

MUNEESH KAPUR\*  
*International Monetary Fund*

RAKESH MOHAN†  
*International Monetary Fund*

## India's Recent Macroeconomic Performance: An Assessment and the Way Forward

**ABSTRACT** The sustained high growth in an environment of macroeconomic and financial stability—recorded by the Indian economy prior to the North Atlantic financial crisis (NAFC) has suffered a setback. While the macroeconomic policy response after the NAFC was admirably rapid, there was overshooting of the stimulus, and its withdrawal was gradual. The stimulus measures led to high growth, averaging 9%, during 2009–11, but also sowed the seeds for inflationary and balance of payments pressures, necessitating the subsequent moderation in domestic demand and growth. The domestic slowdown was then further exacerbated by domestic policy bottlenecks. Appropriate policies in regard to domestic oil prices and fiscal consolidation will make more resources available to the private sector and contribute to the recovery of private sector investment. Fiscal consolidation would also facilitate a reduction in inflation, which would then have a moderating impact on gold imports and a favorable impact on the real exchange rate, exports and current account deficit. Given the growth and inflation expectations, interest rates in India can be expected to remain above those in advanced economies, even when we move away from the present aberrations of near zero interest rates in the major advanced economies; therefore, a prudent approach with regard to the opening up of debt flows to foreign investors needs to be pursued.

**Keywords:** *Current Account, Capital Flows, Exchange Rate, Exports, Fiscal Policy, Gold, Growth, India, Monetary Policy, Oil Demand, Savings*

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\* *mkapur@imf.org*

† *rmohan@imf.org*

## 1. Introduction

**T**he Indian economy recorded robust growth of 9% plus per annum during 2004–08, and the high growth phase was accompanied by the consolidation of key macroeconomic indicators. However, this process suffered a setback with the onset of the North Atlantic financial crisis (NAFC) in 2008. Growth rebounded initially in response to large monetary and fiscal stimuli but slowed down significantly subsequently; moreover, a substantial widening of the current account and fiscal deficits has occurred since 2008–09, along with inflation climbing to an elevated level. With the observed decline in domestic saving and investment (S–I) rates, there are concerns that India’s potential growth rate has now fallen significantly (Mishra 2013c). Furthermore, given the large twin deficits, concerns have also been expressed about the possible emergence of a balance of payments crisis (for example, Acharya 2013; Mody and Walton 2013; Tarapore 2013b). These concerns came to the forefront during June–August 2013 following the mention of tapering of its unconventional monetary policy by the US Federal Reserve and the resulting volatility in the global and domestic financial markets. There is also a view that the high growth phase of 2004–09 was a debt-led cyclical boom, supported by unprecedented capital inflows, coinciding with an exceptional growth phase in the world economy (Nagaraj 2013).

Can India be placed on a sustained high growth path again so that it grows consistently over the next couple of decades and beyond? To what extent have domestic economic policies contributed to the slowdown that might have been expected in any case, as a result of the headwinds emanating from the NAFC?

Against this backdrop, this paper begins with an evaluation of India’s recent growth experience in a cross-country perspective (Section 2). This is followed by an assessment of the role of domestic macroeconomic policies in the growth slowdown; this section also examines as to whether oil demand is responsive to price movements and as to how much of the recent growth slowdown can be explained through conventional determinants (Section 3). Section 4 then assesses the factors that have led to the widening of the current account deficit (CAD) and explores: (a) the role of income and price elasticities in external trade and (b) the determinants of demand for gold imports in order to understand the widening of the CAD. Section 5 focuses on some key issues in macroeconomic management going forward and concluding observations are in Section 6.

## 2. Recent Macroeconomic Trends: India in a Global Perspective

After the NAFC in 2008–09, India's real gross domestic product (GDP) growth rebounded sharply during 2009–11, but this rebound was short-lived and growth decelerated significantly in the following two years, as shown in Table 1. This deceleration in growth has been accompanied by a number of disconcerting macroeconomic developments since 2008–09. First, the noteworthy fiscal consolidation process witnessed during 2003–08 has suffered a setback and, despite some renewed correction, the fiscal deficit in 2012–13 was still more than double that of the pre-crisis year. Second, the CAD, which was relatively moderate and averaged around 1% of GDP during 1992–2008, widened significantly to just under 5% in 2012–13. Third, headline inflation, especially consumer inflation, has remained persistently high in the post-crisis period. Finally, private corporate investment has declined significantly.

**TABLE 1. Key Macroeconomic Indicators: 2003–13**

(%)

<i>Year</i>	<i>Real GDP growth (factor cost)</i>	<i>Real GDP growth (market prices)</i>	<i>GFD/ GDP (center)</i>	<i>CAB/ GDP</i>	<i>Non-oil CAB/ GDP</i>	<i>WPI inflation</i>	<i>CPI inflation</i>	<i>REER index<sup>@</sup></i>	<i>Real policy rate<sup>#</sup></i>
2003–04	8.1	7.9	4.3 (4.6)	2.3	5.0	5.5	3.9	96.8	-0.4
2004–05	7.0	7.8	3.9 (3.9)	-0.3	2.8	6.5	3.8	99.9	-0.6
2005–06	9.5	9.3	4.0 (4.7)	-1.2	2.7	4.4	4.4	102.7	1.7
2006–07	9.6	9.3	3.3 (4.3)		3.0	6.6	6.7	101.0	3.1
2007–08	9.3	9.8	2.5 (3.1)	-1.3	2.9	4.7	6.2	108.6	2.2
2008–09	6.7	3.9	6.0 (8.2)	-2.3	3.1	8.1	9.1	97.8	0.9
2009–10	8.6	8.5	6.5 (6.6)	-2.8	1.5	3.8	12.4	95.3	1.5
2010–11	9.3	10.5	4.8 (4.9)	-2.7	1.1	9.6	10.4	103.5	2.0
2011–12	6.2	6.3	5.7 (5.7)	-4.2	1.1	8.9	8.4	100.7	1.0
2012–13	5.0	3.3	4.9 (4.9)	-4.8	1.1	7.4	10.4	96.3	1.9

Source: Database on Indian Economy, Reserve Bank of India (<http://dbie.rbi.org.in/DBIE/dbie.rbi?site=home>); Economic Advisory Council to the Prime Minister.

Notes: @: 36-currency real effective exchange rate index (2004–5=100).

#: Nominal effective policy rate less 12-month moving average of non-food manufactured products WPI inflation.

Figures in parenthesis are GFD/GDP ratios including off-budget liabilities.

Part of the domestic slowdown is obviously the outcome of a sluggish global recovery. As Table 2 shows, global growth fell from an annual average of 4.8% during 2003–07 to an average of 2.9% during the subsequent five-year period (2008–12), and the slowdown is visible across all regions, including

**TABLE 2. Key Macroeconomic Indicators: Variation Between 2008–12 (Average) and 2003–07 (Average)**

	(%)									
	GDP growth	CPI	CAB/GDP	Non-oil CAB/GDP	Variation in REER @	Revenues/ GDP	Expenditure/ GDP	Structural fiscal balance/ Potential GDP		
Argentina	-3.3	-0.4	-2.4	0.8	-13.5	7.3	7.7	-0.6		
Australia	-1.0	0.1	2.2	1.3	17.1	-3.3	1.9	-5.1		
Brazil	-0.8	-1.7	-3.1	-1.2	13.1	2.1	1.1	0.5		
Canada	-1.4	-0.4	-4.1	-4.5	2.1	-2.2	2.5	-3.2		
China	-2.4	0.7	-1.4	2.0	22.0	3.7	4.4	-0.8		
France	-2.0	-0.1	-1.6	-2.1	-7.4	0.3	2.7	-0.7		
Germany	-0.9	-0.0	1.3	4.6	-9.5	0.8	-0.2	1.5		
India	-1.8	5.0	-3.0	-1.6	-5.9	-0.4	0.9	-1.9		
Indonesia	0.4	-2.7	-2.0	-1.9	2.3	-1.3	-0.7	-0.8		
Italy	-2.7	0.1	-1.4	-1.0	-4.8	1.9	2.4	1.5		
Japan	-1.9	-0.2	-1.3	0.8	21.1	1.0	4.9	-2.6		
Korea	-1.4	0.4	0.1	4.0	-22.9	0.9	0.7	0.4		
Malaysia	-1.7	0.3	-1.7	1.2	1.4	0.6	1.7	-0.7		
Mexico	-1.7	0.3	0.1	1.0	-11.1	2.5	4.5	-1.3		
Russia	-5.6	-2.0	-4.1	-6.6	12.2	-2.0	4.5	-5.4		
Saudi Arabia	0.3	2.5	-3.6	-2.6	14.5	-1.0	3.0	n.a.		
South Africa	-2.5	2.2	-0.8	-1.7	0.6	0.9	4.8	-3.7		
Thailand	-2.7	-0.3	1.3	4.0	1.6	-0.1	2.7	-2.7		
Turkey	-3.7	-4.0	-1.4	-1.6	-4.3	1.5	0.7	1.1		
UK	-3.6	1.4	0.3	1.2	-17.6	-0.3	5.1	-2.5		
US	-2.1	-0.8	2.1	2.4	-7.5	-1.1	5.3	-3.7		
Average	-2.0	0.0	-1.2	-0.1	0.2	0.6	2.9	-1.5		
Median	-1.9	-0.0	-1.4	0.8	0.6	0.6	2.7	-1.1		
World	-1.9	0.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.		
Advanced economies	-2.2	-0.2	0.6	n.a.	n.a.	-0.3	3.8	-2.3		
Euro area	-2.4	-0.1	-0.1	n.a.	n.a.	0.3	2.7	-0.7		
EDEs	-2.1	0.5	-1.4	n.a.	n.a.	n.a.	n.a.	n.a.		

Source: World Economic Outlook Database (April 2013), IMF.

Note: @: REER is percentage change between 2012 and 2007.

emerging markets. Clearly, global demand has fallen as a result of the NAFC and there has been some rebalancing of current account balance/GDP ratios across G20 countries. The advanced economies—the United States, the United Kingdom, Germany—have recorded an improvement in their current account positions. These were mostly associated with real currency depreciations and weak domestic demand. Interestingly, since the NAFC, it is the advanced economies that have generally recorded real depreciation with the Emerging Market Economies (EMEs) recording real appreciation—the consequence of accommodative monetary policies in the advanced economies. Many EMEs have correspondingly recorded high CADs. Thus, the slowdown in global growth and demand had some adverse impact on demand and growth in India, along with other EMEs, while also contributing to the widening of CAD.

The slowdown in India's growth or widening of its CAD is thus not surprising in a cross-country perspective. However, what is of concern is the extent of the slowdown and the magnitude of key imbalances in India. In 2012, amongst the G-20 economies, India had the third largest CAD after Turkey and South Africa, and India's fiscal deficit was the second largest after Japan. Compared to India, fiscal deficits in Turkey and South Africa are more modest, while Japan has a surplus on its current account. Thus, the concern in the Indian context is the high level of twin deficits which, as the crisis literature shows, can be a source of future vulnerability. Advanced economies with debt/GDP ratios above 80% of GDP and persistent CADs are vulnerable to rapid fiscal deterioration: government borrowing costs increase much more quickly at higher debt levels, especially for countries also running CADs (Greenlaw et al. 2013). Debt thresholds are, however, typically lower for emerging economies (Reinhart and Rogoff 2009). External vulnerabilities (large CADs) and domestic credit booms explain the NAFC, like the previous crises in emerging markets (Lane and Milesi-Ferretti 2010). These vulnerabilities were again visible in the most recent turmoil during June–August 2013, when the countries with large CADs were hit the most.

There is also a view that global growth in the pre-NAFC period was well above potential and the post-NAFC slowdown is a return to the underlying potential growth path. The potential growth of developing countries was 6.3% during 2005–07, whereas the actual growth during this period averaged two percentage points higher at 8.3%; the output gap which was close to zero in 2005 reached 3.5% in 2007 (World Bank 2013). Going forward, the World Bank estimates that potential growth for developing countries will be lower at 5.5% for 2012–15. Thus, the ongoing slowdown in the Indian economy can also be viewed as a part of the worldwide phenomenon of slower potential growth in the post-crisis period.

While the growth slowdown, the widening of the CAD and the widening of the fiscal deficit in India are directionally in line with global trends, the domestic inflation outturn depicts a different picture. Inflation moderated or was largely unchanged in many economies on the back of weak demand in the post-2008 period. In India, however, it has been substantially higher in the 2008–12 period; see Table 2.

The brief global overview clearly shows deterioration in growth and current account positions for a number of EMEs. Thus, the Indian slowdown and high CAD are not an aberration from these global trends, *but what is striking is the extent of the slowdown and the deterioration*. This suggests that domestic factors have added to headwinds from the global economy.

We now turn to the role of domestic macroeconomic factors and policies. At the same time, it is worth noting that the domestic financial sector exhibited striking resilience to the NAFC, reflecting India's prudent approach to domestic and external financial liberalization (Mohan 2011a).

