

Is the Twin Deficits Hypothesis a Myth In India? Evidence from an Updated Study: 1980-2012

Keshmeer Makun

*School of International Trade, Dongbei University of Finance & Economics, Liaoning, China and Lecturer, Fiji National University.
mkashmir.15@gmail.com and keshmeer.makun@fnu.ac.fj*

Abstract

Background: The recent global financial crisis has led to greater imbalance in both the external and the internal account deficits of several countries including India. In this paper, the relationship between India's government budget deficit and current account deficit during the period 1980-2012 is examined.

Method: In order to examine the relationship between budget deficit and current account deficit this study resort to bound testing procedure and standard Granger causality test.

Results: The results show that a cointegrating relationship exists between current account and fiscal balances, exchange rate and real GDP. Existence of cointegration confirms beyond any doubt that the twin deficit hypothesis is very much relevant in the case of India.

Conclusion: Policy makers should continue to focus on fiscal consolidation measures for keeping deficits under control for achieving sustainable current account deficits.

Key Words: Twin Deficit, Government budget, Current account, financial crisis and India

JEL Classification: F32 and H6

1. Introduction

Indian economy displayed a remarkable degree of resilience in the immediate period following the American financial crisis of 2007 and the subsequent global economic downturn. Countercyclical measures by government and central bank warded off the negative impact of the world recession in the next three year period. However, both external and domestic sectors began to experience considerable stress during the following four years: 2010-13 as slow recovery in the United States and other industrialised countries together with the onset of the Euro zone debt crisis in late 2010 gave rise to another round of contraction in major economies. These two developments led to the deterioration in India's external accounts, which were reflected in the growing size of annual current account deficits.

The current account deficit, which was 1.3 percent of gross domestic product (GDP) in 2007-08, rose to reach 4.2 percent in 2011-12. In early 2013, surge in imports of gold and petroleum products, which accounted for 50 percent of total imports, led to a further rise in the current account deficit to reach US\$ 21.8 billion, a close 5 percent of GDP. Weak growth, rising global crude oil prices and sluggish financial market conditions for implementation of the government's budgeted disinvestment programme affected fiscal performance. The difference between the central budgets' actual outcomes and budgetary estimates, both as proportion of GDP, rose. Central government's fiscal deficits as percentage of GDP widened from 2.5 percent of GDP in 2007-08 to 5.7 percent in 2011-12.

Emergence of fiscal and current account deficits is in accordance with the theoretical expectations. If domestic absorption exceeds the potential output, the former spills over into the external sector, giving rise to imbalances in current account and balance of payments. The reader is referred to the following competent literature surveys, which provide summary of theoretical developments and empirical studies testing the connection between fiscal and current account balances. The theoretical aspects are dealt with by Bernheim [1], Enders and Lee [2], Kearney and Monadjemi [3] and Jha, et al. [4]. Empirical studies on industrialised countries and developing countries studies include Abell [5], Ahmed and Ansari [6], Akbostanci and Tunc [7], Bahmani-Oskooee [8], Darrat [9], Saleh, et al. [10].

Notable empirical studies on India are: Anuruo and Ramchander [11], Bose and Jha [12], Kulkarni and Erickson [13] and Ratha [14].

The conclusions reached by empirical studies are not unanimous. Two recent studies on India came to different conclusions. While Ratha [14] concluded that twin-deficits theory holds for India in the short-run, Bose and Jha [12] rejected the hypothesis and noted the existence of a stronger degree of statistical significance in favour of the causation running from external to internal deficit. A similar view was taken by Goyal [15], who argued that current account deficits are “influenced more by external ‘shock’ factors than domestic savings or investment rates” [15].

In the context of these conflicting inferences, a growing scepticism about the connection between the two deficits seems not totally unjustified. Calling it a myth, a number of economic commentators, led by Damodaran [16] have been questioning whether there is any case for the Indian economists to entertain “a strange fascination for dyads”. This research note seeks to examine whether the “belief about the connection between the deficits is backed by reason” [16]. Aside from utilising an updated data series, we focus on external factors, which always end up with “changes in exchange rate of the country” [15]. Specifically, we employ data over a 32- year period (1980-81 to 2011-12), which cover exchange rate variations taking into account the shift effects of policy changes on current account deficits for each year.

The paper is organised on the following lines: the next section reviews trends in fiscal and current account balances over the three decades; the second section provides a theoretical basis and outlines the methodology adopted in the study; the third section reports empirical results and the final section is a summary listing conclusions with policy implications.

