

Is India's Current Account Deficit Problem Truly Global?

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Abstract

This research paper examines India's current account deficit problem in the context of domestic macro imbalances and the exogenous global dynamics. At the outset, the paper reviews historically various theoretical models explaining multifarious economic determinants of current account deficits. To be more specific in the Indian context, this problem is dealt with by running simple regressions explaining the correlation and possible causality between the current account deficit on the one hand and growth rates, real effective exchange rates, exports and imports, gold imports, export and import elasticities, import intensities and net foreign assets on the other. The author believes that the volatility in the current account deficit in India is not to be viewed only in terms of country's external linkages but the domestic macro imbalances are equally responsible for India's current account deficit. To understand the macro imbalances in the domestic context domestic savings and investment data are examined in the context of the current account deficit. Also regressed is a function showing relationship between gross inflows to investment ratio and its relation with the CAD. To examine domestic financial strength, country's internal and external debts are compared and an attempt has been made to examine whether any correlation exists between debt and current account deficits. The paper is concluded on the note that a diverse correlation and causality have been observed in the case of external or exogenous variables affecting the current account deficit. The currency valuation plays an important role in stabilizing the current account deficit problem. The point has been made that the domestic macro imbalances need special attention to approach the current account deficit problem along with global determinants.

Keywords: *Current Account Deficit, Rupee Depreciation, Export/Import Elasticities and Intensities, savings, Investments.*

Introduction

This research paper is divided into three parts. The First Part (Part I) examines various explanations on the possible determinants of imbalances in the current account against the background of Asian economies including India. This is a theoretical framework of this paper. These various explanations are not conclusive in terms of selecting one and only one determinant of current account deficit problem. In the Second Part (Part II) an empirical analysis is carried out for understanding correlation and causality between India's current account deficit (CAD) problem and a host of global and domestic determinants of current account deficit. In the Third Part (Part III) conclusions are drawn on the issue of domestic linkages of India's current account deficit problem. This Part also includes a few

recommendations which refer to domestic structural imbalances and possible panacea for the same.

Objectives of Research

This research paper has the following three objectives. The relative significance of these objectives has been ordinarily diverse in nature.

- a) How to understand differently the implications of the CAD in the short-run and long-run perspectives?
- b) To what extent can one determine coefficient of correlation and determination of various domestic and global determinants of the India's CAD problem?
- c) Can we argue that the structural domestic imbalances need to be removed to better understand India's CAD problem rather than using conventional wisdom of treating this problem strictly in the only perspective of global volatility that reflects in either the rupee depreciation or in the decline of foreign exchange reserves and net loss of capital flows?

Methodology of Research

This research paper is empirical in nature. To understand correlations and causality between the CAD and its determinants, simple regressions are run. Before the author could make any logical deductions, the regressions have helped establish correlations between the CAD and its possible determinants. To do this, a time series data are used with linear relationships. With SPSS ANNOVA outputs, the Durbin Watson coefficients are calculated for examining the possibility of autoregressive linearity. Along with this, export and import elasticities are calculated with the help of unit value and volume indices of exports and imports. The author has also made use of earlier studies on 'import intensities'. In addition to this, index values on foreign exchange reserves and capital flows are calculated to understand the relative significance of the activity of preserving foreign exchange reserves on the one hand and attracting capital flows on the other to comprehend whether such policies would mitigate the intensity of the problem of CAD. Based on observed trends of time series data on many related variables the analysis of variance is carried out to interpret the movement and pattern of data on fiscal and current account deficits. The overall progression of this paper is exploratory and interpretative in nature. To approach the research question with a focused emphasis, domestic and global variables are separately regressed. It is expected that the global volatility is pertinent through trade balance with exports and imports of gold and oil and petroleum products. The changes in the value of trade balance are also affected through exchange rate movements. To capture this, initially rupee versus dollar exchange rate data and the NEER and REER correlations with the CAD are examined (Appendix C). On the domestic front, the savings and investments approach is discussed along with short-term and long-term debt and foreign exchange dynamics and their impact on the CAD problem. To understand the domestic linkages of global dynamics, the capital inflows to domestic investment ratio is regressed with the CAD and its correlation has been examined and discussed in detail. A clear identification of domestic and global determinants have emphasized a point that the understanding of India's CAD problem needs a long-term and a more robust and sophisticated analysis.

