

India's External Sector

Do We Need to Worry?

C RANGARAJAN, PRACHI MISHRA

The deterioration in India's current account has led to a series of debates in the policy arena relating to sustainability, the importance of exchange rates in influencing the trade balance, and the role of high and rising inflation. Against this background, this article takes a step back and analyses the performance of the external sector in India since 1990. It estimates the sustainable current deficit to GDP ratio to be 2.3%. Importantly, even to sustain a 2.3% CAD, India would need net capital inflows of the order of at least \$50-70 billion annually over the next five years. Given the uncertainty around both the push factors (e.g. rising global risk aversion) as well as the pull factors (slower growth in India) that determine capital flows, attracting such magnitudes of flows could very well be an uphill task.

This is an extended version of the ECGC Foundation Day Lecture, 2012. The authors are grateful to D Subbarao and Michael Debabrata Patra for comments on an earlier draft.

C Rangarajan (c.rangarajan@nic.in) is Chairman, Economic Advisory Council to the Prime Minister and Prachi Mishra (pmishra0513@gmail.com) is Senior Economist at the Office of the Chief Economic Adviser, Ministry of Finance, Government of India, New Delhi.

1 Introduction

The balance of payments in India has come under pressure recently with the current account deficit (CAD) reaching a historical record level of 4.2% of gross domestic product (GDP) in 2011-12. The deterioration in the current account has led to a series of debates in the policy arena relating to the sustainability of the current account, the importance of exchange rates in influencing the trade balance, and the role of high and rising inflation.

Against this background, this article takes a step back and analyses the performance of the external sector in India since 1990. Section 2 describes the reforms in the early 1990s, Section 3 documents stylised facts on the performance of the external sector – both current and capital accounts. Section 4 provides evidence on the sustainable level of current account, and sheds light on the issue of elasticity of exports to exchange rates. Section 5 concludes with policy implications and the way forward in both the short- and medium-term.

2 External Sector Reforms

Immediately after Independence, India embarked on a strategy of development, which envisaged a pivotal role for the government and the public sector in shaping India's economy and industrialisation. The trade regime till the early 1980s was characterised by high nominal tariffs and non-tariff barriers coupled with a complex import licensing system. In addition, India's tariff structure was very complex with myriad exemptions applicable to the basic duty rate. During the late 1980s, the government took the first steps towards reducing state control on the external and domestic industrial policy fronts. Steps were taken to ease industrial and import licensing, replace

quantitative restrictions with tariff barriers and simplify the tariff structure. Importantly, this was the first instance of a three-year trade policy. There were conscious efforts to dismantle the import licensing regime via reductions in the number of products listed under banned/restricted category (Das 2003). However, these measures were less than comprehensive and left a lot to be desired. Figures 1 and 2 (p 53) show that till 1991, the levels of protection were very high – in 1991 the average tariff rate was 117% and the share of imports subject to non-tariff barriers was 82% (Kumar and Mishra 2007).

The years 1989-91 were marked by difficulties, both on the economic and political fronts. As the new government took over in 1991, India was facing an impending external payments crisis with foreign currency assets less than \$1 billion, just enough to cover two weeks of imports. The Government of India requested a Stand-By Arrangement from the International Monetary Fund (IMF) in August 1991 and entered into an IMF-supported programme. In addition to deficit reducing policies, a wide array of policies spanning the external, trade, industrial, public sector, financial and banking sectors were implemented. The export-import policy (EXIM policy) of 1992-97 reaffirmed India's commitment to freer trade. All import licensing lists were eliminated and a "negative" list was established. Except consumer goods, almost all capital and intermediate goods could be freely imported subject to tariffs. By April 2002, all the remaining quantitative restrictions were also removed.

The exchange rate regime also went through a fundamental change in the early 1990s. The rupee was officially devalued in July 1991. In March 1992, a dual exchange rate regime was introduced. All foreign exchange receipts on current account transactions were required to be submitted to authorised dealers of foreign exchange, who in turn would surrender to the Reserve Bank of India (RBI) 40% of their purchases of foreign currency at the official exchange rate announced by the central bank.

The balance 60% could be retained for sale in the free market. In March 1993, India moved from the dual exchange rate regime to a single market-determined exchange rate system (see Patanaik and Pauly 2001 and Report of the High Level Committee on Balance of Payments 1993).

3 External Sector Performance since 1991

3.1 Current Account

Exports have increased dramatically over the last two decades, from \$18.5 billion to \$309.7 billion between 1990-91 and 2011-12 (Table 1). The average annual growth rate of merchandise exports doubled during the last two decades, from 9% in 1991-92 to 1999-2000 to 20% during 2000-01 to 2011-12. The growth rate fell sharply to -3% in 2009-10 during the global financial crisis, but then picked up immediately to 37% in 2010-11, but is estimated to have slowed down to 24% in 2011-12.

In terms of the composition of exports, there has been a shift from labour-intensive products (e.g., textiles) to capital- and skill-intensive ones (e.g., engineering goods and jewelry). Exports have also become more diversified in terms of trading partners with a shift from developed economies towards developing ones with China becoming one of the top three trading partners (Garg 2012).

There has also been a phenomenal growth in exports of services during the last two decades, with service exports increasing from \$4.6 billion to \$142.3 billion; the average annual growth rate rising from 15% to 25% over the two decades.

Private transfers are one component of invisibles that have grown substantially over the years. Remittances tend to be countercyclical and are recognised to be a stable source of foreign exchange. While capital flows rise during favourable cycles and fall in bad times, there is evidence that remittances show remarkable stability (e.g., see Ratha 2003).