1.1. Trends in Fiscal and Current Account Balances

India is not a stranger to fiscal and current account imbalances ever since its independence in 1947. In the light of the economic philosophies which guided India’s growth and development, one would broadly divide the past 65 years at least into two distinct periods: pre-reform and post reform periods: 1947-90; and 1991-and later. During the pre-reform period, Indian economic growth was guided by policies based on strategies which aimed at import-substitution and conservation of scarce foreign exchange resources. Inward looking growth strategy with high tariffs and import substitution through provision of subsidies actually hurt potential exports themselves. Trade deficits were the consequence. Since restrictions on capital movements in the current account were equally strict, inward flows, private transfers and other non-factor transaction were less than what would have been otherwise. The net result was consistent trade and current account deficits.

The pre-reform period also marked a larger role for public sector, under the assumption that private sector would not be in a position to promote development until public goods were in abundant supply and that only the state could provide them. Added to this approach, political dogmas influenced economic policies, based on control of commanding heights of the economy, by focussing on capital intensive industries, steel and fertilizers and power generation and distribution, all kept within the purview of state control. In addition, in the absence of a robust private sector, public sector took upon itself the responsibility of being a major provider of jobs, by enlarging the civil service and state owned enterprises [17].

1.2. Liberalisation of the economy

Severe balance of payment crises of the late 1980s were held responsible for a sea-change in the economic philosophies of the ruling party since 1947. Reforms were introduced in 1990 for liberalizing the economy with a greater role for private sector [18]. However, the economy was afflicted with another balance of payment crisis in 199-92, which was attributed to fiscal profligacy. Although curbs on spending brought down the fiscal deficit, the medium term fiscal objective of improving public savings for essential public investment was never implemented at any time [18]. The reasons were apparent: governments at the centre happened to be coalition governments on the basis of minimum agenda, with an eye on next elections. The reasons for current fiscal deficits continued to be the same. Most of the public sector expenditures have continued to be influenced by populist measures of subsidized welfare measures supposedly aimed at improving the standards of living of disadvantaged sections, which formed a large part of the electorate.

1.3. Post Liberalisation

A former governor of Reserve Bank of India attributes India's growth acceleration in the 2000s to: (i) impact of economic reforms of the 1990s; (ii) rapid integration of the economy with the global economy; (iii) rise of entrepreneurship; and (iv) rise in productivity. The underlying factors are increase in investment (from 26.9 per cent of GDP in 2003/04 to 38.1 per cent in 2007/08), which was supported by rise in domestic saving and in productivity, driven by improvements in technology, organization, financial intermediation and external and domestic competitiveness [19]. The annual current account deficits during this period averaged just 0.3 per cent of GDP since favourable export performance was the major reason. Liberalised foreign direct investment which increased during this period raised overall productivity, also contributed to a better export performance.

Although conscious efforts towards fiscal consolidation were made during 2001-08, fiscal stimulus to meet the adverse impact of global crisis eroded the gains in terms of rise in public savings [20]. Fiscal deficits during this period rose from 2.5 percent of GDP in 2007-08 to 5.7 percent during 2011-12.

1.4. Recent trends

One of major factors contributing to fiscal deficits as well as current account deficits in late 2012 and in 2013 was rise in global commodity prices, especially the price of crude oil. India imports about 80 per cent of its oil demand. The global price of oil is therefore an important variable in determining the inflation outlook as well as the policy measures to reduce the impact on a wide spectrum of consumers. However, the central government was more worried with public reaction as winning the election was the prime concern. The convenient way open to them was subsidization. Subbarao [19], a former governor of Reserve Bank of India observed: "if the domestic petroleum sector was a free market and if global prices passed through to domestic prices, demand would arguably have declined in response to rising prices. But such a demand adjustment was blocked by the administered (subsidized) pricing regime of petroleum products". He argued that to the extent lower subsidies result in a lower fiscal deficit, there would have been some disinflationary impact even in the short-term; and reduction in subsidies would have removed price distortions, improved efficiency and provided a much better investment environment. Continuation of policies of subsidies, however, contributed to enlargement of fiscal deficits. The combined fiscal deficit of the centre and state governments in 2011-12 was 8.1 percent of GDP. This was quite close to the figure of 9.1 per cent in the balance of payment crisis of 1990-91. Just as the fiscal indiscipline of the 1980s that fuelled the balance of payments crisis of 1991, the fiscal excesses of 2011-12 were responsible for another episode of the balance of payments crisis. It was apparent that the twin deficits were a result of macroeconomic consequences.