Part I

A Theoretical Framework of CAD Determinants

There are many theoretical approaches which try to explain the possible correlation between various determinants and the current account deficit.

- a) The elasticity approach refers to the current account balance as the sum of trade balance and net international investment income. This approach, therefore, further examines the analysis of price elasticity of demand for imports and that of demand for exports.
- b) As per the absorption approach the current account balance is taken as the difference between income and absorption, i.e. the difference between savings and investments. According to this approach if the economy spends more than it produces (i.e. absorption exceeds income), it must import from other countries for its excess consumption and spending. As per this approach the exchange rate does not have any role to play in current account adjustments (Krugman, 1987).
- c) The inter-temporal approach has been derived from the absorption approach. This approach also considers the current account balance from savings and investment approach. This approach argues that an economy runs a current account surplus if national income is temporarily high or investment temporarily low.

Part II

Empirical Results and Analysis

The empirical results in this research paper have a strong bearing upon the elasticity and absorption approach. It is important to know that India's current account deficit problem will be better examined and understood through the first two approaches suggested in Part I. At the outset, we aim at finding out whether there exists any correlation between a number of global and domestic variables and the behaviour of CAD in India. Against the background of rupee depreciation and continuously raising fiscal and current account deficits, we intend to find out the correlation between the CAD and gold imports and the import of crude oil and petroleum products. In this connection our two fundamental equations are:

$$\text{CAD/GDP} = a_0 + \beta_1 X/\text{GDP} - \beta_2 M/\text{GDP} + e_0 \quad (i)$$

Here, CAD/GDP is a ratio between current account deficit and gross domestic product.

X/GDP is a ratio between exports and gross domestic products and M/GDP is a ratio between imports and gross domestic products. A small e_0 is an error term.

Our second equation is $\text{CAD} = a_0 - \beta_1 \text{CRPOL} + e_0$. Here, CAD is current account deficit and CRPOL is import of crude oil and petroleum products. We have run simple regressions on both and have found high correlation and significant coefficient of determination. Let us initially examine our regression result outputs.

$$a) \text{ CAD} = a_0 - \beta_3 \text{GM} + e_0 \quad \text{CAD} = 11238.349 - 1563.952 \text{GM}$$

R	.977	Sig.
R ²	.954	
RegressionSS	7.244E9	
Residual SS	3.519E8	
F	205.829	.000
T Intercept	4.288	.002
β	- 14.347	.000
Durbin- Watson	1.66	Close to 2

SPSS Output (Data Source: www.rbi.org.in)

Our statistics show that the gold imports have high and significant correlation with the CAD. Our results pertaining to crude oil and petroleum products are as follows:

$$b) \text{ CAD} = a_0 - \beta_1 \text{CRPOL} + e_0 \quad \text{CAD} = 15041.243 - .498 \text{CRPOL}$$

R	.972	Sig.
R ²	.945	
RegressionSS	6.961E9	
Residual SS	4.039E8	
F	155.117	.000
T Intercept	4.464	.002
β	-12.455	.000
Durbin- Watson	1.638	

SPSS Output Regression (a) (Data Source: - www.rbi.org.in)

These statistics have also confirmed the argument that the imports of crude oil and petroleum products have very high and statistically significant correlation with the CAD.

For a couple of years India's current account deficit has been badly affected by the increasing volume of such imports. Our deeper analysis would like to emphasize a point which states that it is the rising value of these imports owing to depreciation which has been affecting our current account deficit. Notwithstanding, a cut in gold imports will have insignificant effect in terms of reducing the deficit. The following table throws much better light upon the actual situation in this connection.