Although exports have grown during the last two decades they have not kept up with the growth in imports (e.g., export/GDP increased 11 percentage points between 1990-1991 and 2011-12 whereas imports/GDP increased by 18 percentage points over the same period). Importantly, the recent growth in imports is explained by an across-the-board

Figure 1: Average Tariff Rates: India and Latin America (1980-81 to 1999-2000)

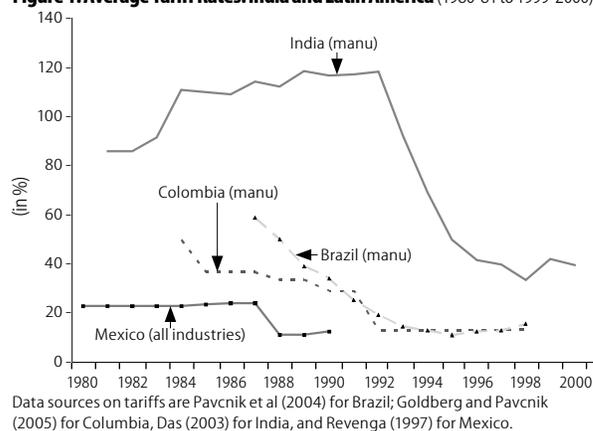
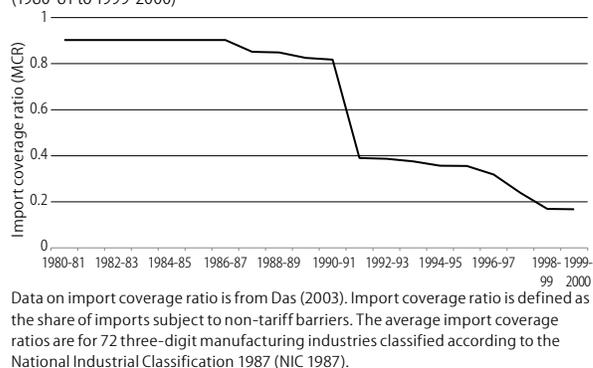


Figure 2: Non-Tariff Barriers: Average Import Coverage Ratio (1980-81 to 1999-2000)



increase: e.g., oil imports as a proportion of GDP doubled between 2004-05 and 2011-12 but non-oil imports increased as well (from 14.4% to 18.5% of GDP). Among non-oil imports, gold has been an important contributor, increasing from 1.5% to 2.5% of GDP between 2004-05 and

Table 1: Current Account (in millions of dollars)

	1990-91	1995-96	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Current account (1+2)	-9.7	-5.9	-2.7	3.4	6.3	14.1	-2.5	-9.9	-9.6	-15.7	-27.9	-38.2	-45.9	-78.2
1 Merchandise trade balance	-9.4	-11.4	-12.5	-11.6	-10.7	-13.7	-33.7	-51.9	-61.8	-91.5	-119.5	-118.2	-130.6	-189.8
Merchandise exports	18.5	32.3	45.5	44.7	53.8	66.3	85.2	105.2	128.9	166.2	189.0	182.4	250.5	309.8
Merchandise imports	27.9	43.7	57.9	56.3	64.5	80.0	118.9	157.1	190.7	257.6	308.5	300.6	381.1	499.5
Oil	6.0	7.5	15.7	14.0	18.1	20.6	29.9	44.0	56.9	79.7	93.7	87.1	106.0	154.9
Non-oil	21.9	36.2	42.2	42.3	46.3	59.4	89.0	113.1	133.7	177.9	214.8	213.5	275.1	344.6
2 Invisibles	-0.2	5.4	9.8	15.0	17.0	27.8	31.2	42.0	52.2	75.7	91.6	80.0	84.6	111.6
Non-factor services balance	1.0	-0.2	1.7	3.3	3.6	10.1	15.4	23.2	29.5	38.9	53.9	36.0	48.8	64.1
Receipts	4.6	7.3	16.3	17.1	20.8	26.9	43.2	57.7	73.8	90.3	106.0	96.0	132.9	142.3
Payments	3.6	7.5	14.6	13.8	17.1	16.7	27.8	34.5	44.3	51.5	52.0	60.0	84.1	78.2
Net investment income	-3.8	-3.2	-5.0	-4.2	-3.4	-4.5	-5.0	-5.9	-7.3	-5.1	-7.1	-8.0	-17.3	-16.0
Credits	0.4	1.4	2.7	3.4	3.5	3.9	4.6	6.4	9.3	14.3	14.3	13.0	9.1	10.1
Debits	4.1	4.6	7.7	7.6	7.0	8.4	9.6	12.3	16.6	19.3	21.4	21.1	26.4	26.1
Interest	4.0	4.3	4.5	4.3	3.7	4.4	3.0	5.2	5.5	8.2	6.6	4.8	4.7	
Dividends	0.2	0.4	3.2	3.2	3.3	4.0	6.5	7.0	11.1	11.2	14.8	16.2	21.7	
Transfers, net	2.5	8.9	13.1	15.9	16.8	22.2	20.8	24.7	30.1	41.9	44.8	52.0	53.1	63.5
Private transfers, net	2.1	8.5	12.9	15.4	16.4	21.6	20.5	24.5	29.8	41.7	44.6	51.8	53.1	63.5
Grants	0.5	0.3	0.3	0.5	0.5	0.6	0.3	0.2	0.3	0.2	0.2	0.3	0.0	0.0
Memorandum items														
Gross domestic product (\$ billion)	327	367	475	493	523	618	721	837	947	1,229	1,210	1,381	1,729	1,861
Current account (% of GDP)	-3.0	-1.6	-0.6	0.7	1.2	2.3	-0.3	-1.2	-1.0	-1.3	-2.3	-2.8	-2.7	-4.2

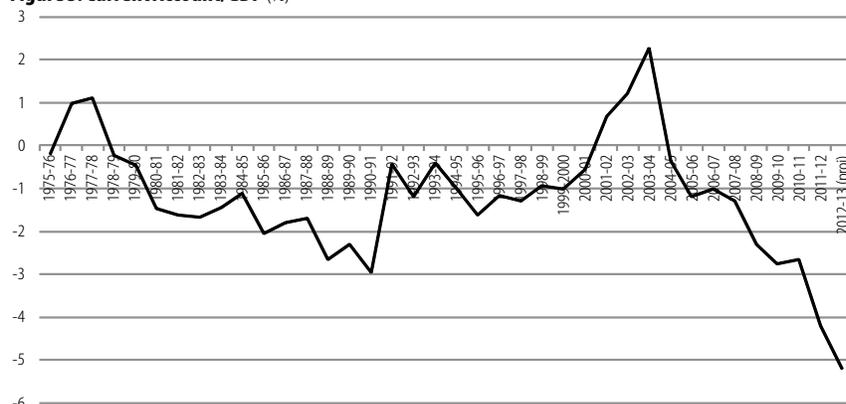
2011-12. Both oil and gold imports registered sharp increases in 2011-12 with growth rates of 45% and 40% respectively (relative to 22% and 18% in the previous year).

