Results for FD, CAD, CF - DCCF, and NDCCF

	AR (1) Process Specification				
Statistically Tested Variables	**RHO**	**Data Points**	**ADF Test**	***p* - value**	**Lag Order**
Fiscal Deficit	1	68	-4.247294	0.0059	2
Current Account Deficit	1	68	-3.420146	0.0271	2
Capital Flows	1	68	-4.315319	0.0065	2
Debt Creating Capital Flows	1	68	-2.619503	0.0224	2
Non-Debt creating Capital Flows	1	68	-5.634294	0.0006	2

Note: The lag length of the ADF regression is based on the Schwarz Information Criterion for appropriate lag length.

Granger Causality Test

The present study has employed the Granger causality test using optimal lag in order to observe the relationship between fiscal deficit, current account deficit, capital inflows, and sub components of capital inflows. Usually, two types of hypotheses are used in the Granger causality test. One is the null hypothesis, which states that the variable A does not Granger cause variable B. Similarly, the reverse way of testing the same variable, like variable B does not Granger cause variable A. In this way, the selected variables are tested and the results are given in the Table 2.

(i) Fiscal Deficit and Current Account Deficit : The Granger causality test results from Table 2 give the probability value of 0.10, implying that the fiscal deficit of India does Granger cause current account deficit. This means that the fiscal deficit of India affects the current account deficit at the 10% level of significance. When we move to the second hypothesis, the study observes a probability value of 0.68, implying that we cannot reject the

Table 2. Granger Causality Test for FD, CAD, CF - DCCF, and NDCCF

Hypotheses	*F* - Statistics	Probability	Results
Fiscal deficit does not Granger cause current account deficit.	2.701	0.102	Unidirectional Causality Found
Current account deficit does not Granger cause fiscal deficit.	2.310	0.681	
Current account deficit does not Granger cause capital flows.	3.801	0.041	Unidirectional Causality Found
Capital flows do not Granger cause current account deficit.	1.241	0.382	
Current account deficit does not Granger cause non-debt creating capital flows.	1.112	0.351	No Causality Found
Non-debt creating capital flows do not Granger cause current account deficit.	0.593	0.710	
Current account deficit does not Granger cause debt creating capital flows.	10.461	0.004	Bidirectional Causality Found
Debt creating capital flows do not Granger cause current account deficit.	5.020	0.021	

hypothesis that the current account deficit does not Granger cause fiscal deficit. So, the study finds only unidirectional causality between fiscal deficit and current account deficit and there is no causality between current account deficit and fiscal deficit. It can be observed that the fiscal deficit of India creates the current account deficit via excess demand and inflation. Similarly, it can be observed that the current account deficit does not directly influence fiscal deficit, and it may be determined by the policy variable. As per the descriptive analysis, this study observes mixed implications for fiscal deficit and current account deficit, and the descriptive analysis does not differentiate the two - way relationship. Hence, the empirical results occupy significance.

(ii) Current Account Deficit and Capital Inflows : According to the Granger causality test results from Table 2, the study observes unidirectional causality between current account deficit and capital flows. The probability value of 0.041 implies that the CAD does Granger cause capital inflows into India. Based on the given *p* - value and descriptive analysis, it can be observed that the CAD always induces the inflow of accommodating capital (induced capital) into India through supportive policies to attract FDI, portfolio investment, short and long-term debts, NRI deposits, and so on. When we move to the second hypothesis that the capital inflows do not Granger cause CAD, the study finds the probability value of 38%, specifying that capital inflows do not affect CAD. Theoretically, we can say that the inflow of capital may create/widen CAD via interest payments, profits, and dividends to foreigners. But the empirical findings reject such a kind of theoretical perceptions. However, the results are not sufficient to determine whether the CAD induces the inflow of accommodating capital or autonomous capital and also whether the increased capital is favorable or not. Therefore, there is a need for further classification of capital inflows into debt creating capital flows and non - debt creating capital flows.