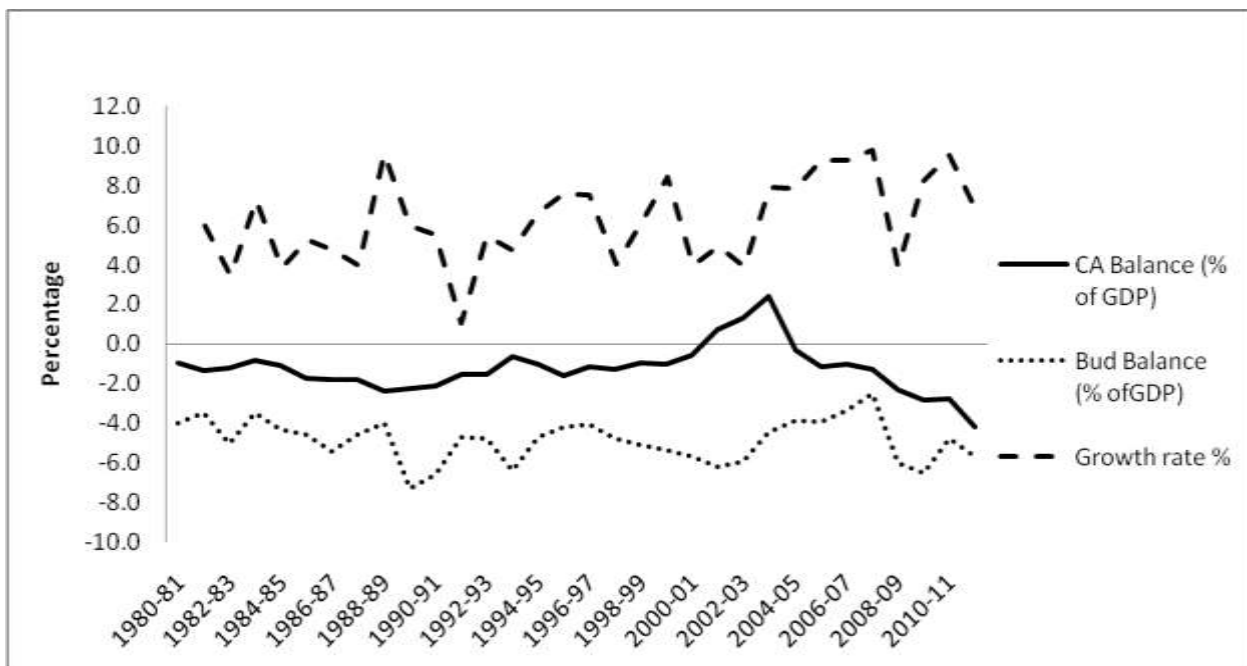
Table 1 presents budget and current account balances and other key variables for the period: 1980-2012.

Table 1. CA, Budget Balances and other Key Variables

Year	Current Account Balance (% of GDP)	Budget Balance (% of GDP)	RGDP Index (1980-81=100)	ER index (1980-81=100)
1981-82 to 1990-91 (ave)	-1.7	-4.9	134.7	159.2
1991-92 to 2000-01 (ave)	-1.1	-5.0	229.5	437.4
2001-02 to 2005-06 (ave)	0.6	-4.9	352.2	589.6
2006-07	-1.0	-3.3	446.9	576.2
2007-08	-1.3	-2.5	490.7	525.9
2008-09	-2.3	-6.0	509.8	553.3
2009-10	-2.8	-6.5	551.8	615.6
2010-11	-2.8	-4.8	604.5	581.5
2011-12	-4.2	-5.7	645.9	593.5
Mean	-1.3	-4.9	273.5	389.4
Standard Deviation	1.2	1.1	156.4	191.6

Source: Asian Development Bank (2013) and authors' calculations

Figure 1. India's CA balance, Budget balance and Growth rate, 1980-81-2011-12



Source: Asian Development Bank (2013) and authors' calculations

2. Methods

A survey of studies on the linkages between current account deficits in the balance of payments and budget deficits begins with the standard treatment of external current account deficits, which is based on the national accounting identity [21].

The external current account balance is derived as follows:

$$CAB = (S_{priv} - I_{priv}) + (S_{pub} - I_{pub})$$

where CAB = external current account balance;

- S_{priv} = private sector savings
- I_{priv} = private sector investment
- S_{pub} = public sector saving
- I_{pub} = public sector investment

While $(S_{pub} - I_{pub})$ represents the overall fiscal balance, $(S_{priv} - I_{priv})$ is the private savings and investment balance.