As a result, the merchandise trade balance has worsened significantly over the last two decades, from -2.9% of GDP in 1990-91 to an estimated -10.2% of GDP in 2011-12. The invisibles have, however, had a moderating influence with a surplus increasing from 0.6% of GDP in 1991-92 to 6% of GDP in 2011-12. Overall, the current account was in deficit throughout the 1990s. However, in the early 2000s, the current account registered surpluses (driven primarily by a sharp increase in the surplus on invisibles). Since 2004-05, however, the current account has consistently been in deficit; with the magnitude of the deficit growing since then.

3.2 Capital Flows

The ongoing current account deficits have been financed by capital inflows; hence a surplus on the capital account. The composition of financial flows to India has changed over time. Compared to 1990-91, when foreign direct investment (FDI) and portfolio flows constituted a small portion of the overall capital account, in 2011-12, they are estimated to comprise close to 60% of the capital account. In contrast, debt flows are estimated to account for about 30% in 2011-12,

Figure 3: Current Account/GDP (%)



compared to 80% in 1990-91 (Chari 2012). Net foreign investment reached its peak during the last two decades at 3.7% of GDP in 2009-10, with portfolio flows constituting the major portion at 2.3% of GDP. In 2009-10, portfolio flows were the biggest component of the overall capital account surplus (constituting 60% of the overall surplus); though their share is estimated to have declined to 25% in 2011-12.

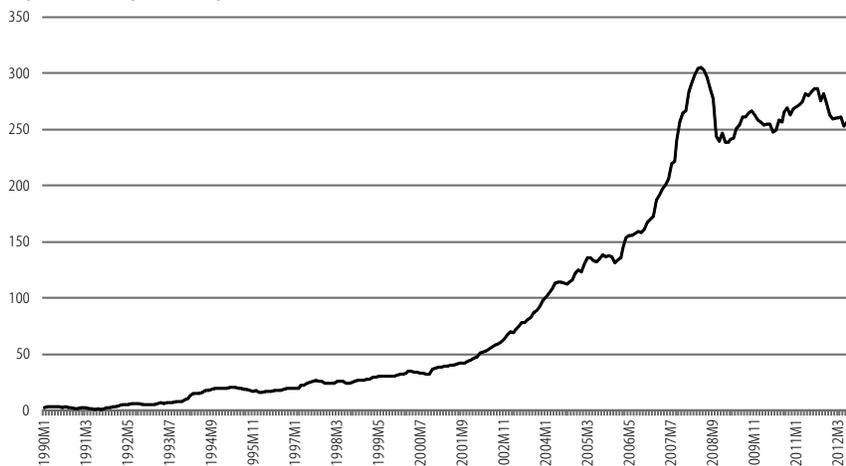
Though the share of debt flows in the overall capital account surplus has declined over time, debt flows have grown substantially in value terms as controls have been gradually eased, with a net outflow of \$1.3 billion in 2002-03 to inflows of \$19.3 billion in 2011-12. Particularly noteworthy is the sharp growth in the external commercial borrowings (ECBs). ECBs have grown from \$4.3 billion in 1990-91 to \$36 billion in

2011-12, with almost exponential growth between 2003-04 and 2007-08 (due to several measures to liberalise the market for ECBs, see Singh 2012 for details).

The surplus capital flows in excess of CAD existed through most of the last decade and we continued to accumulate reserves. This happened mainly because of the policy decision on the exchange rate. The stock of foreign exchange reserves increased from \$3 billion in January 1990 to \$305 billion in May 2008. Since then, reserves have decreased by 16% to \$257 billion (Figure 4, p 55). The decline in reserves is partly explained by the rising current account deficit and slowing capital flows. The overall capital flows which reached a peak of \$107 billion in 2007-08 came down to \$7.2 billion in 2008-09 (Table 2). In 2011-12, they were \$68 billion. In the meanwhile, the current account

Table 2: Net Financial Flows to India, Select Years (in billions of dollars)

	1990-91	1995-96	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Total capital account (1 to 5)	7.1	4.1	8.8	8.6	10.8	16.7	28.0	25.5	45.2	106.6	7.2	53.4	62.0	67.8
1 Foreign investment, net	0.1	4.6	5.9	6.7	4.2	13.7	13.0	15.5	14.8	43.3	3.5	51.2	39.7	39.2
(i) Direct	0.1	2.0	3.3	4.7	3.2	2.4	3.7	3.0	7.7	15.9	17.5	18.8	9.4	22.1
(ii) Portfolio	0.0	2.7	2.6	2.0	0.9	11.4	9.3	12.5	7.1	27.4	-14.0	32.4	30.3	17.2
2 Loans (a+b+c), net	5.5	2.2	5.3	-1.3	-3.9	-4.4	10.9	7.9	24.5	40.7	8.7	13.3	28.4	19.3
(a) External assistance, net	2.2	0.9	0.4	1.1	-3.1	-2.9	1.9	1.7	1.8	2.1	2.6	2.9	4.9	2.3
(b) Commercial borrowings (MT & LT), net	2.3	1.3	4.3	-1.6	-1.7	-2.9	5.2	2.5	16.1	22.6	7.9	2.8	12.5	10.3
(c) Short term to India	1.1	0.0	0.6	-0.8	1.0	1.4	3.8	3.7	6.6	15.9	-1.9	7.6	11.0	6.7
3 Banking capital (a+b), net	0.7	0.8	-2.0	2.9	10.4	6.0	3.9	1.4	1.9	11.8	-3.2	2.1	5.0	16.2
(a) Commercial banks	0.9	0.9	-1.9	2.7	10.1	6.5	4.0	0.4	1.6	12.1	-2.8	1.9	4.4	16.0
of which: Non-resident deposits	1.5	1.1	2.3	2.8	3.0	3.6	-1.0	2.8	4.3	0.2	4.3	2.9	3.2	11.9
(b) Others	-0.2	-0.2	-0.1	0.2	0.3	-0.5	-0.1	0.9	0.3	-0.4	-0.5	0.2	0.5	0.24.
4 Rupee debt service	-1.2	-1.0	-0.6	-0.5	-0.5	-0.4	-0.4	-0.6	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1
5 Other capital, net	1.9	-2.5	0.3	0.8	0.6	1.7	0.7	1.2	4.2	11.0	-1.5	-13.0	-11.0	-6.9
Monetary movements (i+ii)	2.5	1.2	-5.9	-11.8	-17.0	-31.4	-26.2	-15.1	-36.6	-92.2	20.1	-13.4	-13.1	12.8
(i) IMF	1.2	-1.7	-0.03											
(ii) Foreign exchange reserves (Increase -/decrease +)	1.3	2.9	-5.8	-11.8	-17.0	-31.4	-26.2	-15.1	-36.6	-92.2	20.1	-13.4	-13.1	12.8
Memorandum items														
Gross domestic product (\$ billion)	327	367	475	493	523	618	721	837	947	1,229	1,210	1,381	1,729	1,861