### **3. Domestic Macroeconomic Policies and Growth Slowdown**

Part of the growth slowdown in the Indian context during 2011–13 vis-à-vis the immediate post-crisis years (2008–09 and 2009–10) could be attributed to the withdrawal of the large monetary and fiscal stimulus that was administered immediately after the crisis (Rajan 2013). Following the collapse of Lehman Brothers in October 2008 and the intensification of the NAFC, there were large capital outflows from India reflecting sales by foreign institutional investors in the domestic stock market. There was, however, no direct impact of the Lehman collapse on the Indian banking system due to its limited exposure to toxic assets, in turn reflecting the prudent regulatory framework in India with regard to the banks. The Indian financial markets also worked normally in the aftermath of the Lehman collapse, albeit with elevated volatility (Mohan 2011c). Notwithstanding these relatively positive domestic developments, there was a sharp slowdown in the domestic economy in the second half of 2008–09; there was a perception that the global developments would have a serious sustained adverse impact on the real economy, given the relatively high degree of openness of the Indian economy by that time. Moreover, a number of advanced economies had undertaken significant monetary and fiscal stimulus measures, although these were clearly in response to the sharp slowdown in their own growth and the severe disruptions to their financial markets. Here, it is relevant to note that the Reserve Bank of India was in a tightening mode as late as

July/August 2008 in response to the then prevailing domestic macroeconomic conditions. Nonetheless, given the sharp downturn in the global economy and the perceptions of these developments having a serious knock-on effect on the domestic economy, India, like many other EMEs, took both monetary and fiscal measures.

On the monetary side, the effective policy rate was cut sharply from 9.0% in September 2008 to 3.25% by April 2009; the cash reserve ratio was reduced from 9.0% to 5.0% over the same period. In addition, a number of other monetary and liquidity measures were instituted, which collectively had the potential to release liquidity of more than 10% of GDP (Mohan 2011c). On the fiscal side, the Government, *inter alia*, cut the CENVAT (the main Central indirect tax in the form of a VAT) rate from 14% to 8% between December 2008 and February 2009 and also increased plan expenditure. These measures were in addition to the stimulus already in the pipeline from implementation of the Pay Commission award and the agriculture debt waiver. Reflecting these actions as well as others, the Central government's headline gross fiscal deficit (GFD) increased from 2.5% of GDP in 2007–08 to 6.0% in 2008–09. Including bonds issued in lieu of cash subsidies with regard to oil, fertilizer and food sectors, the GFD/GDP ratio recorded an even sharper increase from 3.1% to an all-time high of 8.2%, which provides a better indicator of the boost to domestic demand from the fisc. Thus, both monetary policy and fiscal policy provided strong support—excessive with hindsight—to the domestic economy in 2008–09.

### *Monetary Policy*

In contrast to the prevailing pessimistic outlook, real GDP growth in 2009–10 and 2010–11, however, turned out to be much stronger as shown in Table 3. Stronger growth started to be reflected in high inflation, initially in food inflation (by end 2009) and in underlying inflation by April 2010. Elevated international commodity prices and domestic structural imbalances in the availability of select domestic food items (pulses and other protein items) added to the inflationary pressures. Monetary accommodation was, however, continued until early 2010. The subsequent withdrawal was done in a phased and gradual manner during 2010–11 reflecting a number of factors: the high degree of uncertainty about the global as well as domestic outlook, the perception that the initial phase of high inflation was due to food prices, and the real-time data on domestic economic activity underestimating the strength of domestic demand at that time (Subbarao 2011). As inflationary pressures persisted and intensified, the pace of monetary tightening was

**TABLE 3. Real GDP Growth: Forecast and Actual**

(%)

<i>Year and institution</i>	<i>Overall GDP</i>		<i>Industry</i>		<i>Services</i>	
	<i>Forecast/ projection</i>	<i>Latest estimate</i>	<i>Forecast/ projection</i>	<i>Latest estimate</i>	<i>Forecast/ projection</i>	<i>Latest estimate</i>
<b>2008–09</b>						
Professional Forecasters @	8.1	6.7	8.1	4.1	9.7	9.4
PMEAC	8.5					
RBI	8.0–8.5					
<b>2009–10</b>						
Professional Forecasters @	5.7	8.6	4.1	10.2	7.5	10.0
PMEAC	7.0–7.5					
RBI	6.0					
<b>2010–11</b>						
Professional Forecasters @	8.2	9.3	9.0	8.7	9.0	9.8
PMEAC	8.2		8.7		8.8	
RBI	8.0					
<b>2011–12</b>						
Professional Forecasters @	8.2	6.2	8.2	2.7	9.6	7.9
PMEAC	9.0		9.2		10.3	
RBI	8.0					
<b>2012–13</b>						
Professional Forecasters @	7.2	5.0	6.0	2.0	8.8	6.5
PMEAC	7.6		7.0		9.1	
RBI	7.3					

Source: Macroeconomic and monetary developments (various issues), RBI; Economic review (various issues), PMEAC; central statistical organization.

Note: @: Forecast made in the last quarter of the preceding fiscal year (taken from the April/May issue of MMD) (for example, forecast made in the quarter ended March 2008 for the fiscal year 2008–09 and so on).

increased in 2011–12. This was in contrast to the rapid monetary and liquidity stimulus—the effective policy rate moved from 9.00% (repo rate) in September 2008 to 3.25% (reverse repo rate) in April 2009. Table 4 shows that the quantum and the pace of the monetary stimulus were more than those in most major emerging markets, despite the fact that no Indian financial institution had been substantially affected by the NAFC.

While inflationary pressures since 2010 are the outcome of factors noted above, one issue is: Did these also reflect the lagged impact of the high growth in monetary and credit aggregates in the pre-NAFC period? In the face of large and increasing capital flows—from 2.7% of GDP in 2003–04 to 8.6% in 2007–08—the Reserve Bank had deployed a range of instruments to manage these capital flows, including sterilized interventions.



**TABLE 4. Policy Rates in Select Emerging Markets**

Month	Brazil	Chile	China	India	Indonesia	Israel	Korea	Malaysia	Mexico	Russia	S.Africa	Thailand
Dec-2007	11.25	6.00	7.47	7.75	8.00	4.00	5.00	3.50		10.00	11.00	3.25
Jun-2008	12.25	6.75	7.47	8.50	8.50	3.50	5.00	3.50	7.75	10.75	12.00	3.25
Sep-2008	13.75	8.25	7.20	9.00	9.25	4.25	5.25	3.50	8.25	11.00	12.00	3.75
Dec-2008	13.75	8.25	5.31	5.00	9.25	2.50	3.00	3.25	8.25	13.00	11.50	2.75
Mar-2009	11.25	2.25	5.31	3.50	7.75	0.75	2.00	2.00	6.75	13.00	9.50	1.50
Jun-2009	9.25	0.75	5.31	3.25	7.00	0.50	2.00	2.00	4.75	11.50	7.50	1.25
Dec-2009	8.75	0.50	5.31	3.25	6.50	1.00	2.00	2.00	4.50	8.75	7.00	1.25
Jun-2010	10.25	1.00	5.31	3.75	6.50	1.50	2.00	2.50	4.50	7.75	6.50	1.25
Dec-2010	10.75	3.25	5.81	6.25	6.50	2.00	2.50	2.75	4.50	7.75	5.50	2.00
Jun-2011	12.25	5.25	6.31	7.50	6.75	3.25	3.25	3.00	4.50	8.25	5.50	3.00
Dec-2011	11.00	5.25	6.56	8.50	6.00	2.75	3.25	3.00	4.50	8.00	5.50	3.25
Jun-2012	8.50	5.00	6.31	8.00	5.75	2.50	3.25	3.00	4.50	8.00	5.50	3.00
Dec-2012	7.25	5.00	6.00	8.00	5.75	2.00	2.75	3.00	4.50	8.25	5.00	2.75
May-2013	8.00	5.00	6.00	7.25	5.75	1.50	2.50	3.00	4.00	8.25	5.00	2.50

Source: Haver Analytics.

Nonetheless, growth in broad money averaged more than 21% per annum during 2005–08, with growth in non-food credit averaging 28% and real GDP growth 9.5% during this three-year period. Actual growth in monetary and credit aggregates was also above the indicative projections set out by the Reserve Bank at the beginning of financial years. All these would suggest signs of overheating in the pre-NAFC period; indeed, inflation indicators did start increasing in 2007–08, but were compounded by the increasing oil prices at that time. Thus, the stimulus measures adopted after the NAFC added to the incipient inflationary pressures already emerging in the economy.

A related issue is: Is higher food inflation entirely the outcome of the minimum support price (MSP) policy and the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) (Bhalla 2013b)? Although a large increase in the MSP for the various crops has taken place during the recent years, especially since 2008–09, the causation is arguable. For example, there was a large increase in the actual prices (as measured by the wholesale price index (WPI)) of pulses during 2005–06 and 2006–07, but there was only a moderate increase in the MSP of these items. The MSP was then increased in 2007–08 and especially substantially in 2008–09, but even then the cumulative variation in the MSP between March 2005 and March 2010 was trailing the cumulative variation in actual prices for the three major pulses (*arhar*, *moong*, and *urad*) and also wheat, although the situation has reversed since then, as can be seen in Table 5. Why did the prices of pulses increase substantially beginning 2005–06? Strong growth in domestic food demand from 2003–04, accompanied by near plateauing of domestic production of pulses, is one plausible factor. Dietary patterns shifted in favor of protein-rich items on the back of higher incomes and this trend then seems to have got support from the MGNREGA scheme. The increases in MSP could then be viewed as an attempt by the government to incentivize farmers to increase domestic production of pulses to meet the rising demand.

Here, it is also relevant to note that the Reserve Bank of India had pointed to the possibility of overheating<sup>1</sup> as early as 2006, but there was a substantial

1. The RBI in its mid-term review in October 2006 had noted:

“Recent developments, in particular, the combination of high growth and consumer inflation coupled with escalating asset prices and tightening infrastructural bottlenecks underscore the need to reckon with dangers of overheating and the implications for the timing and direction of monetary policy setting. While there is no conclusive evidence of overheating in the Indian economy at the current juncture, the criticality of monitoring all available indications that point to excess aggregate demand is perhaps more relevant now than ever before.” (RBI, 2006: 25).

**T A B L E 5. Minimum Support Prices and Wholesale Price Index**

(March 2003 = 100)

Item	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	Mar-09	Mar-10	Mar-11	Mar-12	Mar-13	
Rice	WPI	100.0	97.7	101.1	104.0	113.4	129.7	149.7	161.7	165.4	173.7	204.2
	MSP	100.0	103.8	105.7	107.5	109.4	121.7	169.8	188.7	188.7	203.8	235.8
	Gap	0.0	6.2	4.5	3.4	-3.5	-6.1	13.5	16.7	14.1	17.3	15.5
Wheat	WPI	100.0	104.8	104.1	120.5	132.8	144.4	155.6	178.4	178.7	177.7	212.0
	MSP	100.0	101.6	103.2	104.8	121.0	161.3	174.2	177.4	188.7	207.3	217.7
	Gap	0.0	-3.1	-0.8	-13.0	-8.9	11.7	12.0	-0.5	5.6	16.7	2.7
Gram	WPI	100.0	96.4	95.6	124.9	145.8	151.5	145.0	140.7	152.7	217.0	233.4
	MSP	100.0	114.8	116.8	117.6	118.4	131.1	141.8	144.3	172.1	229.5	245.9
	Gap	0.0	19.0	22.2	-5.8	-18.8	-13.5	-2.2	2.5	12.7	5.8	5.4
Arhar	WPI	100.0	106.9	98.9	107.8	129.0	152.2	174.8	246.0	222.8	197.2	231.0
	MSP	100.0	103.0	105.3	106.1	106.8	117.4	151.5	174.2	265.2	280.3	291.7
	Gap	0.0	-3.6	6.5	-1.6	-17.2	-22.8	-13.3	-29.2	19.0	42.1	26.3
Moong	WPI	100.0	89.3	91.2	128.2	143.7	117.6	140.3	266.5	222.8	211.0	247.0
	MSP	100.0	103.0	106.0	114.3	114.3	127.8	189.5	207.5	275.9	300.8	330.8
	Gap	0.0	15.4	16.2	-10.9	-20.5	8.7	35.0	-22.1	23.8	42.5	33.9
Urad	WPI	100.0	97.1	94.5	141.1	166.5	136.1	157.8	236.5	232.9	202.9	214.1
	MSP	100.0	103.0	106.0	114.3	114.3	127.8	189.5	189.5	255.6	285.7	323.3
	Gap	0.0	6.1	12.2	-19.0	-31.4	-6.1	20.0	-19.9	9.8	40.8	51.0

Source: Database on the Indian Economy, Reserve Bank of India.

Note: MSP = Minimum Support Prices; WPI = Wholesale Price Index. The row 'Gap' gives difference (percent) of MSP over WPI.

amount of skepticism about this assessment at that time. No doubt, there is a two-way feedback between actual prices and the MSP, but the previous analysis suggests that the higher order of initial increases in the MSP was necessitated by higher food demand on the back of high growth and rising incomes. The MSP story focuses on relative inflation. Similarly, the view that the MGNREGA has led to wage pressures stresses the cost-push view of inflation. But, high relative inflation cannot lead to persistent high overall inflation, unless it is generalized and accommodated. For example, non-food non-fuel consumer price index (CPI) inflation (rural and urban combined based on the new CPI series) has been around 8% since June 2012 (it was higher at around 10% during January–May 2012), which is suggestive of generalized pressures. In the face of persistently high food inflation, monetary policy can keep overall inflation within its comfort zone, but this would involve excessive tightening and large output costs for the other sectors of the economy. Thus, productivity gains in food production provide a more durable solution to increase food production in a non-inflationary manner.

Finally, the higher outlays on MGNREGA and the higher food subsidy bill are ultimately reflected in revenue deficits, which then add to domestic demand. If the revenue deficits had been contained through adjustments in other expenditures/higher revenues, then there might have been more merit in the cost-push argument—but only for explaining the short-term increase in inflation, not its persistence.