Assuming investment/savings gap remains stable overtime, external current account deficit would be equal to budget deficit. This identity provides a basis for modeling the hypothesized long run relationship between current account trade deficits and budget deficits. However, we do not have any indication of the direction of linkages, both behavioral and temporal.

2.1. Modelling

We hypothesise that current account balance (CAB) is directly associated with budget balance (BB). Negative budget balances or deficits lead to increases in aggregate demand, which spill over into external sector as demand for imports. Thus, budget deficits and surpluses give rise to current account deficits and surpluses respectively. On the other hand, influence of rise in RGDP on CAB is uncertain and hence the direction of influence remains to be empirically tested. If expansion of the economy is well diversified and results in expansion of export sector, exports may rise relative to imports and CAB may improve. On the other hand, if economic expansion results in rise in demand for

growth oriented imports in terms of intermediate and capital goods, relative to rise in exports, the result would be in the other direction. The CAB would then be negative.

We also include a variable representing influence of external factors. The variable is exchange rate (ER) which is defined as units of rupees per one US dollar, which is expected to exercise a positive influence on CAB. A rise in ER signifying depreciation of the domestic currency would make exports cheaper to foreigners and imports more expensive to domestic consumers. Thus, ER and CAB are hypothesised to be directly related. Besides these variables, we have included a dummy variable for reforms towards liberalising the economy. The dummy variable takes the value of unity for the year (1991) when reforms were introduced and for subsequent years; and zero for years prior to 1991. A time trend is also introduced to capture the influence of any left out variables on the dependent variable.

The simple model is written as:

$$CAB = f(RGDP, BB, ER, t, DUM) \tag{1}$$

Where:

- CAB = Current account balance (percent of GDP);
- RGDP = real GDP (index number); and
- BB = budget balance (percent of GDP);
- ER= nominal exchange rate (Units of rupees per unit of US dollar) in index;
- TREND = time trend; and
- DUM= dummy variable (one for 1991 and subsequent years; zero for 1990 and years before)

The data series are drawn from one single source, namely Asian Development Bank (2012). All variables are duly transformed into logarithmic form prior to estimation.

3. Results and Discussion

Before undertaking the investigation, we test the stationary properties of the variables in their logs. Table 2 reports the results from the two unit root tests. At the 5% significance level, irrespective of whether there is a time trend or not, the ADF and Ng-Perron statistics show strong evidence that the four series – CAB, BB, ER and RGDP in their logs at levels – have unit roots. At the first difference, the series are of I (1) process. After examining the order of integration for these series, we proceed to examine if there is a long-run relationship between CAB, BB, ER and RGDP by using bounds testing approach proposed by Pesaran et al. [22].

Table 2. Results of Unit Root Tests

Variable	ADF		Ng and Perron	
	Level	First Difference	Level	First Difference
ln CAB	0.379	-3.658**	-2.187	-13.788**
ln BB	-3.542	-6.990**	-13.925	-47.947**
ln ER	-0.019	-3.721**	-9.187	-13.060**
lnRGDP	-0.484	-4.578**	-1.301	-14.693**

Notes: The ADF critical values are based on McKinnon. The asterisk ** denotes the rejection of the null hypothesis at the 5% level of significance. The optimal lag is chosen on the basis of Akaike Information Criterion (AIC). The null hypothesis for both ADF and Ng-Perron tests is a series has a unit root (non-stationary) while the null hypothesis of the KPSS test does not contain unit root (stationary).

Table 3 presents results of bound tests, exhibiting the F-statistics associated with the null hypothesis of no cointegration, along with the asymptotic critical values of the bounds testing procedure. It is concluded that only in regard to the equation with CAB as the dependent variable do we find the calculated F-statistic exceeds the upper critical value at the 1 per cent significance level. Hence, the study identifies the long-run relationship among CAB, BB, ER and RGDP.

Equation (2) shows the long-run coefficients of explanatory variables on current account deficit (CAB) with dummy and trend variable:

$$\ln CAB = 32.545 + 1.841 \ln BB^{***} + 9.864 \ln RGDP^{***} + 4.447 \ln ER^{***} + 1.963 DUM^{***} + 0.288 TREND^{**}$$

$$t = (5.925) \quad (11.009) \quad (8.511) \quad (15.021) \quad (12.182) \quad (3.679)$$

(2)

** And *** Significant at the 5 and 1 percent levels, respectively. Numbers in parentheses below regression coefficients are t-values.