Figure 4: Foreign Exchange Reserves (\$ billion)

deficit has increased. The decline is also the result of interventions by the RBI to arrest the decline of the rupee.

3.3 What Are the Major Concerns?

Rising CAD: The current account has consistently been in deficit since 2004-05. The CAD has increased from -0.3% of GDP in 2004-05 to an estimated -4.2% of GDP in 2011-12. The CAD as a percentage of GDP in 2011-12 has reached an alarmingly high rate (highest in the last five decades; see Figure 3, p 54). What is particularly worrying is that we are in a situation of rising CAD in the midst of a slowing economy. Normally, one would expect imports to fall and the current account to improve when the economy slows. However, India has not experienced a significant slowdown in imports despite the deceleration in growth.

A sharply deteriorating merchandise trade balance is largely responsible for the worsening CAD. The merchandise trade deficit has increased fivefold from 2.2% of GDP in 2003-04 to 10.2% of GDP in 2011-12. Invisibles have had a moderating influence on the current account. The balance on invisibles has been positive throughout the decade, and has increased threefold from 2% of GDP in 2000-01 to 6% of GDP in 2011-12.

How to Narrow CAD? The current account can be economically analysed based on two perspectives: first, the international trade perspective, where CAD reflects the trade balance (difference between exports and imports), and

balance on invisibles. The discussion above has focused on this perspective. Second, from the national income accounts perspective, the current account is also identical to the domestic savings-investment gap. If domestic investment exceeds savings, a country imports capital (has to borrow from abroad), and will run into a CAD. Therefore, the potential policy responses to reduce CAD will focus on both these perspectives.

First Is the Exchange Rate Policy: Exchange rate depreciation, assuming plausible export-exchange rate elasticities can boost exports and reduce the CAD. But we need more work to pin down the precise elasticities. The strength of the effect will depend among other things on the pass-through from exchange rates to prices charged by exporters (see discussion below). Second is the fiscal policy. Fiscal consolidation can serve to increase domestic savings, and reduce CAD. For example, raising diesel prices could increase fuel efficiency and bring down our energy imports. The recent decision to raise diesel prices by Rs 5 a litre is welcome move in this respect. Third, controlling inflation (through fiscal and monetary policies) can help in various ways: It can help translate the nominal depreciation of the rupee into a real one, and can potentially boost exports and also reduce imports of gold (as one of the reasons for recent increase in gold imports has been the rising inflation and absence of inflation-indexed bonds in India). Fourth, addressing supply bottlenecks, e.g. in the case of coal can reduce

the demand for imports. Finally, making progress on trade agreements, e.g. the India-European Union (EU) Free Trade Agreement can potentially boost our exports. Having a predictable policy on export regulations (e.g. in the case of agriculture) and avoiding frequent reversals can also contribute towards increasing our exports.

4 Some Analytical Issues

4.1 What Is the Sustainable Level of CAD?

One way to assess the sustainability of the current account is based on the “External Sustainability” (ES) approach developed by the Consultative Group on Exchange Rate Issues (CGER) developed at the IMF. According to this approach, a sustainable current account balance is defined as the balance that would stabilise the net foreign asset (NFA) position of a country at some benchmark level (IMF 2006). The ES approach is similar to approaches on public debt sustainability and relies on an inter-temporal budget constraint for the economy, which requires that the present value of trade surpluses is sufficient to pay for the country’s outstanding external liabilities. One simple way that the intertemporal constraint can be satisfied is to ensure that the size of net foreign assets is stabilised relative to the size of the economy, thus preventing assets or liabilities from growing without bound.

We start with the simple equation for accumulation equation for NFAs, which states that changes in NFAs are accounted for by either net financial flows (net purchases of foreign assets minus net foreign purchases of domestic assets) or to changes in the valuation of outstanding foreign assets and liabilities:

$$B_t - B_{t-1} = CA_t + KG_t + E_t \quad \dots(1)$$

where CA_t is the current account balance, KG_t are capital gains arising from valuation changes, and E_t includes factors such as capital account transfers and errors and omissions that can drive a wedge between the current account balance and net financial flows. Assuming $E_t = 0$ and denoting ratios to GDP by

lower case letters, (1) can be expressed as follows:

$$b_t - b_{t-1} = ca_t + kg_t - \frac{g_t + \pi_t}{(1 + g_t + \pi_t)} b_{t-1} \dots (2)$$

where g_t is the growth rate of real GDP, and π_t is the inflation rate. Further, denoting the benchmark level of NFA as b_s , the sustainable (or NFA-stabilising) level of current account to GDP can be given by:

$$ca_s = \frac{g + \pi}{(1 + g + \pi)} b_s - kg \dots (3)$$

Equation (3) forms the basis for calculating the sustainable or more correctly the stabilising level of current account to GDP. Using the 2007 level of NFA/GDP calculated based on the Lane-Milesi-Ferretti (2009) "External Wealth of Nations" database as the benchmark, assuming a nominal growth rate of about 13% in the medium term (same as the average over the last decade), and a capital loss of 3% on the net portfolio position, the sustainable current account to GDP ratio is estimated to be -2.3%.¹ It is clear that the sustainable level depends critically on the benchmark level, the assumed rate of growth of nominal income, and the assumption of a net capital loss.