#### *REAL INTEREST RATES: BORROWERS*

The extent of monetary accommodation can be better gauged through movements in real interest rates, although these are beset with a number of conceptual issues in regard to the measurement of inflation expectations. The relevant measure of inflation and inflation expectations could differ for the various economic agents/groups in the country: while consumer inflation may be more relevant for households, manufactured products WPI inflation could be more appropriate for the industrial sector. Accordingly, in this paper, real lending rates are assessed both in terms of headline WPI inflation and non-food manufactured products (NFMP) WPI inflation. Real deposit rates are analyzed in relation to consumer inflation and also in relation to the inflation expectations of households. Apart from the issue of the appropriate inflation rate, a related issue is: Are inflation expectations better captured by the year-on-year (y-o-y) inflation rate or some sort of average inflation rate? If inflation expectations are relatively well-anchored, it is likely that the y-o-y inflation matters less and the more appropriate yardstick would be

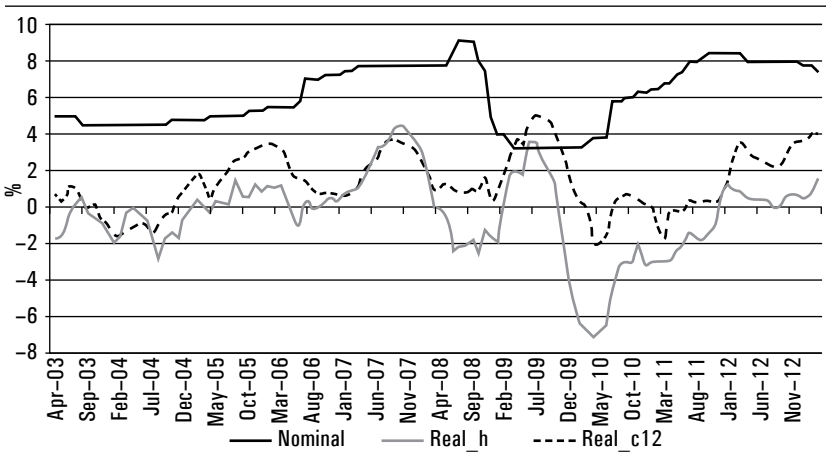
some sort of average inflation rate. Indeed, the empirical exercise carried out later on in the paper favors a real rate using a 12-month moving average of y-o-y inflation. Accordingly, the real interest rate is also presented using this indicator of inflation for the real policy rate.

While the nominal policy rate was being increased gradually during 2010 and 2011, the real policy rate was highly negative with respect to y-o-y headline WPI inflation and marginally negative with respect to y-o-y NFMP inflation. Thus, arguably, monetary policy was still in an accommodative mode over this phase, although most commentators characterized it as being too tight. Real policy rates moved from negative territory during 2010 and 2011 to positive territory in 2012, especially when the core inflation indicator is used as shown in Figure 1. The real interest rate trajectory is broadly similar in terms of the 12-month moving average of inflation, and, as can be expected, smoother. According to this measure, and using NFMP inflation, the real policy rate initially fell from an average of 2.2% in 2007–08 to 0.9% in 2008–09, but then edged up to 2.0% in 2010–11. It fell back to an average of 1.0% in 2011–12 (reflecting the more than expected increase in NFMP inflation), but again edged higher to 1.9% in 2012–13 (on the back of higher policy rate and some moderation in NFMP inflation). The real policy rate in terms of CPI inflation has been generally negative since mid-2008 (RBI 2014).

Bank lending rates and market rates broadly mirror the policy rates both in terms of nominal and real rates. Figure 2 shows that real commercial paper rates increased during the course of 2012 and were higher than those in the pre-crisis period, especially in terms of core inflation. In regard to commercial bank lending rates, the assessment is somewhat complicated by the move of the banking system from the benchmark prime lending rate system to the base rate system in July 2010, but the directional movement is broadly similar to that emanating from trends in the commercial paper rates; see Figure 3.

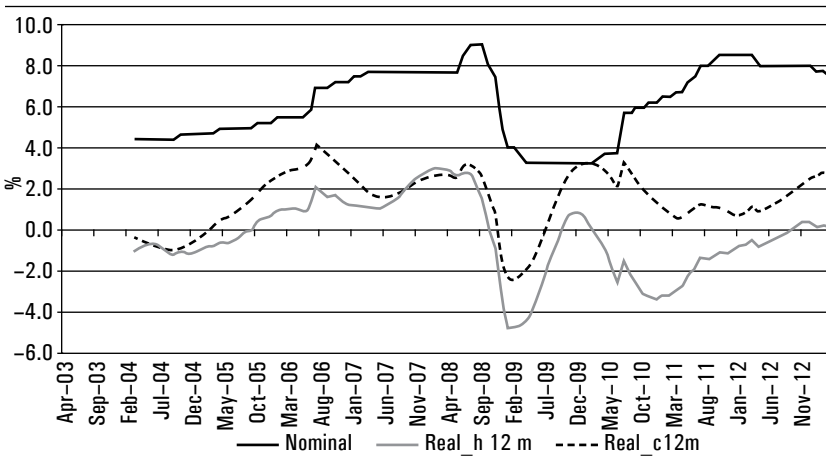
As shown in Figure 4, higher interest rates also had an adverse impact on corporate profitability and hence corporate savings and investment during this period. Corporate savings fell from 9.4% of GDP in 2007–08 to 7.2% in 2011–12, while corporate investment fell even more from 17.3% of GDP to 10.6%; see Table 6. What explains the larger decline in corporate investment vis-à-vis corporate savings since 2007–08? First, policy bottlenecks—such as obtaining environmental permissions, fuel linkages, or carrying out land acquisition—led to stalling of a number of large projects, which may in turn have discouraged new investment (Government of India 2013a). Second, the

**FIGURE 1. Real Policy Rate**



Source: Reserve Bank of India.

Note: Real\_h and Real\_c are real policy rates, defined as nominal policy rate adjusted for headline WPI inflation and non-food manufactured products WPI inflation, respectively.

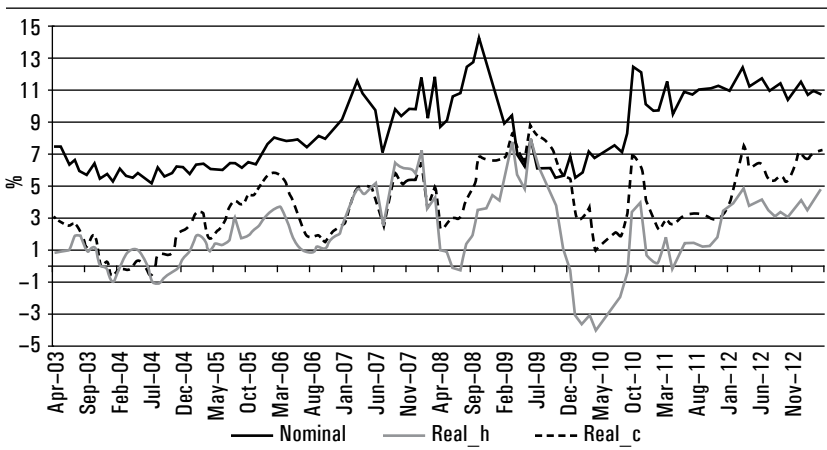


Source: Reserve Bank of India.

Note: Real\_h12m and Real\_c12m are real policy rates, defined as nominal policy rate adjusted for 12-month moving average of headline WPI inflation and non-food manufactured products WPI inflation, respectively.

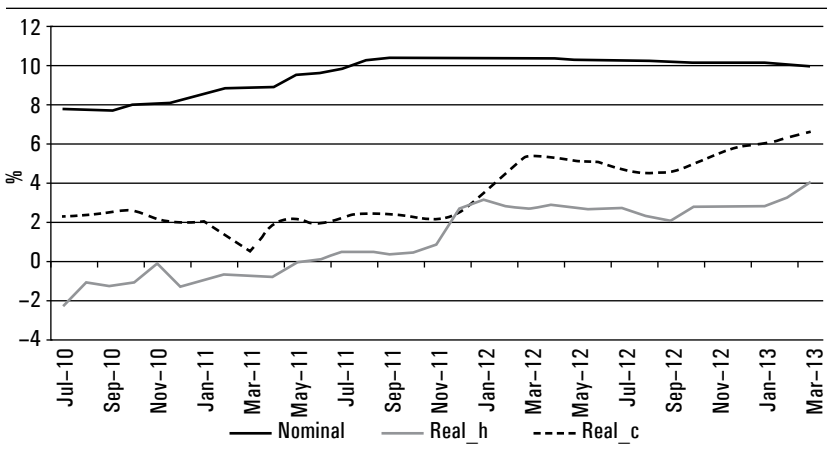
large increase in fiscal deficit and the near trebling of government borrowing requirements appears to have led to some crowding out of the private sector. Third, there is a perception that the decline in domestic corporate investment since the NAFC is due to more outward foreign direct investment (FDI) on the back of domestic rigidities that impede domestic investment. This perception is, however, not borne out by data. Outward FDI by Indian corporates indeed increased substantially in the pre-NAFC phase from 0.3% of GDP in 2003-04 to 1.5% in 2007-08, but during this period domestic

**FIGURE 2. Commercial Paper Rate**



Source: Reserve Bank of India and Haver Analytics.  
 Note: Real\_h and Real\_c are real commercial paper rates, defined as nominal rate adjusted for headline WPI inflation and non-food manufactured products WPI inflation, respectively.

**FIGURE 3. Base Rate**

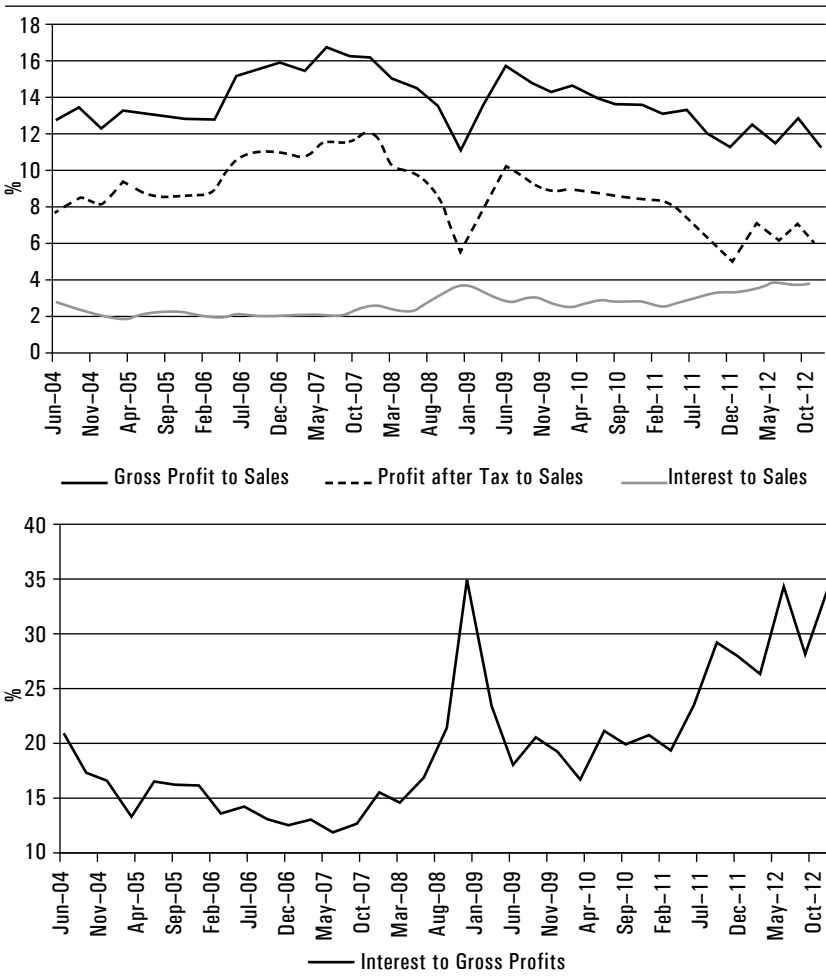


Source: Reserve Bank of India and Haver Analytics.  
 Note: Real\_h and Real\_c are real base rates, defined as nominal rate adjusted for headline WPI inflation and non-food manufactured products WPI inflation, respectively.

investment had also increased significantly. Since then, outward FDI has fallen to its 2003–04 levels (it was 0.4% of GDP in 2012–13) in tandem with the declining trend in domestic investment as can be seen in Table 9. The decline in domestic investment since 2007–08, therefore, cannot be attributed to more investment abroad.