Table 1: India's Gold Imports

<i>Year</i>	<i>Total Imports (USD Billion)</i>	<i>Gold Imports (USD Billion)</i>	<i>Gold Imports as % of Total Imports</i>
2000-01	50.5	4.2	8.2
2001-02	51.4	4.2	8.1
2002-03	61.4	3.8	6.3
2003-04	78.1	6.5	8.3
2004-05	111.5	10.5	9.4
2005-06	149.2	10.8	7.3
2006-07	185.7	14.5	7.8
2007-08	251.7	16.6	6.6
2008-09	303.7	21.3	7.0
2009-10	288.4	28.8	10.0
2010-11	369.8	40.7	11.0
2011-12	489.3	56.5	11.5
2012-13	234.8	20.3	8.6

Source: - Ministry of Commerce, Govt. of India. Retrieved from commerce.nic.in

The standard argument is if we cut down our imports of gold, it will help control the current account deficit. Our regression outputs suggest that they have high correlation and coefficient of determination. Notwithstanding, the information from Table 1 clearly suggests that gold imports as percentage of total imports are not very significant and they have been declining. What really matters is the volatility in the value of gold imports subject to the rupee depreciation which has been affected more strongly by a few other exogenous variables that barely have any close relation with the CAD. Our second equation related to the correlation between the CAD and CRPOL is also high and significant. In this connection we need to take a look at Table 2. The following table shows that the proportion of CRPOL to bulk imports has been ranging between 66 to 72 percent. And its proportion to total imports has been in the range of 26 to 31 percent. These imports are significantly high in terms of value. Our reliance on these imports suggests that domestically there is dearth of the production of oil and petroleum products owing to domestic supply constraints. This is a structural barrier. The value of such imports rises owing to the fact that the rupee depreciates against the dollar. Such volatility is caused externally which is beyond our control. What is within our control is domestic production and removal of supply constraints. A policy of mere rupee stabilization would not structurally overcome the problem of rising CAD so long as domestic production does not catch up the pace of growth or the efforts to produce import substitution fail. India's overall trade gap has been continuously increasing. We have regressed the CAD along with exports and imports by using the following equation.

$$\text{CAD/GDP} = a_0 + \beta_1 X/\text{GDP} + e_0 \quad (i)$$

The regression outputs are placed after Table 2.

Table:2 Imports of Crude Oil and Petroleum Products

Year	Imports of Crude Petroleum Products (Rs. Billion)	CRPOL proportion to bulk imports (%)	CRPOL proportion to total imports (%)
2002 -03	853.67	72.59	28.72
2003 -04	945.20	69.81	26.32
2004 -05	1340.94	70.38	26.76
2005-06	1945.40	71.96	29.45
2006-07	2585.72	67.67	30.76
2007-08	3206.55	70.64	31.67
2008-09	4199.68	66.92	30.55
2009-10	4166.49	69.44	30.18
2010-11	4822.82	70.07	28.64
2011-12	7427.64	72.14	31.66

Author's own calculation (Data Source: - Directorate General of Commercial Intelligence and Statistics. Retrieved from www.rbi.org.in)

With the following equation our regression outputs on exports and imports are as follows.

$$CAD/GDP = a_0 + \beta_1 X/GDP - \beta_2 M/GDP + e_0 = 4.352 + .379 X - .543M + e_0$$

R	.952	Sig.
R ²	.906	
RegressionSS	45.495	
Residual SS	4.702	
F	43.540	.000
t		
Intercept	1.656	.132
Betas X	.741	.478
M	-2.447	.037

SPSS Outputs. Regression (c) (Data Source: - www.rbi.org.in)

From the outputs it is clear that both the exports and imports are highly correlated and the coefficient of determination is very high. Although the t statistics does not show a high significance level, the F statistics show the required level of significance. To take care of rising CAD, a general expectation is that the exports should rise and imports should fall. This implies that the trade balance (TB) should improve. The following equation suggests the correlation between the two.

$$CAD = a_0 + \beta_1 TB + e_0 \quad (iii)$$

The correlation between the CAD and TB has been positive and satisfactorily high. But, the coefficient of determination is not that strong. The F and t statistics are significant. The fact

that residual sum of squares are higher than the regression sum of squares, we can argue that only trade balance does not explain the movements in the CAD. It also shows that in addition to positive trade balance, other factors such as capital flows through FDIs, NRIs, and foreign exchange reserves along with repatriation sums play an important role in improving the CAD. The regression outputs are shown as follows.

$$\text{CAD} = a_0 + R_1\text{TB} + e_0 = \text{CAD} = -10.281 + 1.300\text{TB} + e_0$$