It is found that coefficients of BB, RGDP and ER have positive signs and are significant at 1 percent level suggesting budget surplus, depreciation of domestic currency and increase in the economic growth rate are positively associated with CAB. Further, both RGDP and ER seem to have had a greater effect on CAB than BB. This phenomenon underscores the potential benefits of greater integration with global economy.

Looking at the dummy variable, which measures the effectiveness of economic reforms towards liberalising the economy, it is clear liberalisation measures since the early 1990s have positively and significantly contributed to the improvement of CAB. The improvement has been effected through two channels: one where it directly stimulates current account surplus and indirectly where it stimulates economic growth / exchange rate which then spurs current account surplus. The coefficient of time trend is positive and significant.

Table 3. Results of Bound Tests

Dependent Variable		Computed F-statistic			
InCAB		14.553***			
InBB		2.421			
InER		0.223			
InRGDP		1.792			
		Pesaran et al. (2001) ^a		Narayan (2005) ^b	
Critical Value		Lower bound value	Upper bound value	Lower bound value	Upper bound value
1 per cent		3.74	5.06	4.768	6.670
5 per cent		2.86	4.01	3.354	4.774
10 per cent		2.45	3.52	2.752	3.994

^a Critical values are obtained from Pesaran et al. [22], Table CI(iii) Case III: Unrestricted intercept and no trend, p. 300.

^b Critical values are obtained from Narayan [23], Table case III: unrestricted intercept and no trend, p. 1988. *, ** and *** indicate significance at 10%, 5% and 1% levels, respectively.

3.1. Granger causality test

Since the variables are of I (1) and are also found cointegrated, we proceed to undertake error correction, modelling the variables in their first differences with a view to examining the directions of causation between CAB, BB, ER and RGDP in the short-run. Table 4 shows the results of Granger causality test.

Among the five equations, the error correction term (ECT) is statistically significant with the negative sign only in the equation with CAB as dependent variable. This finding is consistent with the results of bound test we obtained. It thus confirms that there is only one cointegrating equation, namely the one with CAB as dependent variable. Further, the ECT is not significant in equation with BB as dependent variable; it is clear that the linkage runs only from BB, ER and RGDP to CAB.

Turning to the short-run causality, it is found that there is bi-directional causality between CAB and BB, BB and ER, ER and RGDP, and CAB and RGDP. The uni-directional causality only runs from RGDP to BB in the short run,

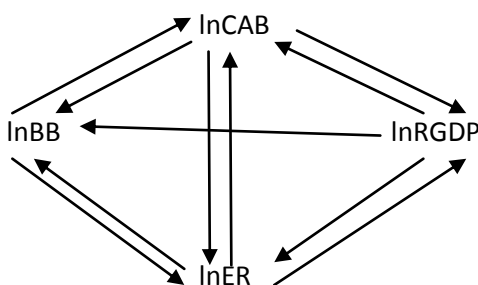
but the reverse causality does not hold true. The summary of the short-run causality is depicted in Figure 2. In sum, the findings suggest that RGDP can be viewed as a catalyst in monitoring current account balance either directly or indirectly via both budget balance and exchange rate channels.

Table 4. Results of Granger causality test

Dependent Variable	Source of causation (independent variable)				ECT
	Short run causality (F-statistics)				
	$\Delta \ln \text{CAB}$	$\Delta \ln \text{BB}$	$\Delta \ln \text{ER}$	$\Delta \ln \text{RGDP}$	
$\Delta \ln \text{CAB}$	-	4.545**	3.489*	2.910*	-0.068***
$\Delta \ln \text{BB}$	2.963*	-	3.015*	2.506*	-0.031
$\Delta \ln \text{ER}$	3.052*	2.703*	-	2.357*	-0.003
$\Delta \ln \text{RGDP}$	3.358*	1.597	6.568***	-	-0.007

Notes: * Significance at the 10% level, ** Significance at the 5% level, *** Significance at the 1% level.

Figure 2. Short-run lead-lag linkages summarised from Granger causality test



4. Conclusion

A cointegrating relationship exists between current account and fiscal balances, exchange rate and real GDP. Existence of cointegration confirms beyond any doubt that the twin deficit hypothesis is very much relevant in the case of India and that it is not a myth. There is a uni-directional linkage, which runs only from budget balance to current account balance. The study results also indicate exchange rate has an influence on current account balance. Excess domestic absorption leads to depreciation of the Indian rupee, which in turn improves current account balance through having a positive effect on exports. The policy implication is clear. Policy makers should continue to focus on fiscal consolidation measures for keeping deficits under control for achieving sustainable current account deficits.