Thus, as nominal as well as real lending rates tightened, especially beginning early 2012, the pace of investment activity and economic activity

**FIGURE 4. Corporate Performance**



Source: CEIC.

slowed down as expected. While monetary policy supported growth during 2009–11, it contributed to the slowdown in the subsequent phase. Econometric evidence for India and elsewhere suggests that a 100 bps increase in the policy interest rate is associated, on average, with a growth slowdown of 25–50 bps, and the actual impact on growth during each monetary cycle of easing/tightening depends, inter alia, on the extent of transmission to market rates (Kapur and Behera 2012; RBI 2013c). The scale



**TABLE 6. Savings and Investment**

<i>Item</i>	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	
	(% to GDP)									
1 Household sector	23.2	23.6	23.5	23.2	22.4	23.6	25.2	23.5	22.3	
a. Financial saving (i-ii)	11.0	10.1	11.9	11.3	11.6	10.1	12.0	10.4	8.0	
(i) Financial assets	13.7	13.8	15.8	17.8	15.5	12.9	15.3	12.7	10.8	
of which: Bank deposits	5.5	5.4	7.2	10.0	7.8	7.4	6.1	5.7	5.5	
(ii) Financial liabilities	2.5	3.7	5.0	6.6	3.8	2.9	3.1	3.6	3.1	
b. Saving in physical assets	12.1	13.4	11.7	11.9	10.8	13.5	13.2	13.1	14.3	
b. Private corporate sector	4.6	6.6	7.5	7.9	9.4	7.4	8.4	7.9	7.2	
3 Public sector	1.3	2.3	2.4	3.6	5.0	1.0	0.2	2.6	1.3	
of which: Government administration and quasi government bodies	-3.3	-2.3	-2.1	-1.0	0.5	-2.8	-3.1	-0.6	-2.0	
4 Total domestic savings (1+2+3)	29.0	32.4	33.4	34.6	36.8	32.0	33.7	34.0	30.8	
5 Gross capital formation	26.2	32.5	34.3	35.9	38.0	35.5	36.3	37.0	35.4	
a. Public sector	6.6	7.4	7.9	8.3	8.9	9.4	9.2	8.4	7.9	
b. Private corporate sector	6.6	10.3	13.6	14.5	17.3	11.3	12.1	13.4	10.6	
c. Household sector	12.1	13.4	11.7	11.9	10.8	13.5	13.2	13.1	14.3	
d. Valuables	0.9	1.3	1.1	1.2	1.1	1.3	1.8	2.1	2.7	
6 Gross fixed capital formation	24.6	28.7	30.3	31.3	32.9	32.3	31.7	31.7	30.6	
7 Change in stocks	0.7	2.5	2.8	3.4	4.0	1.9	2.8	3.1	2.1	
8 Errors and omissions	0.7	0.4	0.4	0.2	0.1	-1.2	0.2	-0.1	-0.4	
9 Total investment (5+8 = 6+7+8+5d)	26.9	32.8	34.7	35.7	38.1	34.3	36.5	36.8	35.0	
<i>Memo:</i>										
10 Saving-investment balance, net (4-9)	2.2	-0.4	-1.2	-1.1	-1.3	-2.3	-2.8	-2.8	-4.2	
a. Household financial savings, net	11.0	10.1	11.9	11.3	11.6	10.1	12.0	10.4	8.0	
b. Private corporate sector, net	-2.0	-3.8	-6.1	-6.6	-7.9	-3.9	-3.8	-5.4	-3.6	
c. Public sector, net	-5.3	-5.1	-5.5	-4.7	-3.9	-8.5	-9.0	-5.8	-6.6	
11 Household financial savings (net) available for private corporate sector (10a+10c)	5.7	5.0	6.3	6.5	7.8	1.7	3.0	4.5	1.5	

Source: Central Statistical Organization.

of the slowdown in the recent period has been much greater than suggested by these estimates and we will revisit this issue a little later.

On the extent of the slowdown, some caution is, however, warranted in reaching definitive conclusions, given the large revisions to GDP data in the recent past. There is divergence between industrial growth indicated by the data on the index of industrial production (IIP) and the Annual Survey of Industries (ASI), with IIP growth rates being significantly lower than the ASI growth rates in most of the years (Economic Advisory Council to the Prime Minister 2013). During 2003–12, IIP growth averaged almost four percentage points lower than the real growth of the gross value added from ASI data, with the difference being pronounced in 2011–12, the latest year for which the ASI data are available; see Table 7. Given that the IIP data are available at a high frequency (monthly) and provide a critical input for macroeconomic policy formulation, substantial revisions in IIP data can lead to incorrect policy inferences and actions. Accordingly, it is important to

**TABLE 7 Industrial Growth**

(%)

Year	Index of industrial production		Annual survey of industries <sup>@</sup>			GDP at constant prices	
	Manu- facturing	General	Output	Net value added	Gross value added	Manu- facturing	Industry <sup>#</sup>
2000–01	5.4	4.9	-0.1	-10.3	-8.4	7.3	6.0
2001–02	2.9	2.8	2.0	-1.3	0.9	2.3	2.6
2002–03	6.0	5.8	14.4	16.3	13.9	6.9	7.2
2003–04	7.4	7.0	7.8	11.5	9.5	6.3	7.3
2004–05	13.2	11.7	22.3	20.6	17.7	7.4	9.8
2005–06	10.3	8.6	11.4	17.2	15.0	10.1	9.7
2006–07	15.0	12.9	19.4	20.1	19.4	14.3	12.2
2007–08	18.4	15.5	10.0	16.1	14.6	10.3	9.7
2008–09	2.5	2.5	11.1	3.2	4.2	4.3	4.4
2009–10	4.8	5.3	11.6	9.7	11.5	11.3	9.2
2010–11	9.0	8.2	18.5	12.6	12.0	9.7	9.2
2011–12	3.0	2.9	15.3	10.7	10.4	2.7	3.5
2012–13	1.2	1.0	n.a	n.a	n.a	1.0	2.1
<i>Averages</i>							
1980s	7.4	7.6	8.1	7.3	7.9	6.2	5.8
1990s	6.5	6.3	7.3	6.8	6.9	5.8	5.7
2000s	8.6	7.7	11.0	10.3	9.8	8.0	7.8
2003–08	12.8	11.1	14.2	17.1	15.2	9.7	9.7
2008–11	4.8	4.7	14.1	9.1	9.5	7.0	6.6

Source: Central Statistical Organization.

Notes: @: Growth rates are based on ASI data deflated by WPI-Manufactured Products index.

#: including construction.

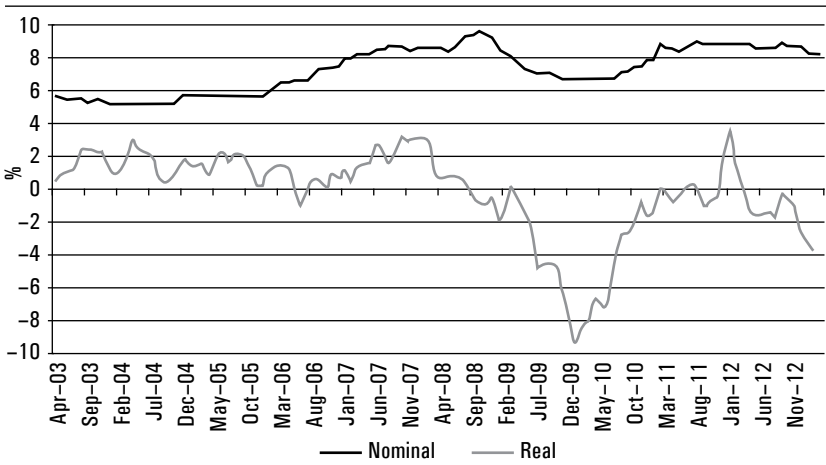
understand and reconcile the differences between the two sets of industrial data. Since it is the ASI data that determine the final GDP estimates, the problems in collecting IIP data should be corrected on a priority basis so that more accurate information is available for a short-term policymaking process.

#### *REAL INTEREST RATES: DEPOSITORS*

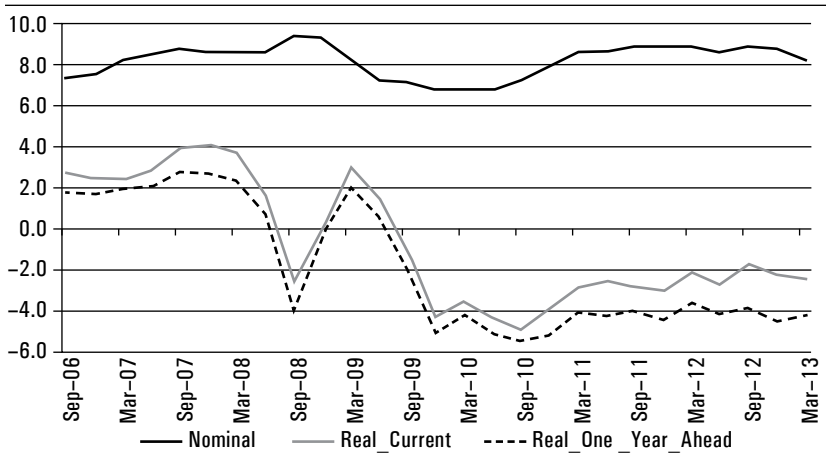
Turning to deposit rates, the real rate in terms of consumer inflation has been broadly negative since 2008–09 reflecting the persistently elevated level of consumer inflation on the back of high food inflation. Thus, even as nominal deposit rates increased from the pre-2008 levels, real rates fell from an average of (+) 1.5% during 2003–08 to (–) 1.9% during 2008–13. Real deposit rates turn out to be more negative, if data on inflation expectations of households are used, which are available from 2006 onward. According to these data, during 2008–13, the real deposit rate averaged (–) 2.1% using households’ “current” inflation expectations and (–) 3.3% using households’ “one-year ahead” inflation expectations; see Figure 5. Administered interest rates on small savings have also been negative in real terms in the recent years and growth in small savings has been low or negative in this period.

Negative real deposit rates, along with the growth slowdown, seem to have contributed to the decline in household financial savings accompanied by a switch toward savings in physical assets (gold and property). Financial savings (gross) of households fell from 15.5% of GDP in 2007–08 to 10.8% in 2011–12, reflecting decline in all the major constituents—bank deposits, life insurance funds, and shares and debentures; see Table 6. The recent decline has taken gross financial savings in 2011–12 to below its 1997–98 levels (10.9% of GDP) and just close to its levels in the early 1990s (10.4% in 1992–93). Financial savings (net) of households declined by 3.6 percentage points of GDP between 2007–08 and 2011–12, while physical savings went up by almost a similar magnitude. Households’ physical investments in gold increased from an average of 1.1% of GDP during 2003–08 to 2.7% by 2011–12. The overall household savings at 22.3% in 2011–12 were almost the same as in 2007–08 as shown in Table 6. The stability of the overall household savings rate is remarkable in the face of the significant deceleration in economic activity. Thus, rather than smoothing consumption, households appear to have focused on maintaining their overall savings propensities, perhaps a reflection of the elevated uncertainty in the economic environment. At the same time, the significant deterioration in public finances has not been countered by households through higher savings, which would indicate non-Ricardian behavior and also presents indirect evidence of some role for countercyclical fiscal policy.

**FIGURE 5. Deposit Rate**



Source: Reserve Bank of India and Haver Analytics.  
 Note: Real interest rate is nominal deposit rate less y-o-y CPI (Industrial Workers) inflation.



Source: Reserve Bank of India and Haver Analytics.  
 Note: Real\_Current and Real\_One\_Year\_Ahead are nominal deposit rate less "current" and "one year ahead" inflationary expectations, respectively, of households as per RBI's survey.

However, the significant decline in financial savings, if not reversed quickly, has adverse implications for medium-term growth prospects as well as external sustainability.

Does the relationship between real deposit rates and savings hold in other periods? Household savings, for example, increased between 1997-98 (18% of GDP) and 2003-04 (23%), even as deposit rates declined. Nominal deposit rates declined over this period and the decline was quite substantial (from around 11% to around 5-6%). But, this period was also marked by

a significant fall in inflation. Real deposit interest rates during the early part of this period were almost unchanged and highly positive (4–5% until 2001–02, and 2–3% during 2002–03 and 2003–04; these were negative in one year only, 1998–99). Thus, the decline in nominal deposit rates tracked the inflation movements—or perhaps trailed the decline in inflation, given the fact that it takes some time for economic agents to revise their inflation expectations. The downward movement in banks’ nominal deposit rates was also facilitated by the downward adjustment in the administered interest rates on small savings during this period. The available evidence, therefore, suggests that real deposit rates do matter for household savings.

### *Fiscal Policy*

As noted, the fiscal stimulus measures in response to the NAFC included cuts in the CENVAT rate and higher plan expenditure, in addition to the already announced Pay Commission award and agricultural debt waiver. Reflecting these measures as well as the impact of growth slowdown on revenues, the Centre’s headline fiscal deficit/GDP ratio jumped from 2.5% in 2007–08 to 6.0% in 2008–09 and further to 6.5% in 2009–10; see Table 8. The deficit, including the impact of bonds issued in lieu of cash subsidies for oil and others, as mentioned earlier, recorded an even higher order of increase from 3.1% of GDP in 2007–08 to 8.2% in 2008–09, but then moderated somewhat to 6.6% in 2009–10. In nominal terms, the Centre’s fiscal deficit increased from ₹1,269 billion in 2007–08 to ₹3,370 billion in 2008–09 (*vis-à-vis* the budgeted amount of ₹1,333 billion) and ₹4,185 billion in 2009–10, an increase of 230% in just two years. Despite this substantial increase in its borrowing requirements, the borrowing costs declined—the weighted average yield on Central government’s dated securities fell from 8.12% in 2007–08 to 7.23% in 2009–10—benefiting from the monetary policy stance and the large open-market operations of the Reserve Bank.