R	.665	Sig.
R ²	.442	
Regression SS	62146.889	
Residual SS	78352.449	
F	21.416	.000
T Intercept	-.788	.438
Beta	4.628	.000
Durbin Watson	2.702	

SPSS Output Regression (d) (Data Source: www.rbi.org.in)

The growth in India's exports requires competitiveness. The rupee depreciation would certainly bring in competitiveness. Structurally the issue requires sector-wise analysis. But mere exchange rate valuation will not solve the problem. We also need to examine export and import elasticities. The author has calculated export and import elasticities by using data on the quantum and unit value indices of exports and imports over a period from 1999-2000 to 2010-11. In most of the years the coefficient of export elasticity shows higher values and coefficient of import elasticities shows lower values (Appendix A). With high values of export elasticities the competitive pricing would help India boost its exports. In the case of imports a strategic decision is required to cut down a few items of imports and completely doing away with certain categories of imports such as coal. In this respect what matters more is the issue of import intensities. Until 2000-01, various studies on import intensities were undertaken by many scholars (Bhattacharya, 1989, Burange 1991-92, Sathe, 1995, Pitre, 1992, Bhat, Guha, Paul and Sahu, 2007 etc.). These studies have either found out increasing or decreasing trend in import intensity values. The author has calculated import intensities for select commodities by using the Annual Survey of Industries Data over a period from 2002-03 to 2011-12. These indices have used values on select imports, total inputs and value of total output. The author's calculation also shows rising trend of import intensities (Appendix A). With increasing import intensities, one of the possible ways to control the CAD is to find out local input sources through localization. This is a long-term solution to improve the current situation of rising CAD. In terms of nominal value interpretation, India's current account deficit is affected through the rupee depreciation. Although it is true that the rupee depreciation affects the values of exports and imports, we have not found very high correlation and significant coefficient of determination between both the CAD and NEER (Nominal Effective Exchange Rate) or the CAD and REER (Real Effective Exchange Rate). (Appendix B). The rupee depreciation has been affecting net terms of trade and we have found high correlation and significant coefficient of determination between the CAD and NTT (Net Terms of Trade).

Since trade balance carries significant proportion of inflows and outflows of foreign exchange reserves, the unfavourable net terms of trade are adding to the rising value of the CAD. This is again a resultant factor and a short-term phenomenon so far as the overall transactions in the current account are concerned. Our NTT equation is as follows:-

$$CAD = -a_0 - \beta_1 NTT + e_0 = CAD = -.877 - .175 NTT + e_0$$

The regression outputs are given below.

R	.851	Sig.
R ²	.724	
Regression SS	36.352	
Residual SS	13.845	
F	26.256	.000
t Intercept	-2.478	.033
Beta	-5.124	.000
Durbin Watson	.911	

SPSS Outputs, Regression (e), Data Source: - (www.rbi.org.in)

An increase in volume of exports and a reduction in imports along with rupee stabilization measures will help improve NTT. This again requires domestic restructuring. Our savings-investment approach to CAD is vital in this respect. We shall, therefore, examine whether there exists any correlation between the CAD and a ratio between net domestic capital formation (NDCF) and net domestic savings (NDS). Our equation to show this correlation is as follows:-

$$CAD = -a_0 - \beta_1 NDCF/NDS + e_0 = .330 - .991 \beta_1 NDCF/NDS + e_0$$

R	.825	Sig.
R ²	.681	
Regression SS	34.202	
Residual SS	15.995	
F	21.381	.001
t Intercept	-.767	.461
Beta	-4.624	.001
Durbin Watson	1.569	

SPSS Regression Outputs, Regression (f), Data Source: - (www.rbi.org.in).