Overall, the analysis presented above suggests that the estimated CAD for 2011-12 at 4.2% of GDP is significantly above the level that can be sustained over the medium term. Importantly, to sustain a 2.3% CAD over the medium term, India would need net capital inflows of the order of at least \$50-70 billion annually over the next five years. Given the uncertainty around both the push factors (e.g., rising global risk aversion) as well as the pull factors (slower growth in India) that determine capital flows, attracting such magnitudes of flows could very well be an uphill task. In fact, the gross inflows needed will be even larger as debt repayments begin to rise. Starting from an expected deficit level of 3.5% of GDP in the current year, we should work towards lowering it to little over 2% by the end of next five years. If we continue to run a CAD significantly higher than the sustainable level, our NFA position will continue to deteriorate, making the economy vulnerable to sudden stops.

4.2 Exchange Rate and Exports

Recent Exchange Rates Movements: Stylised Facts: The rupee has depreciated sharply against the dollar since July 2011. The rupee depreciated vis-à-vis the dollar by 28% in nominal terms between July 2011 and May 2012 (from Rs 44.2/\$ to Rs 56.4/\$), with a 10% depreciation in April-May. After June 2012, the exchange rate has appreciated slightly (to Rs 55.7/\$ in August). Between July 2011 and August 2012, the rupee has depreciated against the \$ by 26%. Importantly, the magnitude of this depreciation is much lower than in 1991, where the rupee-dollar rate depreciated by over 40% between December 1990 and December 1991 (from Rs 18.1/\$ to Rs 25.8/\$, see Table 3a). The decline in the rupee vis-à-vis the dollar is, however, comparable to some of the other currencies like those of Brazil, South Africa and Poland (Table 3b).

The depreciation vis-à-vis some of the other top trading partners has, however, been less pronounced. Table 3a shows the bilateral exchange rates vis-à-vis some of the top trading partners other than the US. For example, between July 2011 and August 2012, the rupee depreciated by 12% and 19% vis-à-vis euro and Australian dollar respectively (from Rs 63/euro to Rs 70.3/euro, and from Rs 48.4/Aus\$ to Rs 57.4/Aus\$). The nominal effective exchange rate (NEER), which is a trade-weighted average of nominal bilateral exchange rates, therefore, has depreciated by less than the rupee-dollar rate (15% between July 2011 and July 2012, as shown in Table 4, p 57).

The depreciation in the real effective exchange rate (REER) has also been relatively moderate.² The REER has depreciated by 7% between July 2011 and July 2012. In fact, it is comparable to the magnitude of depreciation in some other emerging markets like Brazil and South Africa. Notably, the magnitude of depreciation during the current episode is also much

lower than India's own experience during 1990-91, when the REER depreciated by close to a quarter within a span of one year (Table 4).

Two candidate explanations for the recent fall in the rupee include a worsening of the current account balance, and reduced capital inflows.

In addition to the level of the exchange rate, policymakers also worry about increased volatility of exchange rate movements. High real exchange rate variability can create uncertainty and reduce trade as well as capital flows (e.g., Thursby and Thursby 1987). The volatility in the nominal rupee-dollar rate has shot up recently, although the increase in volatility of the REER has been limited. Exchange rate volatility for the nominal rupee-dollar exchange rate (measured by the annual standard deviation of log difference of exchange

Table 3a: Nominal Exchange Rate

	Rs/US\$	Rs/Euro	Rs/Aus\$	1990m12	Rs/US\$	Rs/Aus\$
2011m7	44.2	63.0	48.4	1990m12	18.1	14.0
2011m8	46.0	66.5	49.2	1991m1	18.6	14.6
2011m9	48.9	66.1	47.9	1991m2	19.1	15.0
2011m10	48.9	68.4	51.4	1991m3	19.6	15.2
2011m11	52.2	70.0	52.3	1991m4	20.1	15.7
2011m12	53.3	68.9	54.1	1991m5	21.0	16.0
2012m1	49.7	65.5	52.8	1991m6	21.2	16.3
2012m2	48.9	65.8	52.9	1991m7	25.8	20.0
2012m3	51.2	68.3	53.2	1991m8	25.9	20.4
2012m4	52.5	69.4	54.9	1991m9	25.8	20.6
2012m5	56.4	70.0	54.9	1991m10	25.9	20.2
2012m6	56.3	70.9	57.4	1991m11	26.0	20.5
2012m7	55.8	68.6	58.7	1991m12	25.8	19.6
2012m8	55.7	70.3	57.4			
% change						
July 2011-May 2012	27.8	11.1	13.5		42.9	39.7
July 2011-August 2012	26.2	11.6	18.7			

Source: IMF.

Table 3b: Nominal Exchange Rate vis-à-vis India vs Other Emerging Economies

	India	Brazil	China	Russia	South Africa	Poland	Turkey
2011m7	44.2	1.6	6.4	27.7	6.7	2.8	1.7
2011m8	46.0	1.6	6.4	28.9	7.0	2.9	1.7
2011m9	48.9	1.8	6.4	31.9	8.1	3.3	1.9
2011m10	48.9	1.7	6.3	29.9	7.8	3.1	1.8
2011m11	52.2	1.8	6.3	31.3	8.3	3.4	1.8
2011m12	53.3	1.9	6.3	32.2	8.1	3.4	1.9
2012m1	49.7	1.7	6.3	30.4	7.8	3.2	1.8
2012m2	48.9	1.7	6.3	29.0	7.4	3.1	1.7
2012m3	51.2	1.8	6.3	29.3	7.7	3.1	1.8
2012m4	52.5	1.9	6.3	29.4	7.7	3.2	1.8
2012m5	56.4	2.0	6.3		8.5	3.5	1.8
% change	27.8	29.2	-1.7	6.1	26.7	25.8	10.0
% change							
2012m2	15.3	18.3	0.7	1.4	14.8	15.1	5.9

Source: IMF.