The fiscal stimulus began to be withdrawn in 2011–12 and 2012–13, and this could have had some impact on the immediate growth outcome. The quality of fiscal stimulus provided in the aftermath of the NAFC also seems to have exacerbated the slowdown in 2011–13. Revenue expenditure of the Central government increased from 11.9% of GDP in 2007–08 to 14.1% in 2008–09 (and maintained at this level in 2009–10). This increase was partly on account of subsidies, which increased from 1.4% of GDP during 2007–08 to 2.3% in 2008–09 and remained around these levels till 2012–13. Table 8 shows that the increase in subsidies was initially due to fertilizers and then due to the incomplete and delayed pass-through of high international crude oil prices to domestic prices. Oil subsidies increased from 0.1% of GDP during 2003–08 to 1.0% in 2012–13. However, these data represent only the

**TABLE 8. Fiscal Position of the Center**

<i>Item</i>	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
1											
Gross fiscal deficit (GFD)	4.3	3.9	4.0	3.3	2.5	6.0	6.5	4.8	5.7	5.2	4.8
Adjusted GFD *	[4.6]	[3.9]	[4.7]	[4.3]	[3.1]	[8.2]	[6.6]	[4.9]	[5.7]	[4.9]	[4.8]
2											
Gross primary deficit	-0.0	-0.0	0.4	-0.2	-0.9	2.6	3.2	1.8	2.7	2.0	1.5
3											
Revenue deficit	3.5	2.4	2.5	1.9	1.1	4.5	5.2	3.2	4.4	3.9	3.3
4											
Revenue receipts	9.3	9.4	9.4	10.1	10.9	9.6	8.8	10.1	8.4	8.7	9.3
a. Gross Tax	9.0	9.4	9.9	11.0	11.9	10.8	9.6	10.2	9.9	10.4	10.9
(i) Corporation tax	2.2	2.6	2.7	3.4	3.9	3.8	3.8	3.8	3.6	3.6	3.7
(ii) Income tax	1.5	1.5	1.6	1.7	2.1	1.9	1.9	1.8	1.8	2.0	2.1
(iii) Customs duties	1.7	1.8	1.8	2.0	2.1	1.8	1.3	1.7	1.7	1.6	1.6
(iv) Union excise	3.2	3.1	3.0	2.7	2.5	1.9	1.6	1.8	1.6	1.7	1.7
(v) Service tax	0.3	0.4	0.6	0.9	1.0	1.1	0.9	0.9	1.1	1.3	1.6
b. Non-tax revenue	2.7	2.5	2.1	1.9	2.1	1.7	1.8	2.8	1.4	1.3	1.5
5											
Capital receipts	7.4	6.2	4.9	3.5	3.4	6.1	7.0	5.2	6.0	5.5	5.1
a. Market borrowings (net)	3.1	1.6	2.9	2.7	2.6	4.4	6.1	4.2	5.4	4.9	4.3
b. Disinvestment receipts	0.6	0.1	0.0	0.0	0.8	0.0	0.4	0.3	0.2	0.2	0.5
6											
Total receipts	16.7	15.6	14.3	13.5	14.3	15.7	15.8	15.4	14.3	14.2	14.4
7											
Revenue expenditure	12.8	11.9	11.9	12.0	11.9	14.1	14.1	13.4	12.8	12.6	12.6
a. Interest payments	4.4	3.9	3.6	3.5	3.4	3.4	3.3	3.0	3.0	3.2	3.3
b. Subsidies (I to IV)	1.6	1.4	1.3	1.3	1.4	2.3	2.2	2.2	2.4	2.6	2.0
(i) Food	0.9	0.8	0.6	0.6	0.6	0.8	0.9	0.8	0.8	0.8	0.8
(ii) Fertilizers	0.4	0.5	0.5	0.6	0.7	1.4	0.9	0.8	0.8	0.7	0.6
(iii) Petroleum	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.5	0.8	1.0	0.6
(iv) Others	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

(Table 8 Contd)

(% to GDP)

(Table 8 Contd)

8	Capital expenditure	3.8	3.5	1.8	1.6	2.4	1.6	1.7	2.0	1.8	1.7	2.0
	a. Capital outlay	1.2	1.6	1.5	1.4	2.1	1.4	1.5	1.7	1.5	1.5	1.8
9	Total expenditure	16.6	15.4	13.7	13.6	14.3	15.7	15.8	15.4	14.5	14.3	14.6
	<i>Memo:</i>											
	Combined (Center and States) Finances											
10	Gross fiscal deficit	8.2	7.2	6.5	5.4	4.0	8.3	6.9	6.9	7.7	7.5	6.9
11	Gross primary deficit	2.0	1.3	1.0	0.0	-1.2	3.3	2.4	2.4	3.3	2.9	2.2
12	Revenue deficit	5.7	3.6	2.7	1.3	0.2	4.3	3.2	3.2	4.3	3.7	2.9

Source: Reserve Bank of India; Union Budget documents; and, Economic Advisory Council to the Prime Minister.

Notes: Data for 2012-13 and 2013-14 pertain to revised and budget estimates, respectively. Figures in parenthesis are provisional estimates.

\*: GFD including off-budget liabilities.

actual cash outgo on subsidies and exclude the expenditure covered through the issuance of bonds during 2005–09, especially in 2008–09.

The demand for oil is generally adjudged to be relatively price inelastic. In the Indian context, the problem has been compounded by the relatively sticky administered prices. However, estimates in this paper show that demand for oil does respond to prices in a significant manner. The estimated price elasticity of demand for petrol is (–) 0.66, for diesel is (–) 0.36 and for kerosene oil is (–) 0.54 as shown in Annex Table 1 (Annex 1). The price elasticity estimates for India in this paper are comparable to those of other countries: according to the four literature surveys covered in Hamilton (2008), the long-run price elasticity of demand for gasoline is (–) 0.6 to (–) 0.9. Given the estimated elasticities for India, and also the significant amount of under-recoveries, it is evident that had domestic prices reflected movements in international prices, there would have been some demand response, along with some expenditure switching leading to suppressed demand for other commodities. Furthermore, there would have been a beneficial impact on the fiscal balance, and lower crowding out of the private sector. Moreover, lower oil consumption demand would have led to lower oil imports and hence some containment of the CAD. We can use the estimated price elasticity to illustrate the likely impact on the CAD by focusing on diesel, which accounts for the bulk—almost 45%—of domestic petroleum consumption. During 2011–12 and 2012–13, the under-recoveries in the case of diesel are estimated to be around ₹11 per liter<sup>2</sup> (around 25% of the actual prevailing prices). If the diesel prices had been raised to eliminate the under-recoveries, then the estimated price elasticity of 0.36 suggests that diesel consumption would have been around 9% lower. This would have then lowered overall imports and the CAD by around 0.5% of GDP each in 2011–12 and 2012–13, a sizable impact.

In contrast to the upward trend in revenue expenditure, capital outlays of the Centre were broadly stagnant over this period at around 1.5% of GDP; see Table 8. Empirical evidence indicates that fiscal multipliers for government capital outlays exceed government consumption expenditure in India in the long run as in many other countries (Jain and Kumar 2013). According to Tapsoba (2013), the fiscal multiplier for government consumption is unity in the first year, but then turns negative and the long-run impact

2. Total domestic consumption of diesel was 65 million tonnes (MT) in 2011–12 and 69 MT in 2012–13, and the corresponding under-recoveries were ₹812 billion and ₹921 billion (Petroleum Planning and Analysis Cell, <http://ppac.org.in/>). Thus, the under-recovery was around ₹13 per kg or ₹11 per liter.



is also negative; in contrast, the first-year and the long-run multipliers for government investment are more than unity. These multiplier estimates, in conjunction with the actual stimulus nature, would suggest that higher revenue expenditures provided only short-lived boost to activity, while higher capital outlays would have had a more durable impact on economic activity. Thus, the quality of the fiscal stimulus in the aftermath of the NAFC imparted volatility of the growth path. Had ample fiscal buffers been there prior to the crisis, capital outlays could have been increased significantly, providing more durable support to the economy.

On the revenue side, gross tax collections have declined, as could be expected given the weakness in growth. Interestingly, the ratio of direct taxes—both income tax and corporate tax—to GDP has been broadly unchanged from 2007–08, but the pre-crisis upward trend has been halted. The decline in tax/GDP ratio is, therefore, on account of indirect taxes, especially excise collections, reflecting initially the drastic reduction in tax rates as part of stimulus measures, and later, the sharp slowdown of the manufacturing sector. While the CENVAT rate was increased to 10% in the Union Budget 2010–11 (February 2011) and further to 12% in the Union Budget 2011–12 (March 2012), it was still below the pre-NAFC level of 14%.

Given the actual growth outturn, it is apparent that stimulus measures were higher than necessary, and the need for the second and the third packages is debatable, as Finance Minister Chidambaram himself noted in April 2013.<sup>3</sup> Similarly, as the Economic Advisory Council to the Prime Minister (2013) observed, the recovery in growth was grossly underestimated initially, which had an adverse impact on adjustments in the monetary and fiscal stance in 2009–10 and 2010–11 and on inflation: “In retrospect, we could have tightened monetary conditions much earlier, and rolled back the tax incentives at least one full year earlier” (Economic Advisory Council to the Prime Minister 2013: 3). Moreover, the quality of the fiscal stimulus, with its focus on revenue expenditure/tax cuts and stagnant capital outlays, added to demand pressures. These demand pressures were mirrored in high inflation; and, negative real deposit rates, on the back of high inflation, contributed to higher gold imports and higher CAD. Similarly, the incomplete pass-through of high international crude prices to domestic petroleum prices dampened the expenditure adjustment effect, which could have reduced oil imports and hence reduced the pressure on the CAD—an issue which we discuss in Section 4.

3. Remarks at the Peterson Institute for International Economics in Washington, D.C., on April 19, 2013, available at [http://www.iie.com/events/event\\_detail.cfm?EventID=275](http://www.iie.com/events/event_detail.cfm?EventID=275).

*Saving–Investment Balance: Private Sector Crowding Out*

The worsening of fiscal balances was mirrored in the deterioration in public savings from 5% of GDP in 2007–08 to 1.3% in 2011–12, largely on account of government administration. Thus, with the decline in both public and private corporate savings, the overall savings rate fell from 36.8% in 2007–08 to 30.8% in 2011–12, with the large chunk of decline occurring in 2011–12; see Table 6. On the investment side, public and private corporate investment fell by 7.7 percentage points between 2007–08 and 2011–12, but the strong increase in household investment (reflecting the increase in physical savings in gold and property) was effective in reducing the decline in the overall investment rate from 38.1% to 35.0%. The decline in the investment rate during 2008–12 at 3.1% of GDP was, thus, less than that of 6.0% in domestic savings, in turn mirrored in the significant widening of the CAD.

Since households are net savers, while the private corporate sector and the public sector are net users of financial savings, a more analytical way of looking at the S–I trends is to examine the trends in net balances of these three sectors. The household sector's net financial savings declined from 11.6% of GDP in 2007–08 to 8.0% in 2011–12; the public sector's net S–I deficit increased from (–) 3.9% to (–) 6.6% over this period. Thus, the net financial savings of the household sector that could become available to the private corporate sector (after taking into account the draft of the resources by the public sector) fell from an average of 6.3% of GDP during 2003–08 to just 2.7% during 2008–12; these numbers suggest significant crowding out of the private sector in the post-NAFC period, which then had an adverse impact on investment activity. Arguably, the higher fiscal stimulus directly did crowd out the private corporate sector. Furthermore, the stimulus added to inflationary pressures, which then led to negative real interest rates, greater demand for gold and lower household financial savings. If the fiscal stimulus had been moderate, then arguably interest rates for the corporate sector could have declined more than they did and that would have also provided an incentive for higher investment.

In this context, a valid counter-argument is that there was no crowding out: the higher public S–I gap since 2008–09 just reflects the fact that the government was responding to the collapse in the corporate sector investment. This counter-narrative would be true if the public S–I gap had increased on account of higher public investment. However, the public investment rate actually declined from its 2007–08 level as shown in Table 6. The increase in the public S–I gap, thus, is attributable to the decline in public savings and only a part of it is attributable to explicit stimulus measures

(the reduction in excise duty). A large part of the decline in public savings owes to the increase in subsidies, especially oil; cash subsidies increased by one percentage point of GDP in 2008–09, but the increase was almost three percentage points once bonds issued in lieu of cash subsidies are also included. Higher government subsidies clearly were not a response to lower corporate investment.

But, why has corporate investment not picked up, even though the public S–I gap has narrowed since 2010–11? First, the public S–I gap is still higher than the pre-NAFC level. Second, and more importantly, the households' financial savings rate continues to decline. The policy bottlenecks alluded to earlier and monetary measures have also impacted corporate investment. The high CAD increased external vulnerability. Overall, the combined impact of the increase in the public S–I gap (given that it was driven by subsidies and lower revenues), and lower household financial savings reduced the availability of domestic resources to the corporate sector. The impact on corporate investment was also exacerbated by domestic policy bottlenecks, monetary measures and limited space for further external finance.

### *Quantifying the Growth Slowdown*

The discussion above suggests that the accommodative monetary and fiscal policies put in place after the NAFC boosted growth during 2009–11, and then the phased reversal of these policies, partial so far in the case of fiscal policy, contributed to the growth slowdown during 2011–12 and 2012–13. Annex 2 empirically assesses the impact of monetary policy and global conditions on domestic growth. The results show that an increase of 100 bps in the real interest rate leads to a reduction of around 30 bps in GDP growth (non-agricultural non-community services GDP) with a lag of two quarters; see Annex Table 2. As regards global demand, a one percentage point reduction in global exports reduces domestic growth by almost 13 bps, while one percentage point reduction in global GDP growth reduces domestic growth by almost 50 bps. The estimated equations track actual growth relatively well for the 2003–08 period, but deviations are observed since then. The estimated equation under-predicts the actual outturn during 2009–10 by around 3.5 percentage points and overpredicts by around three percentage points on average during 2011–13; see Figure 6. Given that the model includes the monetary policy and the global demand impacts, one potential reason for the deviation since 2009 is the role of the fiscal policy, which has not been included in the explanatory variables.