(iii) Current Account Deficit and Non - Debt Creating Capital Inflows : As far as the CAD and non - debt creating capital flows are concerned, the study does not find any causality. The study finds the probability value of 35% for the first hypothesis and 71% for the second hypothesis. So, it is observed that neither CAD affects non-debt creating capital flows nor non-debt creating capital flows affect CAD. Theoretically, we can say that the CAD might weaken the confidence of foreign investors, which may condense the inflow of non-debt creating capital flows like FDI, portfolio investment, and so on. Similarly, we can say that the inflow of non-debt creating capital flows might provide stimulus to CAD via dividends' shares and profits. However, this study invalidates such perceptions.

(iv) Current Account Deficit and Debt Creating Capital Inflows : According to the Granger causality test results from Table 2, the study finds strong bidirectional causality between CAD and debt creating capital flows. The study observes the probability value of 0.004 for the first hypothesis and 0.021 for the second hypothesis, which

means both - CAD does Granger cause debt creating capital flows and debt creating capital flows do Granger cause CAD. The trend line analysis also observes that there is a direct and strong association between CAD and debt creating capital flows. From the observed facts, the study finds a strong correlation between CAD and debt-creating capital flows via NRI deposits, external commercial borrowings, and short-term debts. Similarly, the debt-creating capital flows also affect/ widen CAD via interest payments to foreigners. Therefore, the Government of India should be so cautious in current account management in order to avoid the negative consequences on capital account as well as widening CAD further.

Conclusion

After the exploratory analysis of causal relationship between fiscal deficit, current account deficit, and capital flows using both quantitative and qualitative methods, the study finds a lot of interesting observations. As far as fiscal deficit and CAD are concerned, the descriptive method observes mixed implications. Out of 17 years, for nearly 13 years, the twin deficits concept applies to India. Only in case of 4 years the study did not find any correlation between fiscal deficit and current account deficit. Similarly, the empirical approach using Granger causality test finds only unidirectional causality between fiscal deficit and CAD at the 10% level of significance, which implies that fiscal deficit does widen CAD to some extent.

When we consider the effect of CAD on capital inflows, the descriptive approach observes that the CAD is highly associated with the performances of current account variables. In the entire study period, the trends in current account and capital account demonstrate inverse directions, indicating that the current account deficit influences the inflow of capital in India's Balance of Payments. Granger causality test also finds unidirectional causality between CAD and capital inflows, which clearly support the inferences drawn in the descriptive analysis.

Interestingly, quantitative analysis of the study does not find any causality between CAD and non - debt creating capital flows, but the trend line analysis observes mixed implications. As far as CAD and debt creating capital flows are concerned, qualitative analysis of the study finds very strong and direct correlation for almost all the years. Similarly, the Granger causality test also finds bidirectional causality between CAD and debt - creating capital flows. Evidence from the trend line analysis clearly support Granger's bidirectional causality.

Policy Implications

The important policy implications from the findings are that the increase in fiscal deficit widens CAD directly, which in turn has an influence on capital inflows. Simultaneously, there is no impact of CAD on non-debt creating capital flows like foreign direct investment and portfolio investment, but it has a direct and concrete relationship in influencing debt-creating capital inflows into India. Therefore, it may create direct as well as an indirect burden to the nation via interest payments, exchange rate fluctuations, and external sector vulnerabilities. So, the study suggests that the policy makers should be cautious and careful while framing fiscal policy for attaining economic stability and external sector sustainability.

Limitations of the Study and Scope for Future Research

The present study is restricted to correlating the major macroeconomic variables called fiscal deficit, current account deficit, and capital flows in the Indian context and not on multi country perspectives. In order to trace out the associations between the selected variables in the present context, the period of the study is limited to 17 years from 2000 to 2017. The study has applied only the Augmented Dickey Fuller Test, Granger causality test,

correlation test, and time series trend lines for analysis. This study is restricted to find causality between the selected macroeconomic variables, not on the policies of the government that creates an impact on fiscal deficit, current account deficit, and capital flows.

It would be very interesting to conduct similar studies for other countries by adding more variables from the balance of payments account. Using the same methodology and conducting a comparative study on twin deficit between low and high income countries will be thought-provoking. The impact of fiscal policy on exchange rate can be assessed by extending this work.

References

Banday, U., & Ranjan, A. (2016). The link between budget deficit and current account deficit in Indian economy. *Jindal Journal of Business Research, 4* (2), 1-10.