Table 4: Nominal and Real Effective Exchange Rates for India

	NEER (IMF)	REER (IMF)	NEER (RBI)	REER (RBI)	NEER (IMF)	REER
					1990m12	118.28
					1991m1	120.80
					1991m2	115.17
2011M7	87.0	122.4	90.9	101.7	1991m3	115.96
2011M8	85.1	120.2	88.9	99.8	1991m4	117.76
2011M9	82.9	118.6	86.3	96.8	1991m5	114.14
2011M10	80.6	115.4	83.9	94.3	1991m6	115.44
2011M11	78.3	112.2	81.5	92.1	1991m7	95.39
2011M12	76.5	109.1	79.3	89.2	1991m8	94.97
2012M1	78.7	112.8	81.6	92.3	1991m9	94.42
2012M2	81.0	117.5	84.7	96.0	1991m10	94.13
2012M3	79.6	116.9	82.6	94.4	1991m11	93.23
2012M4	77.4	115.5	80.4	92.5	1991m12	92.40
2012M5	74.5	112.3	77.2	89.1		
2012M6	73.4	111.1	75.9	87.6		
2012M7	74.1	113.3	76.8	88.7		
2012M8			76.2	88.0		
% change	15	7	16	14	25	20

Source: Information Notice System (INS) of the IMF and RBI *Monthly Bulletin*. An increase denotes an appreciation, the indices are based on 2005=100. The IMF nominal and real effective exchange rates (NEER and REER) are taken from the Information Notice System (INS) database of the IMF. IMF REER indicators are CPI-based, and computed as a weighted geometric average of the level of consumer prices in the home country relative to that in its trade partners. The weights are calculated based on bilateral trade with all 184 IMF member countries. The RBI NEER and REER measures are calculated using 36 partner country trade weights; the REER is calculated using the WPI series. Note that the REER series from the IMF and RBI differ considerably due to the different price indices used to create these series.

rate)³ increased almost five times in the first half of 2012. In fact, looking over a longer time period, the volatility in the rupee-dollar rate between 2010 and 2012 is about 30% higher than in the early 1990s (Tables 5a and 5b). REER, in contrast, has been much less volatile. The variability in the REER was almost unchanged over 2010-12 compared to 2005-09 and is much lower than during the early 1990s.

The recent spike in the nominal exchange rate volatility has been unique compared to other emerging markets. As shown in Table 5c, the nominal rupee-dollar rate in 2012 has been much more volatile, relative to other emerging markets. If external factors were dominant, we should have seen a similar rise in volatility of other currencies. Therefore, the recent trends in volatility could possibly be a reflection of the outside perception of underlying internal factors in India. The volatility in REER, however, has been much more muted and comparable to emerging markets like China and Brazil (and much lower than Russia and South Africa).

Exports-Exchange Rates Elasticity: The effect of depreciation on export growth rate depends on the export-exchange rate elasticity. There are two recent studies which have estimated the export-exchange rates elasticity for India. Aziz and Chinoy (2012) use seasonally

adjusted quarterly data from 1996Q1 to 2008Q2, and a dynamic OLS methodology to estimate the export equation. They do not include data beyond 2008Q2 to estimate trade elasticities in relatively normal times. They regress export volumes on a trade-weighted index of India's partner country real incomes and the trade-weighted CPI-based REER. The REER is lagged by two quarters to allow for lags in the effects of relative price changes. The equation they estimate is specified below:

$$\log E_t = \alpha \log REER_{t-2} + \beta \log PY_t + \varepsilon_t$$

The estimated coefficient on partner country income is 4.61 (statistically significant at the 1% level), while that on REER is -0.66 (which is statistically indistinguishable from zero). Based on this estimation, they conclude that external demand plays a relatively larger role than exchange rates in boosting demand.

IMF (2012) uses data from 1991-2011 and estimates an export equation based on a vector error correction model (VECM). The equation they estimate is specified as follows:

$$\begin{aligned} \Delta X_t = & c + \alpha_1 (X_{t-1} - \beta_1 Y_{t-1}^F - \beta_2 REER_{t-1}) \\ & + \sum_{i=1}^{P-1} \gamma_{1,i} \Delta X_{t-i} + \sum_{i=1}^{P-1} \gamma_{2,i} \Delta X_{t-i}^F \\ & + \sum_{i=1}^{P-1} \gamma_{2,i} \Delta REER_{t-i} + BZ_t + \varepsilon_t \end{aligned}$$

where α_1 measures the speed at which exports respond to deviations from the long-run relationship. $P-1$ measures the

optimal lag length in the VECM (set to 1 as suggested by the Bayesian Information Criterion). Z_t includes additional controls, e.g., a time trend. The long-run elasticity of exports with respect to foreign demand (Y^F) and REER are given by β_1 and β_2 respectively. The short-run elasticities are given by the sum of the γ_1 and γ_2 coefficients. The study uses annual data from 1982-2011; and estimates the VECM model with two sample periods: 1982-2011 and 1991-2011. In the 1991-2011 sample, the long-run and short-run elasticities with respect to REER are estimated at -0.2 (statistically significant at the 5% level) and 0.1 (statistically indistinguishable from zero). The long-run and short-run elasticities with respect to foreign demand are estimated at 2.2 (statistically significant at the 5% level) and 0.6 (statistically indistinguishable from zero) respectively. For the entire sample from 1982-2011 (allowing appropriately for a structural break in 1991), long- and short-run export-exchange rate elasticities are

Table 5a: Exchange Rate Volatility (index, 2000=100)

	Rs-\$	REER	NEER
2000	100	100	100
2001	64	89	79
2002	52	66	75
2003	85	115	104
2004	246	104	117
2005	147	73	76
2006	250	115	108
2007	234	110	106
2008	357	145	159
2009	309	108	124
2010	322	116	107
2011	370	97	96
2012	648	175	205

Volatility is measured by the annual standard deviation of log difference of exchange rate. The measurement involves the following steps: (i) take logs of the end-of-period monthly exchange rate, (ii) compute changes over one-month period, and (iii) calculate the standard deviation over a one year period.

Table 5b: Exchange Rate Volatility (index, 2000=100: Sub-Samples)

	Rs-\$	REER	NEER
1990-94	100	100	100
1995-99	63	73	60
2000-04	36	48	45
2005-09	86	56	54
2010-12	129	59	55

Table 5c: Exchange Rate Volatility in 2012: Emerging Economies (index, 2000=100)

	Rs/\$	NEER	REER
Brazil	295	197	187
China	35	107	159
India	648	205	175
Russia	222	19	14
South Africa	169	59	56

estimated at -0.1 (statistically significant at the 5% level) and 0.3 (statistically indistinguishable from zero) respectively. In comparison, the elasticities with respect to external demand are larger, with estimates of 2.9 and 0.3 in the long- and short-run respectively (both being statistically significant at the 5% level).