5. References

1. D.B. Bernheim [1988] Budget Deficits and the Balance of Trade. *Tax Policy and the Economy*, Cambridge: MIT Press, pp. 1-31.
2. W. Enders and B.S. Lee [1990] Current Account and Budget Deficits: Twins or Distant Cousins? *The Review of Economics and Statistics*, Vol.72, pp. 373-381.
3. C. Kearney and M. Monadjemi [1990] Fiscal and Current Account Performance: International Evidence on Twin Deficits, *Journal of Macroeconomics*, Vol. 12, pp. 197-220.
4. S. Jha, P. Quising and S. Camingue [2009] Macroeconomic Uncertainties, Oil Subsidies, and Fiscal Sustainability in Asia, *ADB Economics Working Paper Series*, No.150.
5. J.D. Abell [1990] Twin Deficit during 1980s: An Empirical Investigation, *Journal of Macroeconomics*, winter 1990, Vol.12 (1).
6. S.M. Ahmed and M.I. Ansari [1994] A Tale of Two Deficits: An Empirical Investigation for Canada. *The International Trade Journal*, Vol. 3 (4), winter, pp. 483-503.
7. E. Akbostanci and G.I. Tunc [2002] Turkish Twin Deficits: An Error Correction Model of Trade Balance, *ERC Working Papers in Economics*, Vol. 1(6).

8. M. Bahmani-Oskooee [2007] Do budget deficits contribute to trade deficits in Spain? *Information Commercial Espanola. Revista de Economia*, 835, March-April, pp. 7-23.
9. C. Darrat [1988] Have Large Budget Deficits Caused Rising Trade Deficits? *Southern Economic Journal*, Vol. 54(4), pp. 879-887.
10. A.S. Saleh, M. Nair and T. Agalewatte [2005] The Twin Deficits Problem in Sri Lanka: An Econometric Analysis. *South Asia Economic Journal*, Vol. 2(6), pp. 221-239.
11. E. Anurao and S. Ramchander [1997] Current Account and Fiscal Deficits: Evidence from India. *Indian Economic Journal*, Vol. 45(3), pp. 66-80.
12. S. Bose and S. Jha [2011] India's Twin Deficits: Some Fresh Empirical Evidence. *ICRA Bulletin: Money and Finance*, December 2011.
13. K.G. Kulkarni and E.L. Erickson [2001] Twin Deficit Revisited: Evidence from India, Pakistan, and Mexico. *The Journal of Applied Business Research*, Vol. 17(2), pp. 97-103.
14. A. Ratha [2011] Twin Deficits or Distant Cousins? Evidence from India. *Economics Faculty Working Papers 1/1/2011: St. Cloud State University*.
15. A. Goyal [2012] Causes and cures for India's current account deficit. *The Hindu, Business line*, August 8, 2012.
16. H. Damodaran [2012] The 'twin deficits' myth. *The Hindu, Business line*, October 3.
17. B.R. Shenoy [1963] *Indian Planning and Economic Development*, Bombay. Asia Publishing House.
18. M.S. Ahluwalia [2002] Economic Reforms in India since 1991: Has Gradualism Worked? *Journal of Economic Perspectives*, Vol.16 (3), pp. 67-68.
19. D. Subbarao [2013] India's Macroeconomic Challenges Some Reserve Bank Perspectives. *Fifth I.G. Patel Memorial Lecture, London School of Economics*, March 13, 2013.
20. R. Jha and R. Gaiha [2013] Budget 2013: Macroeconomic challenges ahead of budget. *Economic Times*, Feb 20, 2013.
21. J. Daniel, J. Davis, M. Fouhad and C. Van Rijckeghem [2006] *Fiscal Adjustment for Stability and Growth*, Pamphlet Series: No.35, Washington, D.C.: IMF
22. M.H. Pesaran, Y. Shin, and R.J. Smith [2001] Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics*, Vol.16, pp. 289-326.
23. P.K. Narayan [2005] The Saving and Investment Nexus for China: Evidence from Cointegration Tests. *Applied Economics*, Vol. 37, pp. 1979-1990.

The Publication fee is defrayed by Indian Society for Education and Environment (www.iseeadyar.org)

Cite this article as:

Keshmeer Makun [2015] Is the Twin Deficits Hypothesis a Myth In India? Evidence from an Updated Study: 1980-2012. *Indian Journal of Economics and Development*. Vol. 3 (1), pp.112-119.