These outputs show that the CAD and NDCF/NDS are highly correlated with statistically significant coefficient of determination. Our theoretical argument states that if planned investments exceed planned savings, the gap is to be bridged by foreign capital flows, FDIs, NRI investments, ECBs (external commercial borrowings) etc. To examine a correlation between the CAD and gross capital inflows (GCINF) to gross investment (GINVES) ratio, we have run the following regression equation;

$$CAD = a_0 - \beta_1 GCINF/GINVES + e_0 = 551.099 - 1.416 GCINF/GINVES + e_0$$

Our regression outputs suggest that the correlation between the two has been high and the coefficient of determination has been significant. The shortfall of the regression outputs has been that the value on regression sum of squares is much lower than the value on residual sum of squares. This suggests that there are other factors which better explain India's current account deficit problem. It is important to note that the capital flows may be substituted by the use of foreign exchange reserves. To know the relative strengths of these variables we have constructed an index of foreign exchange reserves and capital flows. The category of capital flows includes foreign investment inflows, external assistance and inflows (+) and outflows (-) of NRIs. Initially we shall examine our regression outputs on GCINF and GINVES. Later we shall examine the index of foreign exchange reserves and capital flows.

$$CAD = a_0 - \beta_1 GCINF/GINVES$$

R	.877	Sig.
R ²	.769	
Regression SS	1.316E7	
Residual SS	3951180.727	
F	33.315	.000
t Intercept	1,862	.092
Beta	-5.772	.000
Durbin Watson	.776	

SPSS Regression Outputs, Regression (f), Data Source: - (www.rbi.org.in).

As stated earlier, we intend to examine the relative significance of foreign exchange reserves and capital flows. The index of this stands as follows.

Table: 3 Foreign Exchange Reserves to Capital Flows Index

<i>Year</i>	<i>Index Value</i>
2000-01	5.53
2001-02	5.55
2002-03	24.04
2003-04	7.90
2004-05	10.89
2005-06	7.29
2006-07	9.83
2007-08	6.85
2008-09	17.05
2009-10	4.94
2010-11	6.15
2011-12	5.48

Author's calculations (Data Source: - www.rbi.org.in)

First of all, this table shows that the index value reflects some volatility. This implies that the relative significance of the proportionate ratio between foreign exchange reserves and capital flows has been changing. A high index value shows that the foreign exchange reserves as a means to mitigate the problem of CAD outweigh the significance of capital flows. What has been suggested is more and more influx of non-debt capital flows and less and less use of foreign exchange reserves to overcome the problem of CAD. One of the structural deficiencies is India's external debt and less satisfactory debt-service ratio. Ever growing external debt and a high debt payment service ratio put pressure on foreign exchange reserve. A country loses her dollar reserves. This finally puts a downward pressure on domestic currency which experiences erosion on the external value in terms of currency's depreciation. This ultimately results in deteriorating position of CAD. The following tables show India's external debt scenario.

Table: 4 Long-term to Short-term External Debt Ratio

<i>Year</i>	<i>Long-term debt (US \$ million)</i>	<i>Short-term debt (US \$ million)</i>	<i>Short-term as % of long-term</i>
2000	94327	3936	4.17
2001	97698	3628	3.71
2002	96098	2745	2.85
2003	100245	4669	4.65
2004	108222	4431	4.09
2005	116279	17723	15.24
2006	119575	19539	16.34
2007	144230	28130	19.50
2008	178669	45738	25.59
2009	181185	43313	23.90
2010	208606	52329	25.18
2011	240941	64990	26.97
2012	267640	65130	24.33

Author's calculations (Data Source: - www.rbi.org.in)

Table: 5 India's Total, Short-term Debt and Other Dimensions

Year	Concessional debt as % of total debt	Short-term debt as % of total debt	Debt-stock to GDP ratio	Debt – service ratio
2000	38.9	4.0	22.0	17.1
2001	35.4	3.6	25.5	16.6
2002	35.9	2.8	21.1	13.7
2003	36.8	4.5	20.3	16.0
2004	35.8	3.9	18.0	16.1
2005	30.7	13.2	18.1	5.9
2006	28.4	14.0	16.8	10.1
2007	23.0	16.3	17.5	4.7
2008	19.7	20.4	18.0	4.8
2009	18.7	19.3	20.3	4.4
2010	16.8	20.0	18.3	5.8
2011	15.5	21.2	17.8	4.3
2012	13.8	22.6	20.0	6.0

Data Source: - (www.rbi.org.in)

Table 4 clearly shows that short-term as % of long-term debt has been rising. This will surely add to the short-term current account deficit problem. Table 5 reveals that short-term as % of total debt has been rising. The debt-stock to GDP ratio is very high and the debt-service capacity is falling. These issues are clearly structural and require long-term planning.