Further, in a paper to be published, Rangarajan and Patra find similar results. They regress log of exports on its one-year lag REER (in logs) and world GDP (in logs). The estimated coefficient on REER is -0.5 which is correctly signed but is statistically insignificant. The estimated coefficient on world GDP, however, is strongly positive and highly significant, once again supporting the earlier findings of a stronger role played by external demand in the determination of exports.⁴

Overall, these studies suggest a much larger role played by external demand than exchange rates in determining exports. However, a question one might ask if external demand were so important in determining exports, how did exports pick up so immediately after the global financial crisis? For example, while exports fell to \$182 billion in 2009-10 (from \$189 billion in 2008-10); it increased again to \$250 billion in 2010-11. A closer look at the data on exports by destination countries suggests that the sharp pick-up in exports after the crisis is explained primarily by growth in exports to Asia and the Middle East. Between 2008-09 and 2010-11, exports to Asia and the Middle East increased by \$35 billion. The three largest export destinations were China and Hong Kong, Japan and United Arab

Table 6: Export (in billions of \$)

	Europe	Africa	North America	LAC	Asia	Total
2007-08	37	12	22	6	85	166
2008-09	42	11	23	6	97	189
2009-10	39	10	21	6	97	182
2010-11	50	16	27	10	131	250

Source: CEIC database.

Emirates (Table 6). The evidence thus suggests that a strategy of diversification across trading partners helped India weather the effect of the crisis on trade.

There are three possible explanations why existing studies have failed to find strong export-exchange rate elasticities. First, it is hard to estimate the elasticities using macro data – exports and exchange

rates are highly endogenous. The estimation issues are well recognised and the literature has moved beyond using macro data to estimate these elasticities (see, e.g., Engel 2009; Feenstra, Obstfeld and Russ 2012; Mattoo, Mishra and Subramanian 2012).

Second, the imported intermediate content of exports can dampen the competitive effects of depreciations. The greater the reliance on foreign inputs (lower the domestic value added), the more an exchange rate depreciation will increase input costs and hence dampen the competitive advantage from a depreciation. In other words, a greater reliance on foreign inputs is analytically analogous to a lower exchange rate pass-through which theory predicts will dampen the effect on exports.

Third, macro equations do not allow the export-exchange rate elasticity to vary depending on the position of the aggregate supply curve. If there are capacity constraints, then increased domestic demand can reduce the availability for exports. However, there are at least two mechanisms which predict complementarity between domestic and foreign sales: the short-run liquidity channels whereby the cash flow generated by exports is used to finance domestic operations in the short term (e.g., pay salaries to workers) or the existence of increasing returns (Berman, Berthou and Hericourt 2011).

Overall, we will need more micro-level studies for India (e.g., see Berman, Martin and Mayer 2012 for a study using French data) to get a good understanding about the true trade elasticities for India. Further, if there are capacity constraints, we may need to think beyond the role of exchange rate in driving exports.

All the same, policy should be directed towards ensuring that the rupee does not appreciate in real terms and further worsen the trade balance. Normally, the currency of a country continually in current account deficit depreciates. But what prevents this from happening is the capital flows. That is why policy actions are needed to prevent the currency from appreciating in real terms.

We also need to take note of the fact that depreciation of the currency has an effect on capital flows. Foreign investors would want the return to be much higher,

if the currency of the country in which they are investing is depreciating. Thus, we must be conscious of the implications of exchange rate depreciation on various forms of capital flows.

Ultimately, the stability in domestic prices is an important factor in stabilising the external value of the currency in real terms. While depreciation in general is favourable to exporters, abrupt and large depreciation does not help exporters. Almost all exporters have short to medium-term contracts and they are always dealing with same or similar buyers. These buyers are fully aware of the exchange rate shift and its implications on the cost and profitability of Indian companies. When a large change takes place, buyers negotiate with exporters for larger discounts which they may have to give, given the lack of option. The impact of a sharp drop in the exchange rate on the balance sheet of the Indian companies which have large foreign exchange liability also needs to be understood. For example, most infrastructure companies have raised up to half of their funds from overseas. They do not produce tradable commodities or services. Therefore, they have no natural hedge against adverse currency movements. Thus, it is preferable to avoid sudden and sharp declines in the value of the currency.

5 Way Forward

5.1 Short Term

In the short term, boosting investor confidence remains the key to attracting capital flows. Fiscal consolidation, reducing inflation, and further “careful” liberalisation of capital inflows could all contribute towards creating an environment conducive to domestic and foreign investors. The recent decisions to allow 51% FDI in multi-brand retail, 49% FDI in aviation by foreign airlines and the increase in the limit on foreign investment in government securities to \$20 billion are welcome steps in this regard.

It is important that foreign investors perceive the economy’s fundamentals to be strong and continue to be willing to demand Indian financial assets. We need to be proactive in attracting capital flows. That is indeed the short-term solution because curtailing current account deficit

in the short run is going to be tough. Even the Twelfth Plan assumes that in the next five years CAD will on average be around 3% of GDP.

The 1993 high-level Committee on Balance of Payments had outlined two decades ago the hierarchy of preference with respect to capital flows. We need to keep this in mind. While FDI flows are preferred over Foreign Institutional Investment flows, it is also worth noting that in the Indian context there has been only one year in the last decade and a half when net portfolio flows during the year was negative. That was in 2008-09. Data show that, even in the immediate months after Lehman crisis of September 2008, the overall net sale by foreigners amounted to only 6% of the holdings at the end of September 2008. Thus, even in the worst scenario, the outflows have been modest. If India continues to grow at 8% per annum and if the fiscal deficit remains under control, the ability to attract capital flows will remain strong. However, intra-year volatility can put pressure on the currency as it happened very much last year.