**FIGURE 6. Real GDP Growth**

Source: Reserve Bank of India and the Authors' Estimates.

India's structural primary deficit increased by 4.0 percentage points of GDP in 2008–09 (IMF 2013a), reflecting both the stimulus measures in response to the fiscal crisis as well as other measures like the implementation of the Pay Commission award. The structural primary deficit subsequently fell, reflecting the fiscal consolidation measures, but the decline has been modest; the withdrawal of the stimulus was only 1.4 percentage points during the three-year period 2010–13 or an annual average of 0.35 percentage point of GDP. Assuming that the fiscal multiplier for India is similar (around 0.5) to that for other EMEs (Bi et al. 2013), the stimulus of 4% of GDP added almost two percentage points to the growth in 2009–10. In contrast to the large stimulus, the withdrawal of the stimulus was gradual and remains incomplete. The annual fiscal consolidation of 0.35% of GDP during 2010–11 to 2012–13, combined with the multiplier of 0.5, would suggest an adverse impact of less than 20 bps per annum on growth. Even if the fiscal multiplier is assumed to be higher at unity, the annual growth impact would be around 35 bps, abstracting from the lags. Thus, fiscal stimulus can largely explain the high growth in 2009–10, but the subsequent consolidation can explain only a very modest part of the slowdown. One view is that the growth gap during the 2011–13 period appears to be the outcome of the policy bottlenecks noted earlier—such as obtaining environmental permissions, fuel linkages, or carrying out land acquisition, which led to stalling of

a number of large projects, and discouraged new investment (Bhalla 2013a). However, it is not clear as to whether these factors were more binding in the post-NAFC period vis-à-vis the pre-NAFC period and, if yes, to what extent.

#### **4. The External Sector: Current Account**

Large CADs in the 1980s, averaging around 2% of GDP, and their financing with debt flows was one of the factors contributing to the balance of payments crisis in the early 1990s. Since then and until the recent episode, India's CAD had remained modest, averaging 0.6% of GDP during 1991–92 to 2007–08. This was the result of consistent structural reforms throughout the period, including an overhaul of the external trade and payments regime, practice of a flexible but managed exchange rate, accompanied by judicious management of the capital account. Furthermore, the capital account was characterized by a healthy financing mix of non-debt flows and stable debt flows. Excess capital flows were absorbed by the Reserve Bank on its balance sheet leading to a large increase in foreign exchange reserves, as also improving the quality of its balance sheet with high-quality foreign assets. Foreign exchange interventions were appropriately sterilized through a mix of instruments (Mohan and Kapur 2011). The acquisition of foreign assets, apart from providing comfort to the external sector, was also important from the viewpoint of expansion of the Reserve Bank's balance sheet to meet the economy's monetary and credit needs (Mohan et al. 2013).

Against this backdrop of a healthy and vibrant external sector, widening of the CAD to 4.8% of GDP in 2012–13 has attracted a lot of concern (Subbarao 2013a). The widening reflects a variety of factors. First, sluggish global growth since 2009 has impacted India's export markets. As estimates reported later show, given India's income elasticities for exports and imports, the sharper decline in external demand vis-à-vis domestic demand could have contributed to the widening of the CAD. Second, despite sluggish global growth, international commodity prices have remained at relatively elevated levels, supported by ultra accommodative monetary policies of the advanced economies, abundant global liquidity, and near zero interest rates. India, being a net importer, especially of crude oil, has been hit hard. Net oil imports, already high at 4.1% of GDP in 2007–08, rose to 5.9% by 2012–13. Third, domestic supply and policy constraints led to increase in imports of coal—from around 0.5% of GDP during 2004–08 to 0.9% in 2011–12—notwithstanding large domestic stocks. Similarly, exports have suffered from the restrictions on iron ore mining activity since 2010–11.

Fourth, gold imports increased significantly from around 1.5% of GDP during 2004–08 to 3.0% in 2011–12 and 2012–13—high domestic inflation and negative real deposit rates on the one hand and sharp gains in international gold prices and expectations of further gains on the other hand seem to have made gold an attractive asset. Given the oil and gold trends, the non-oil non-gold current account balance (a surplus of around 4%) and the non-oil non-gold trade balance (a deficit of around 2%) have been broadly unchanged between 2007–08 and 2012–13; see Table 9. It is, however, important to note that the deterioration in overall trade balance as well as the non-oil non-gold trade balance had started well before the NAFC. The high growth phase of 2003–08 had led to a very significant increase in the trade deficit from 2.2% of GDP in 2003–04 to 7.4% in 2007–08 and further to 10.6% in 2012–13; the non-oil non-gold trade balance moved from a surplus of 1.6% in 2003–04 to a deficit of 1.9% in 2007–08 and, which as noted above, remained around these levels till 2012–13. The movements in the trade balance were mirrored in the current account balance over this period, although the impact was muted somewhat by the upward movement in net invisibles surplus (from 4.5% in 2003–04 to 6.1% in 2007–08). In the post-crisis period, the net invisibles surplus has been range-bound around its 2007–08 level and thus has not provided incremental support to the Balance of Payments (BoP).

Fifth, the real appreciation of the rupee might have also played a role. Here, the analysis is somewhat complicated by the divergences in alternative available measures of the real effective exchange rate (REER) as shown in Figure 7. For example, the RBI index exhibits a real depreciation of 4% between March 2008 and March 2010, while the BIS index exhibits a modest appreciation of 1%; in sharp contrast, the OECD and the IMF indices show a substantial real appreciation of 12–14% between March 2008 and March 2010. One reason for the difference is that the RBI index uses WPI inflation for India and CPI inflation for partner countries, whereas the OECD/IMF measures use CPI inflation for all countries. Since Indian CPI inflation has been higher than WPI inflation in the past few years, the OECD/IMF indices show a higher real appreciation. According to Bayoumi et al. (2011) and Chinn (2006), WPI- and unit-labor cost (ULC)-based REERs may be better indicators of price competitiveness than CPI-based measures. We discuss this issue further in Annex 3.

Sixth, the financing of the elevated CAD is also an issue. Inward FDI flows jumped significantly during 2006–09, but have since then more than halved from 3.4% of GDP in 2008–09 to 1.4% in 2012–13. Portfolio flows and debt flows financed almost two-thirds of the CAD in 2012–13.

**TABLE 9. Balance of Payments**

<i>Item</i>	<i>(% to GDP)</i>										
	<i>2003-04</i>	<i>2004-05</i>	<i>2005-06</i>	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	
1 Merchandize exports	10.7	11.8	12.6	13.6	13.4	15.4	13.4	14.6	16.5	16.6	
a. Oil	0.6	1.0	1.4	2.0	2.3	2.2	2.1	2.4	3.0	3.3	
2 Merchandize imports	13.0	16.5	18.8	20.1	20.8	25.2	22.0	22.3	26.7	27.3	
a. Oil	3.3	4.1	5.3	6.0	6.4	7.6	6.4	6.2	8.3	9.2	
b. Gold	1.1	1.5	1.3	1.5	1.3	1.7	2.1	2.4	3.0	2.9	
c. Non-oil non-gold	8.6	10.9	12.3	12.6	13.0	15.8	13.5	13.7	15.4	15.1	
d. Net oil imports	2.8	3.2	3.9	4.0	4.1	5.4	4.3	3.8	5.3	5.9	
3 Trade balance	-2.2	-4.7	-6.2	-6.5	-7.4	-9.7	-8.7	-7.6	-10.1	-10.6	
a. Non-oil balance	0.5	-1.5	-2.3	-2.5	-3.2	-4.4	-4.3	-3.9	-4.8	-4.7	
b. Non-oil non-gold balance	1.6	-0.0	-1.0	-1.0	-1.9	-2.7	-2.2	-1.5	-1.8	-1.8	
4 Invisibles, net	4.5	4.3	5.0	5.5	6.1	7.5	5.9	4.9	6.0	5.8	
a. Services, net	1.6	2.1	2.8	3.1	3.1	4.4	2.6	2.9	3.4	3.5	
b. Private transfers, net	3.5	2.8	2.9	3.1	3.4	3.6	3.8	3.1	3.4	3.5	
c. Investment income, net	-0.6	-0.6	-0.6	-0.7	-0.4	-0.5	-0.5	-1.0	-0.9	-1.2	
5 Current account balance	2.3	-0.3	-1.2	-1.0	-1.3	-2.3	-2.8	-2.7	-4.2	-4.8	
a. non-oil balance	5.0	2.8	2.7	3.0	2.9	3.1	1.5	1.1	1.1	1.1	
b. Non-oil non-gold balance	6.1	4.3	4.0	4.6	4.2	4.8	3.6	3.5	4.1	4.1	
6 Capital flows, net	2.7	3.9	3.1	4.8	8.6	0.6	3.8	3.6	3.6	4.8	
a. Capital inflows	12.3	13.7	17.3	24.6	35.4	25.8	25.3	29.2	25.6	25.6	
b. Capital outflows	9.6	9.8	14.3	19.8	26.8	25.2	21.5	25.6	21.9	20.7	
7 Foreign investment, net	2.2	1.8	1.9	1.6	3.5	0.7	3.7	2.3	2.1	2.5	
a. FDI inward	0.7	0.8	1.1	2.4	2.8	3.4	2.4	1.5	1.8	1.5	
b. FDI outward	0.3	0.3	0.7	1.6	1.5	1.6	1.1	1.0	0.6	0.4	
c. Portfolio	1.8	1.3	1.5	0.7	2.2	-1.1	2.4	1.8	0.9	1.5	

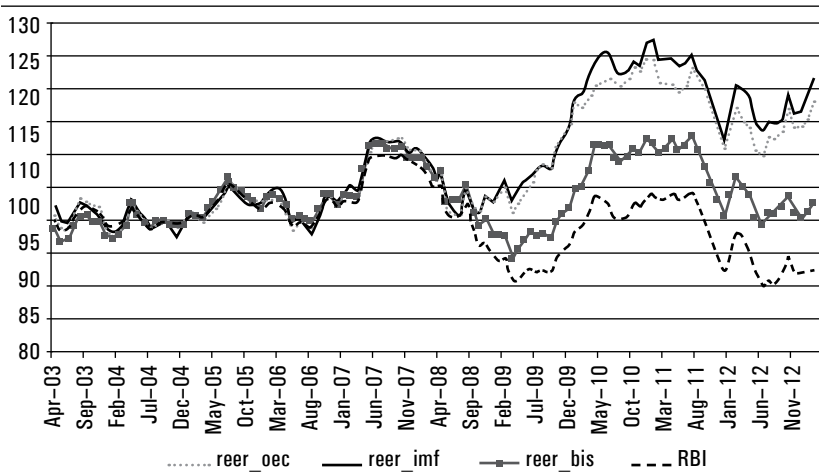
*(Table 9 Contd)*

(Table 9 Contd)

Item	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
8 Debt flows, net	-0.1	1.4	1.3	3.1	3.3	1.0	1.2	1.8	1.6	1.7
a. External assistance	-0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.1	0.1
b. External commercial borrowings	-0.5	0.8	0.3	1.7	1.8	0.5	0.2	0.7	0.5	0.5
c. Short-term trade credits	0.2	0.5	0.4	0.7	1.3	-0.2	0.6	0.6	0.4	1.2
d. Non-resident deposits	0.6	-0.1	0.3	0.5	0.0	0.3	0.2	0.2	0.6	0.8
9 Others	0.6	0.7	-0.1	0.1	1.8	-1.0	-1.1	-0.5	-0.1	-0.2
10 Overall balance	5.1	3.6	1.8	3.9	7.4	-1.6	1.0	0.8	-0.7	0.2
<i>Memo:</i>										
Current account balance (US \$ billion)	14	-2	-10	-10	-16	-28	-38	-46	-78	-88
Capital flows, net (US \$ billion)	17	28	25	45	107	7	52	62	68	89
External debt	17.2	18.1	16.8	17.5	18.0	20.3	18.2	17.5	19.7	21.2
Short-term debt (residual maturity)	1.6	4.3	3.1	3.7	4.4	5.2	4.6	5.0	5.7	6.7
Import cover of forex reserves—goods and services (months)	14.0	11.6	9.5	10.2	12.0	8.4	9.3	7.9	6.1	6.0
Forex reserves/short-term debt by residual maturity (%)	1071	441	595	546	565	438	427	346	296	237
Foreign exchange reserves (US \$ billion)	113	142	152	199	310	252	279	305	294	293

Source: Reserve Bank of India, Ministry of Finance.



**FIGURE 7. Real Effective Exchange Rate (REER) (2004–05 = 100)**

Source: Bank for International Settlements (BIS), International Monetary Fund (IMF), Organization for Economic Co-operation and Development (OECD), and Reserve Bank of India.

The stock of external commercial borrowings (including trade credits and non-residents investment in domestic securities) has increased multi-fold over the past decade from around US \$30 billion (5–7% of GDP) during the four-year period 2000–04 to US \$115 billion (9.2% of GDP) in 2007–08 and further to US \$225 billion (12.2% of GDP) in 2012–13. While the jump between 2003–04 and 2007–08 could perhaps be largely attributed to the sustained high growth of the Indian economy, the increase since then has occurred in an environment of slowing domestic growth. The unconventional monetary policies in the advanced economies made such borrowings quite attractive compared to domestic sources. Moreover, there has been a phased liberalization of the policy regime on the ceilings in regard to external borrowings and investments by non-residents in domestic securities. Concomitantly, high external borrowings might have also been the outcome of the crowding out of the private sector in view of the fiscal stimulus and the high government borrowings since the NAFC.