Part III

Conclusion and Recommendations

India's current account deficit problem is partially global so far as exchange rate volatility and its impact on rupee depreciation is concerned. When we examine the real sector economic variables such as savings/investments, agricultural and industrial production, employee productivity and labour participation rate, we can comfortably argue that India's current account deficit problem is primarily domestic. What we argue here is a different path of causality between the CAD and the rupee depreciation. The causation flows from the current account deficit to the rupee depreciation. On account of various structural deficiencies India's current account deficit has been widening and that is resulting in rupee depreciation. Stabilization of rupee or finding out the correct value of rupee may help trade balance improve over a short-term. A continuous outflow of foreign exchange reserves through declining FDIs and FII's investments will keep on mounting pressure on India's current account deficit beyond our control. Therefore, what we need is internal structural revamping. This is, therefore, a part of our recommendations.

Recommendations

- a) **Overall fiscal consolidation:** - We have run a regression to find out correlation between total fiscal deficit and the CAD. Our regression outputs are encouraging (Appendix C).

The fiscal deficit is a real issue. A proper discipline of income expenditure gaps leading to increasing productive incomes and decreasing unproductive expenditures (such as interest and subsidies) needs to be identified and executed.

- b) **Transparent governance and freedom to Central Bank:** - Injudicious political compulsions defeat a programme of economic excellence. The Indian finance ministry requires to amicably coordinate its programmes with the Central bank. Corruption, nepotism, delays, vote-gaining aspirations defeat long awaited economic compulsions. The current account deficit is not merely an issue of numbers and controls. It requires a more productive and honest programme.
- c) **Removal of supply constraints:-** Low agricultural growth rate (leave aside this years' 5.5% projection owing to good monsoons), declining manufacturing output and IT contributions to dollar inflows and declining overall productivity demand an urgent attention and a concrete programme to mitigate supply constraints.
- d) **Improving Remittances and Invisibles:** - We have run a regression to find out a correlation between the CAD/GDP and Net Invisibles/GDP (AppendixC). Our R suggests a satisfactory correlation between the two. Over a few years our remittances as well as the ratio between invisibles to overall CAD have been declining.
- e) **Balancing monetary and fiscal policies along with a boost in supply side policy measures:-** Neither monetary tightening nor loosening policy measures have helped either stabilize rupee or contain the growing percentages of CAD. Too much emphasis on monetary Policy on the one hand and leaving gaps in the implementation programme of fiscal incentives on the other are priority issues that need a positive attention.
- f) **Improving Trade Issues:** - India's intra-regional (e.g. trade among SAARC countries) trade should increase. Even to improve net terms of trade, the present composition of trade requires some kind of revamping (e.g. adding new products to and dropping imports of items such as coal etc.) from the list of exports and imports.
- g) **Long-term Perspective:** - Common people and general citizens should understand that the objective of reducing CAD is a long-term policy issue. Immediate corrections in the CAD in the short-run are not possible. To meet the objective of balancing CAD or achieving a 2.5% of GDP target needs structural reforms that include fundamental corrections in market processes, governance structure, legal aspects, liberalization measures and productivity issues.

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Appendices

Appendix A

A.1 Export Elasticity (Base 1999-2000)

$$\eta_x = \Delta \text{quantum index } X / \Delta \text{unit value index } X * \text{original unit value index } X / \text{original quantum index } X$$

Table A.1 Export Elasticities

Year	η_x Coefficient
2001	0.81
2002	6.48
2003	0.95
2004	0.73
2005	2.46
2006	0.73
2007	2.46
2008	0.73
2009	1.55
2010	0.52
2011	1.08
2012	1.09

Author's calculation (Data Source: - www.rbi.org.in)

A.2 Import Elasticities

$$\eta_m = \Delta \text{quantum index } M / \Delta \text{unit value index } M * \text{original unit value index } M / \text{original quantum index } M$$

η_m Coefficient	Year
2001	0.1
2002	1.46
2003	0.45
2004	4.89
2005	0.98
2006	1.13
2007	0.63
2008	7.22
2009	1.44
2010	0.98
2011	0.66
2012	NA