Barro, R. J. (1974). Are government bonds net wealth? *Journal of Political Economy, 82* (6), 1095 - 1117.

Bluedorn, J., Duttagupta, R., Guajardo, J., & Topalova, P. (2013). *Capital flows are fickle : Anytime, anywhere* (IMF Working Paper WP/13/183). Retrieved from https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Capital-Flows-are-Fickle-Anytime-Anywhere-40885

Bogdan, T. (2015). Debt - creating capital flows and their macroeconomic implications in Ukraine. *Athens Journal of Business and Economics, 1* (2), 135-151.

Bolat, F., Emirmahmutoglu, F., & Belke, M. (2014). The dynamic linkages of budget deficits and current account deficits nexus in EU countries: Bootstrap panel Granger causality test. *International Journal of Economic Perspectives, 8* (2), 16 - 26.

Bosworth, B., Collins, S. M., & Reinhart, C. M. (1999). Capital flows to developing economies: Implications for saving and investment. *Brookings Papers on Economic Activity, 1999*(1), 143 - 180.

Buchanan, J. (1976). Barro on the Ricardian equivalence theorem. *Journal of Political Economy, 84* (2), 337 - 342.

Calvo, G., Leiderman, L., & Reinhart, C. (1996). Inflows of capital to developing countries in the 1990s. *The Journal of Economic Perspectives, 10* (2), 123-139.

Chinn, M. D., & Ito, H. (2007). Current account balances, financial development and institutions: Assaying the world "saving glut". *Journal of International Money and Finance, 26* (4), 546 - 569.

Chinn, M. D., & Prasad, E. S. (2003). Medium-term determinants of current accounts in industrial and developing countries : An empirical exploration. *Journal of International Economics, 59* (1), 47-76.

Engle, R., & Granger, C. W. J. (1987). Co-integration and error correction: Representation, estimation, and testing. *Econometrica, 55* (2), 251-276.

Gruber, J., & Kamin, S. (2007). Explaining the global pattern of current account imbalances. *Journal of International Money and Finance, 26* (4), 500 - 522.

Jain, M., Vijaykumar, N.V., & Jacob, E. (2013). Balance of payments crisis in India: What the figures say. *Arthshastra Indian Journal of Economics & Research, 2* (5), 14 - 26. doi:10.17010/aijer/2013/v2i5/54526

Khalid, A., & Guan, T. W. (1999). Causality tests of budget and current account deficits : Cross-country comparisons. *Empirical Economics, 24* (3), 389- 402.

Malindretos, J., & Arize, A. C. (2008). Dynamic linkages and Granger causality between trade and budget deficits: Evidence from Africa. *African Journal of Accounting, Economics, Finance and Banking Research, 2* (2), 1-19.

Manda, S. (2014). Capital flows and current account dynamics in Zimbabwe. *Journal of Economics and International Business Management, 2* (4), 82 - 99.

Merza, E., Alawin, M., & Bashayreh, A. (2012). The relationship between current account and government budget balance: The case of Kuwait. *International Journal of Humanities and Social Science, 2* (7), 168 - 177.

Mohanty, A. R., & Mishra, B. R. (2017). Is fiscal policy pro-cyclical or counter-cyclical? Evidence from India. *Arthshastra Indian Journal of Economics & Research, 6*(2), 7 - 19. doi:10.17010/aijer/2017/v6i2/114124

Oeking, A., & Zwick, L. (2015). *On the relation between capital flows and the current account* (Ruhr Economic Papers # 565). Retrieved from http://www.rwi-essen.de/media/content/pages/publikationen/ruhr-economic-papers/rep_15_565.pdf

Rosenzweig, J.A., & Tallman, E. (1993). Fiscal policy and trade adjustment : Are the deficits really twins? *Economic Inquiry, 31* (4), 580 - 594.

About the Author

N. Kubendran did his M.A, M.Phil, Ph.D in Economics and is currently working as an Associate Professor of Economics at the Centre for Management Studies of Presidency College belonging to Presidency Group of Institutions and Presidency University. He has worked with reputed institutes in India like BITS - PILANI, Xavier Institute of Management and Entrepreneurship (XIME), Alliance University, etc. He has published two books and more than 20 articles in recognized journals.