### *Exports and Imports: Role of the Exchange Rate*

The widening of the CAD over the past five years, as noted earlier, reflects a sluggish global economy, elevated international commodity prices, higher gold imports, plateauing of the invisibles surplus, and domestic supply constraints that have led to higher imports/lower exports. The role

of the exchange rate has, however, attracted some debate. As the Economic Advisory Council to the Prime Minister (2013) notes, the conventional approach to an enlarged CAD would be to allow the currency to adjust downwards. This adjustment, they argued, might not lead to the expected changes in both imports and exports in view of: (a) large gold and oil imports and their relative insensitivity to exchange rate movements and (b) much of exports are exported as part of supply chains and in such situations large depreciation does not escape notice and is often neutralized by price renegotiations. “It is therefore not surprising that the substantial depreciation of 20 per cent in the external value of the rupee (against the US dollar) did not boost exports,” whereas “China was able to register 14 per cent growth in the dollar value of exports in December 2012 and as much as 25 and 22 per cent growth in January and February 2013. The Chinese yuan appreciated against the dollar over the past year by about 3 per cent” (Economic Advisory Council to the Prime Minister 2013: 33–34). A few comments on this issue are appropriate.

First, although the rupee depreciated by more than 20% in nominal terms between mid-2011 and end-2012, a large part of it offset the higher inflation differentials. Second, based on US dollar terms data, India’s exports indeed performed poorly vis-à-vis China in 2012; however, in order to assess the exchange rate–export linkage, it is appropriate to take a medium-term perspective, given the lags with which exchange rate movements impact trade volumes. Table 10 shows that India’s average export growth since the NAFC is comparable to that of China, whereas it was much lower in the pre-NAFC period. As regards the exchange rate, the Indian REER recorded an average annual depreciation of 1.0% during 2008–12, compared to an annual average appreciation of 4.1% in Chinese currency (both based on the BIS data). Given that the global economy is a common factor to both the economies, the REER movements favored India in the post-NAFC period and this appears to be reflected in the relative export performance.

Third, weak domestic supply response due to domestic rigidities, which are now well recognized, and which had an adverse impact on the domestic investment climate, could have offset the expected impact of depreciation. Estimates of single equation export demand functions implicitly assume elastic export supplies. Finally, the counterfactual—what would have been the path of exports had there been no real depreciation in 2012—might be the appropriate benchmark to judge the efficacy of exchange rate. Moreover, other policies such as taxation changes as well as government efforts toward product- and market-diversification also play an important role.

TABLE 10. Export Growth: China and India

(%)

Year	Volume of exports		Value of exports (US \$ terms)				Variation in REER			
	Total exports		Total exports		Non-oil exports		China		India	
	China	India	China	India	China	India	China	India	China	India
2003	20.0	13.9	34.6	17.1	34.5	16.1	-7.1	-0.2		
2004	18.2	14.7	35.4	30.0	35.9	26.7	-3.0	1.1		
2005	24.5	12.3	28.4	30.0	28.0	26.4	-1.1	3.5		
2006	24.2	10.5	27.2	22.3	27.5	17.7	1.3	-0.8		
2007	19.3	16.4	25.6	23.1	25.8	18.2	3.7	6.5		
2008	8.2	5.0	17.3	29.7	17.0	34.5	8.5	-4.8		
2009	-10.7	3.3	-15.9	-15.2	-15.9	-17.9	4.4	-5.4		
2010	28.4	15.4	31.3	37.3	31.4	37.5	-0.7	11.7		
2011	9.4	13.8	20.3	33.8	20.3	31.0	2.5	-0.4		
2012	5.7	1.2	7.9	-2.0	8.0	-8.3	6.0	-6.1		
<i>Averages</i>										
2003-07	21.2	13.6	30.3	24.5	30.3	21.0	-1.2	2.0		
2008-12	8.2	7.7	12.2	16.7	12.1	15.4	4.1	-1.0		

Source: International Financial Statistics, IMF; World Economic Outlook, IMF; Bank for International Settlements.

Note: REER data are based on Bank for International Settlements (BIS) indices.

#### VALUE ADDED IN EXPORTS

As Rangarajan and Mishra (2013) and Economic Advisory Council to the Prime Minister (2013) note, the imported intermediate content of exports can dampen the competitive effects of depreciations. In this context, the joint OECD-WTO data on trade statistics on a value added basis are useful and relevant. These data, inter alia, provide the domestic value-added embodied in exports as a percentage of exports. This indicator provides a simple measure that illustrates how much value-added is generated throughout the economy for a given unit of exports. The lower the ratio, the higher the foreign content and so the higher the importance of imports to exports (OECD 2013).

For aggregate exports, the OECD-WTO data indicate that the value added ratio for India is higher than many Asian EMEs as can be seen in Table 11. The ratio averaged 82.5% for India during 1995–2009 (averaged over the five data points: 1995, 2000, 2005, 2008, and 2009). India's ratio was above that of European countries and the emerging Asian countries such as China (73.4%), Korea (64.3%), Malaysia (59.8%), Philippines (59.5%), and Thailand (64.9%). The major non-oil exporting countries with ratios above India during the sample included: Australia (87.0%), Japan (87.1%), United States (89.1%), Argentina (88.5%), Brazil (89.1%), and Indonesia (83.3%). Between 1995 and 2009, the value added ratio declined for India as

**TABLE 11. Value Added Export Ratio: Total Domestic Value Added Share of Gross Exports (%)**

<i>Country</i>	<i>1995</i>	<i>2000</i>	<i>2005</i>	<i>2008</i>	<i>2009</i>
Australia	88.2	86.5	87.0	86.1	87.5
Canada	76.5	69.2	74.9	78.7	80.5
France	82.2	75.5	75.2	72.8	75.3
Germany	81.3	75.6	74.4	72.2	73.4
Israel	71.4	66.2	62.1	65.1	69.4
Italy	78.1	74.7	72.9	77.2	79.9
Japan	93.2	90.1	86.3	80.7	85.2
Korea	76.3	67.1	62.3	56.6	59.4
Mexico	73.5	68.2	69.3	69.4	69.7
Netherlands	65.3	61.8	65.6	63.4	64.1
Spain	79.4	73.0	72.2	75.1	79.3
Switzerland	76.8	72.2	70.7	69.6	71.5
Turkey	88.8	84.7	79.2	73.7	78.2
United Kingdom	79.3	81.6	79.8	81.1	82.7
United States	91.6	91.1	88.9	85.4	88.7
Argentina	91.0	89.9	87.2	86.3	87.9
Brazil	90.3	88.5	87.0	88.5	91.0
China	88.1	81.2	63.6	66.7	67.4
Chinese Taipei	64.2	64.6	57.8	52.2	58.5
India	90.4	87.2	80.5	76.3	78.1
Indonesia	85.3	80.7	82.2	82.6	85.6
Malaysia	59.7	57.0	58.5	61.9	62.1
Philippines	69.1	54.1	54.4	58.3	61.6
Russian Federation	89.3	87.5	91.8	92.6	93.1
Saudi Arabia	98.0	98.2	97.0	97.1	97.0
South Africa	88.3	83.9	83.4	78.9	83.5
Thailand	70.2	65.2	61.5	62.2	65.5
EU27	90.5	87.4	86.5	84.9	86.4

Source: OECD (available at [http://stats.oecd.org/Index.aspx?DataSetCode=TIVA\\_OECD\\_WTO](http://stats.oecd.org/Index.aspx?DataSetCode=TIVA_OECD_WTO)).

for many other countries. The decline for India at 12.3 percentage points was less than that of China (20.8 percentage points) and Korea (16.9 percentage points), and was higher than other Asian EMEs.

The trends visible for aggregate exports carry through for most manufacturing industries, that is, the domestic value added ratio is higher for India for most manufacturing industries vis-à-vis other major economies. This is true for major industries such as food products, “textiles, leather and footwear,” chemicals, metals, machinery and equipment, electrical equipment, transport equipment. The only category for which India lags the other economies in the manufacturing is the residual manufacturing group (manufacturing n.e.c.; recycling); this could perhaps be reflecting higher exports of oil products, on the back of the increase in domestic refining capacity, and the concomitant increase in crude oil imports. The ratio for this group

declined from 85.7% in 1995 to 50.9% in 2008 and 2009. Interestingly, it is in the exports of services that the ratios for India are relatively lower than other economies (even though ratios for services' activities are higher than manufacturing activities).

These data would suggest that for India, given the relatively lower level of imported content of inputs in exports, the hypothesis that exchange rate depreciation can dampen the competitive effects of depreciation should not be strongly binding, at least in a cross-country perspective. Even as the value-added ratio has declined since the mid-1990s, the ratio for India is well ahead of many countries, especially the regional peers. Thus, if the exchange rate channel is effective in other countries, these data would suggest its efficacy in the Indian context as well.

#### *PRICE AND INCOME ELASTICITIES: CROSS-COUNTRY EMPIRICAL EVIDENCE*

As Table 12 shows, cross-country analysis broadly confirms that both prices and demand conditions have a significant impact on exports and imports. For a sample of developing and industrial countries, average long-run price and income elasticities are estimated at (-) 1.0 and 1.5, respectively, for both exports and imports (Senhadji 1998; Senhadji and Montenegro 1999). These findings are supported by studies, focusing on individual countries or for a more homogeneous group of countries; for example, Hooper et al. (2000) for G-7, Chinn (2013) for Japan, Bayoumi et al. (2011) for euro area, Thorbecke and Atsuyki (2012) for Germany, and Aziz and Li (2008) for China.

Elasticities based on aggregate trade flows could be biased as aggregate trade flows may have feedback effects on exchange rates (Auboin and Ruta 2013). Therefore, recent studies have focused on firm-wise behavior to estimate elasticities. For example, Berman et al. (2012) use a French firm-level data set and find that high-performance firms react to depreciation by increasing significantly more their markup and by increasing less their export volume and they find an average export elasticity of (-) 0.4 with respect to the exchange rate. Since aggregate exports are concentrated in high-productivity firms, heterogeneous pricing-to-market may partly explain the weak impact of exchange rate movements on aggregate exports. Using Chinese firm-level data, Tang and Zhang (2012) estimate an exchange rate elasticity of (-) 0.4 for exports (Table 12).

Currency undervaluation stimulates economic growth, particularly for developing countries (Rodrik 2008). Export surges in developing countries tend to be preceded by a large real depreciation, which is associated with significant reallocation of resources toward the export sector, especially into new products and markets (Freund and Pierola 2012). Real appreciation

**TABLE 12. Income and Price Elasticities of Exports and Imports**

Study	Period	Country coverage	Exports		Imports	
			Income elasticity	Price elasticity	Income elasticity	Price elasticity
1	2	3	4	5	6	7
Senhadji (1998)	1960–93	60 developing and industrial countries			Mean: 1.5 Min: 0.0 Max: 5.5	Mean: 1.1 Min: 0.0 Max: 6.7
Senhadji and Montenegro (1999)	1960–93	53 developing and industrial countries	Mean: 1.5 Min: 0.2 Max: 4.3	Mean: -1.0 Min: -0.0 Max: -4.7		
Hooper et al. (2000)	1956–94	Canada France Germany Italy Japan UK US	1.1 1.5 1.4 1.6 1.1 1.1 0.8	-0.9 -0.2 -0.3 -0.9 -1.6 -1.5 -1.6	1.4 1.6 1.5 1.4 0.9 2.2 1.8 1.3	0.9 0.4 0.1 0.4 0.3 0.6 0.3 0.9
Aziz and Li (2008)	1995–2006	China	3.8			
Bayoumi et al. (2011)	1980–2009	Euro area Extra-euro area Intra-euro area China (firm-level data)	1.7–1.9 1.6–1.9 1.4–1.5	0.0 to -0.6 -0.1 to -0.3 +0.4 to -1.3 -0.4		
Tang and Zhang (2012)	2000–06	China (firm-level data)	0.7–2.6	-0.6 to -1.0		
Thorbecke and Atsuyuki (2012)	1980–2009	Germany		-0.4		
Berman et al. (2013)	1995–2005	France (firm-level data)		-0.3 to -0.7		
Chinn (2013)	1990–2012	Japan	1.0–4.0		-2.9 to -6.7	0.2–1.0

Source: Respective studies.

leads to a deterioration in the current account balance, savings, and exports, and the impact is more pronounced in developing countries (Kappler et al. 2013). Export markets are characterized by the well-known hysteresis phenomenon (Baldwin and Krugman 1989): appreciation over some period of time could lead to loss of markets and this impact could persist even if the exchange rate returns to its neutral level after a period of appreciation. Both the United States and the United Kingdom experienced such effects in the 1980s and potentially such effects can be larger for countries like India with relatively greater share of low-tech exports.

Overall, as Auboin and Ruta (2013) conclude, currency undervaluation is generally found to have a positive short-term impact on exports, but the persistence of these effects appears to be limited to developing countries. Price elasticities of exports are statistically significant, but the magnitudes differ across countries and, as some studies show, are sensitive to the choice of variables. However, it also needs to be recognized that the exchange rate is just one of the factors that impact export performance. For example, sector-specific policies, effective industrial policy and fortuitous timing are more critical factors in the phenomenal growth in China's exports during 2000–07, although China's exchange rate policy also had a role (Berger and Martin 2013).