Author's calculation (Data Source:- www.rbi.org.in)

A.3

Table A.3 Import Intensities

<i>Year</i>	<i>Total Inputs (Rs.Billion)</i>	<i>Select Imports (Rs.Billion)</i>	<i>M as % of Inputs</i>	<i>Value of Output</i>	<i>M as % of value of output*</i>
			<i>Import Intensity</i>		<i>Import Intensity</i>
2002-03	9161.85	1372.33	14.97	11305.61	12.13
2003-04	10396.23	1599.24	15.38	12874.01	12.42
2004-05	13629.41	2328.32	17.15	16725.61	13.98
2005-06	15436.58	3300.28	21.37	19083.55	17.29
2006-07	19483.68	4461.83	22.90	24085.48	18.52
2007-08	22229.53	5324.47	23.95	27757.09	19.18
2008-09	26614.86	7462.19	28.03	32727.98	22.80
2009-10	30356.05	6753.68	22.24	37227.77	18.14
2010-11	NA	8212.52	NA	NA	NA
2011-12	NA	12195.17	NA	NA	NA

Author's Calculation * The last column represents import intensity as % of final demand.

(Data Source: - www.rbi.org.in)

Appendix B

B.1 CAD / NEER and REER Relationship

B.1.1 CAD and NEER

$$\text{CAD} = a_0 + \beta_1 \text{NEER} = -163.740 + 1.275\text{NEER}$$

R	.086	Sig.
R ²	.007	
RegressionSS	824.734	
Residual SS	109892.227	
F	.128	.725
t Intercept	-.492	.629
Beta	.357	.725
Durbin Watson	1.894	

SPSS Output (Data Source: - www.rbi.org.in)

We have also regressed trade balance with REER. The correlation is not very high and statistically it does not show significance. Even a much weaker relation has been found between NEER and trade balance.

B.1.2 CAD and REER (Trade-based weight)

$$\text{CAD} = a_0 - \beta_1 \text{REER} = 109.191 - 1.787\text{REER}$$

R	.088	Sig.
R ²	.008	
RegressionSS	710.613	
Residual SS	91918.036	
F	.131	.721
t Intercept	.222	.827
Beta	-.363	.721
Durbin Watson	1.924	

SPSS Output (Data Source:- www.rbi.org.in)

B.2 CAD/GDP / Net Invisibles/GDP

We have run this regression primarily for examining the impact of Net Invisibles on the CAD. It is observed in the case of India that the net trade deficit has been reduced by incomes through invisibles. In last few years the income from invisibles has also been declining. Against this background, we intend to see the correlation. Our regression outputs are as follows:-

$$\text{CAD} = a_0 - \beta_1 \text{NETINVIS} + e_0 = 4.389 - 1.114 \text{NETINVIS}$$

R	.631	Sig.
R ²	.398	
RegressionSS	19.965	
Residual SS	30.232	
F	6.604	.028
t Intercept	1.907	.086
Beta	-2.570	.028
Durbin Watson	.779	

SPSS Output (Data Source: - www.rbi.org.in)

Appendix C

What we argue in this Appendix is that the Gross Fiscal Deficit (GFD) is a much more significant issue that requires urgent attention as compared to the short-term issue related to the volatility in CAD. With this view in mind we have run a regression showing the relation between the CAD and the Gross Fiscal Deficit.

Our equation is $CAD = a_0 - \beta_1 GFD + e_0 = 312.322 - .583 GFD + e_0$

R	.884	Sig.
R ²	.782	
RegressionSS	1.614E7	
Residual SS	4500871.071	
F	100.393	.000
t Intercept	3.097	.004
Beta	-10.020	.000
Durbin Watson	.526	

SPSS Output (Data Source: - www.rbi.org.in)

Even we have calculated variance and standard deviation in the case of GFD and CAD. Our results show higher values of variance and standard deviation in the case of GFD when compared with the CAD which shows comparatively lower values of variance and standard deviation. This is one more support to our argument that there is high correlation between the CAD and the GFD. And the latter as an independent variable has higher influence on the CAD being a dependent variable. Therefore, much more important policy variable is the control of gross fiscal deficit.

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