5.2 Medium Term

In regard to pushing our exports the framework should comprise various elements. Further diversification of exports along the product space and across markets can help boost exports; e.g., we can think about strategies to increase our exports to Asia, Africa and Latin America. In terms of products, we can consider exporting value added textiles in the Chinese markets. Further, investment in Africa can help build up a trade with African countries. Speeding up the trade agreements with EU and Canada can also potentially boost exports. Finally, we need to move beyond the role of the exchange rate in thinking about strategies to increase competitiveness of our exporters. In this regard, measures to improve the domestic infrastructure in ports and airports and to reduce barriers to domestic movement of goods are essential.

On the import side, reducing our dependence on oil imports remains a perennial challenge. Oil imports constitute about 30% of overall imports. Raising fuel prices can potentially decrease consumption,

increase fuel efficiency and reduce our dependence on imports. Increasing incentives for oil and gas exploration (e.g., through reducing uncertainty and creating an efficient revenue-sharing arrangement) could also serve to reduce our dependence on imports of oil. Also, as mentioned earlier, controlling inflation will have an impact on gold imports. Increasing domestic production as in the case of coal will again help to contain imports.

India's external sector has grown rapidly in the post-liberalisation period. India's balance of payments situation has never been stronger than in this period. Until recently, the current account deficit was modest and the capital flows were adequate not only to cover the current account deficit but also to add to reserves. However, in the last few years there has been a change in the picture. The trade deficit has widened and consequently, the current account deficit is also growing. Last year, the deficit touched an unusually high level of 4.2% of the GDP. We need to work towards a much lower level of current account deficit. However, in the short run, we must encourage capital flows to cover the current account deficit. We should not belittle the importance of capital flows. Over the medium term, we need to accelerate exports. For this we must look beyond the adjustment of exchange rate. We need to increase the competitiveness of our exports. We must diversify the product-base as well as the markets. On the imports side, increasing domestic production of commodities like coal and oilseeds will help to constrain the import growth rate.

NOTES

- Given that the net portfolio position is negative for India, assuming similar rates of return on assets and liabilities would translate into a capital loss on net.
- The nominal and real effective exchange rates (NEER and REER) are taken from the Information Notice System (INS) database of the IMF. REER indicators are CPI-based, and computed as a weighted geometric average of the level of consumer prices in the home country relative to that in its trade partners. The weights are calculated based on bilateral trade with all 184 IMF member countries. Note that the REER measures from the IMF differ from the RBI. While the IMF REER measure suggests that the Indian rupee is more appreciated relative to the base year 2005; the RBI measure shows a more depreciated REER. The difference emanates owing to the different deflators being used to create the REER series (while the IMF uses CPI, the RBI uses the WPI).
- This is a commonly used measure of exchange rate volatility (see IMF 2004, and the references therein). The measurement involves the

following steps: (i) take logs of the end-of-period monthly exchange rate, (ii) compute changes over one-month period, and (iii) calculate the standard deviation over a one year period.

- Rangarajan and Patra also regress exports on relative price of Indian exports to world exports (both measured in terms of unit values in dollars), and find the coefficient to be correctly signed but statistically insignificant, with the magnitude of the effect being outweighed by the estimated coefficient on partner countries' income.

REFERENCES

- Aziz, Jahangir and Sajjid Chinoy (2012): "India: More Open Than You Think", JP Morgan note.
- Berman, Nicolas, Antoine Berthou and Jerome Hericourt (2011): "Export Dynamics and Sales at Home", Graduate Institute of International and Development Studies Working Paper No 14/2011.
- Berman, Nicolas, Philippe Martin and Thierry Mayer (2012): "How Do Different Exporters React to Exchange Rate Changes? Theory, Empirics and Aggregate Implications", *Quarterly Journal of Economics*, 127(1): 437-92.
- Chari, Anusha (2011): "Technical Paper on Sustainability of India's Current Account", paper prepared for PMEAC.
- Clark, P, A Sadikov, N Tamirisia, S-J Wei and L Zeng (2004): "Exchange Rate Volatility and Trade Flows", International Monetary Fund.
- Das, D K (2003): "Quantifying Trade Barriers: Has Protection Declined Substantially in Indian Manufacturing?", ICRIER, Indian Council for Research on International Economic Relations Working Paper No 105, New Delhi.
- Engel, Charles (2009): "Exchange Rate Policies", Federal Reserve Bank of Dallas Staff Paper.
- Feenstra, Robert C, Maurice Obstfeld and Katherine N Russ (2012): "In Search of the Armington Elasticity", mimeo, UC Berkeley and UC Davis, available at http://www.econ.ucdavis.edu/faculty/knuss/FOR_6-1-2012.pdf
- Garg, Raj Anmol Singh (2012): "The Case of India's Merchandise Exports", paper prepared for PMEAC.
- Government of India: Report of the High Level Committee on Balance of Payments (Chairman: C Rangarajan), 1993.
- IMF (2004): "Exchange Rate Volatility and Trade Flows – Some New Evidence" (<http://www.imf.org/external/np/res/exrate/2004/eng/051904.htm>).
- (2006): "Methodology for CGER Exchange Rate Assessments", Working Paper.
- (2012): "Note on Current Account".
- Kumar, Utsav and Prachi Mishra (2007): "Trade Liberalisation and Wage Inequality: Evidence from India", *Review of Development Economics*, 2008, Vol 12, Issue 2, pp 291-311 (IMF Working Paper No 05/20).
- Lane, Philip R and Gian Maria Milesi-Ferretti (2009): Updated Dataset based on "The External Wealth of Nations Mark II", *Journal of International Economics*, 2007, 73, November, 223-50.
- Mattoo, Aaditya, Prachi Mishra and Arvind Subramanian (2012): "Spillover Effects of Exchange Rates: A Study of the Renminbi", World Bank Policy Research Working Paper No 5989, IMF WP No 12/88.
- Patanaik, Ila and Peter Pauly (2001): "The Indian Foreign Exchange Market and the Equilibrium Real Exchange Rate of the Rupee", *Global Business Review*, 2(2).
- Ratha, Dilip (2003): "Workers' Remittances: An Important and Stable Source of External Development Finance", Global Development Finance, Chapter 7, World Bank.
- Singh, Prabal Kumar (2012): "India's External Commercial Borrowings", paper prepared for PMEAC.
- Thursby, Marie and Jerry Thursby (1987): "Bilateral Trade Flows, the Linder Hypothesis, and Exchange Risk", *Review of Economics and Statistics*, Vol 69, No 3, pp 488-95.