#### *RECENT INDIAN EVIDENCE*

Recent studies present mixed evidence on the efficacy of the exchange rate on exports in the Indian context (Rangarajan and Mishra 2013), although studies during the 1990s generally found high and statistically significant elasticities (for example, Joshi and Little 1994). Aziz and Chenoy (2012), using quarterly data for 1996–2008, find a positive and statistically significant impact of external demand (real GDP growth in partner countries) on exports; the estimated coefficient was 4.6. However, the coefficient on the REER at (–) 0.6, although with the correct sign, was statistically insignificant. None of the sub-sectors in manufacturing, including the low, value-added labor-intensive segments such as textiles, leather, and gems and jewellery were found to display any statistically significant sensitivity to the exchange rate. Rangarajan and Patra (unpublished), discussed in Rangarajan and Mishra (2013), find qualitatively similar results. IMF (2012), quoted in Rangarajan and Mishra (2013), finds negative and statistically significant impact of REER on exports—the long-run elasticity is estimated at (–) 0.1 for the full sample period (1982–2011) and somewhat higher at (–) 0.2 for the post-1990s period. The corresponding long-run elasticities on external demand were found to be 2.9 and 2.2 for the respective periods.

Although these studies suggest a much larger role played by external demand than exchange rates in determining exports, there are three possible explanations as to why existing studies fail to find strong export–exchange rate elasticities (Rangarajan and Mishra 2013). First, it is hard to estimate the elasticities using macrodata—exports and exchange rates are highly endogenous. Second, the imported intermediate content of exports can dampen the competitive effects of depreciations. Third, macroequations do not allow the export–exchange rate elasticity to vary depending on the position of the aggregate supply curve. Nonetheless, as they note, policy should be directed toward ensuring that the rupee does not appreciate in real terms and further worsen the trade balance, while also factoring in the potential impact of depreciation on capital flows and balance sheets of corporate and financial institutions.

Against this backdrop of cross-country evidence and the mixed evidence on the efficacy of the exchange rate on exports in the recent studies on India, we revisit the issue and estimate export and import demand equations (Annex 3). Empirical results show that both external demand (world real exports) and the REER have the expected impact on India’s exports. Annual estimates using data for 1980–81 to 2007–08 show that an increase of 1% in world real exports is associated with an increase of 1.1–1.4% in India’s exports in the long run. As regards the real exchange rate, estimates suggest that 10% real appreciation leads to a reduction of almost 2.1–6.5% in the volume of exports in the long run, see Annex Table 3.

Moving to estimates based on the post-reforms sample (1996–97 to 2007–08) and using quarterly data, the elasticity with respect to external demand is in a range of 1.6–1.9 (when world exports are used as an indicator of external demand) and 2.6–3.6 (world GDP as an indicator of external demand) across alternative estimates, somewhat higher than the annual estimates. Second, the absolute coefficient on the REER is substantially higher than the annual estimates: the coefficient is more than unity for RBI’s REER and even higher for REERs of OECD and IMF, although the results are sensitive to inclusion of oil exports; see Annex Table 4 (Annex 3). Third, the results for overall exports broadly hold for exports of the major manufactured sub-groups (chemicals, manufactures, and machinery). Overall, these estimates show a stronger impact of global conditions—both demand and price factors—on India’s exports and this seems consistent with the phased opening of the Indian economy to the global economy, and the process of domestic deregulation and liberalization result in a greater role for market forces. The quarterly results are, however, subject to the caveat of a shorter sample period, and the associated estimation uncertainties.



For imports, the long-run coefficients are also on the expected lines, that is, real appreciation and stronger domestic activity both contribute to higher imports. Income elasticity of imports with respect to domestic industrial GDP turns out to be around 1.55 in the long run in all the cases. Thus, the volume of imports changes more than proportionally in relation to variations in domestic demand. The coefficient on the REER ranges from 0.19 to 0.42 and, as in the case, of exports, is higher for the RBI-REER; therefore, 10% real appreciation increases imports by almost 2–4% across the various specifications; see Annex Table 6. Thus, our estimates suggest that the REER does affect India's trade performance in the expected direction.

#### *DETERMINANTS OF GOLD IMPORTS*

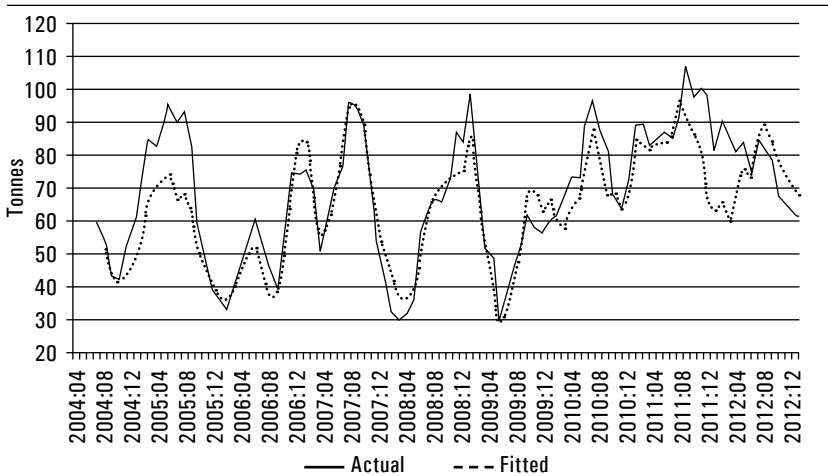
Gold imports jumped from a monthly average of 62 tonnes during 2004–08 to 82 tonnes during 2009–13, while the increase in US dollar terms was much sharper from US\$1.2 billion per month to US\$4.1 billion over the same period, reflecting higher gold prices. High domestic inflation, low domestic deposit rates, bank loans for gold, the substantial increase in international gold prices, movements in the Indian rupee, and pent-up demand are potential contributors to the jump in the quantum of gold imports (Economic Advisory Council to the Prime Minister 2013; Rangarajan 2013; RBI 2013a; Vaidyanathan 1999). An econometric analysis of these potential determinants of gold demand is presented in Annex 4. The impact of gold prices on gold demand is not obvious a priori: on the one hand, as with any normal good, one would expect an increase in its price to reduce the quantity demanded, ceteris paribus; but on the other, recent price increases may increase interest in acquiring gold for the investment returns, if recent price increases are interpreted as signaling a likelihood of further increases in the future (Starr and Tran 2008). Gold is also a potential instrument for asset diversification by economic agents; therefore, movements in domestic stock prices are also included in the model. The real estate market is also a potential contributor to gold demand, and perhaps even more important than stock prices in the Indian context, but this variable is not included due to lack of time-series data.

The results indicate that higher gold prices—nominal as well as real—have a significant dampening impact on gold imports in the first few months, but have a lagged positive impact on demand for gold in the fourth/fifth month. As Annex Table 7 shows, the cumulative impact is negative, and statistically significant. Thus, both the channels discussed by Starr and Tran (2008) are seen in the Indian case, but the first impact predominates the second impact and hence gold prices have an overall negative impact on demand.

Higher domestic CPI inflation is also found to have a significant impact on gold imports, but no impact is found for WPI inflation. Estimates show that 1% increase in CPI inflation leads to an increase of 9% in gold imports in the long run. Higher domestic deposit rates, contrary to expectations, lead to more gold demand. This finding could perhaps be reflective of the fact that, over the last four years of the sample period, the real deposit rates were generally negative, notwithstanding some upward movement in nominal deposit rates. Thus, the increase in nominal deposit rates did not have the expected dampening impact on gold, as the real return on deposits was still negative; however, this hypothesis would need to be further examined. Stock market gains also lead to higher gold demand, with a lag, perhaps indicating a wealth diversification motive. Exchange rate depreciation reduces gold demand in all specifications and the effect is generally statistically significant; since the model also includes gold prices in rupee terms, which would capture the exchange rate impact indirectly, it is interesting that exchange rate depreciation has a direct additional negative impact on depreciation.

The model captures the various turning points well, although it has difficulty in explaining the increase in imports in 2010–11; (see Figure 8)—perhaps, the volatility and the uncertain economic environment in the aftermath of the NAFC could have induced more demand for gold. Overall, the results suggest that higher domestic CPI inflation and the continued negative real deposit rates could have contributed to higher gold imports, adding to

**FIGURE 8. Gold Imports**



Source: Directorate General of Commercial Intelligence and Statistics (DGCI&S) and the Authors' Estimates.

the external vulnerability while also reducing domestic financial savings of households. While WPI inflation has come off from its recent highs in the past few months, CPI inflation—which is found to be related to gold imports—remains at persistently high levels. Success with inflation management and appropriate real returns on bank deposits should provide a durable solution to the surge in gold imports. As Tarapore (2013b) notes, curbing gold imports requires very attractive instruments which would be better than the return on gold—a 3% real rate plus the consumer price inflation of, say, 9% would yield a nominal return of 12% plus inflation adjustment for the capital and such an instrument would knock down the demand for gold. As the CAD and inflation come down, the cost of such an instrument would also come down.

## 5. Macroeconomic Management: Some Issues

### *External Sector*

The levels of CAD during 2012–13 and the early part of 2013–14 were well above the estimates of a sustainable level, which is in the range of 2.3–2.5% of GDP (Rangarajan and Mishra 2013; RBI 2012). Estimates of sustainable CAD ought to be seen as an upper limit and not as desirable levels of CAD. Sustainable CAD estimates largely rely on the stabilization of external liabilities/GDP ratio and are better viewed as long-run solvency consistent levels. Sustainable levels can also be a challenge from the financing viewpoint, given the volatility of capital flows. Even the 2.3% estimate of the CAD requires net annual capital inflows of US\$50–70 billion at present GDP levels (Rangarajan and Mishra 2013); the required magnitude of capital flows would be even higher than this estimate if the policy is to aim for some prudent build-up of foreign exchange reserves, especially in the context of no accretion to reserves since 2008.

Given the large oil and gold imports and also the large fluctuations in international oil and gold prices, the sustainable deficit needs to be reassessed. Since large fluctuations in prices of oil and gold impact the CAD significantly, it may be prudent to plan for a lower level of deficit so that in the event of large shocks to oil and gold prices, the vulnerability of the country to the widening of the CAD to large levels is contained. Against this backdrop, the proposal of Dr Y. V. Reddy to aim for an average current account balance of zero merits further consideration. Given large domestic savings, foreign savings play only a marginal role in investment and growth.

A zero average or low CAD does not mean—and is not—an argument for less current account openness. It is the openness of the economy to gross imports and exports of goods and services, and FDI inflows, rather than the volume of current account balance per se, that matters more for competition, productivity, investment, and growth. For example, China has persistently recorded high growth in the recent years, despite persistent surpluses.

Given the widening of the CAD, the policy regime with regard to debt capital flows has been liberalized to meet the external payment needs in the recent years. Some of the steps include: an increase in interest rate ceilings on foreign-currency non-resident deposits; removal of the interest rate ceiling on non-resident external rupee deposits and capping them at the same level as the domestic rupee deposits; and an increase in local-currency investment limits by non-residents; see Table 13. In the process, external sector sustainability indicators such as import cover and short-term debt to reserves recorded some deterioration (RBI 2013b). However, these and other external sector indicators still remain at comfortable levels, although their adequacy was questioned by the markets during the June–August 2013 episode.

The policy approach of opening the capital account to meet the persistently high CAD, however, potentially hinders adjustment—allowing more foreign capital might lead to real appreciation which would then itself lead

**TABLE 13. Investment Limits for Foreign Institutional Investors (FIIs) in Debt Securities**

<i>End-March</i>	<i>US \$ billion</i>			<i>% to GDP</i>		
	<i>Government securities</i>	<i>Corporate debt securities</i>	<i>Total</i>	<i>Government securities</i>	<i>Corporate debt securities</i>	<i>Total</i>
1999	1.0	0.0	1.0	0.2	0.0	0.2
2005	1.8	0.5	2.3	0.2	0.1	0.3
2006	1.8	0.5	2.3	0.2	0.1	0.3
2007	2.6	1.5	4.1	0.3	0.2	0.4
2008	3.2	1.5	4.7	0.3	0.1	0.4
2009	5.0	15.0	20.0	0.4	1.2	1.6
2010	5.0	15.0	20.0	0.4	1.1	1.5
2011	10.0	40.0	50.0	0.6	2.3	2.9
2012	15.0	45.0	60.0	0.8	2.4	3.2
2013	25.0	50.0	75.0	1.4	2.7	4.1
Jun-13	30.0	50.0	80.0			
<i>Memo:</i>						
<i>Actual investments</i>						
2012	11.2	19.1	30.3	0.6	1.1	1.7
2013	15.2	19.7	35.0	0.8	1.1	1.9

Source: Reserve Bank of India and Securities Exchange Board of India.

to higher CAD and consequent enhanced external vulnerability (Panagariya 2013). For the euro area, the empirical evidence is supportive of this channel: abundant capital flows, high credit growth, and real appreciation largely determined current account balances in the euro area countries in the run up to the 2008 crisis (Atoyan et al. 2013). Offering more incentives to foreign capital in the current global uncertainty and the unprecedented external imbalance will make the country hostage to short-term, volatile capital (Nagaraj 2013; Subramanian 2013). Thus, the issue is that of causality: Whether higher CAD deficit necessitated more opening up of the capital account or it is the liberalized approach to capital flows which led to real appreciation and then higher CAD?

The empirical results presented in the paper indicate that exports and imports respond significantly to the domestic and foreign income variables as well as to the real exchange rate dynamics. In consonance with previous studies, income elasticities are greater than the price elasticities and, hence, growth dynamics at home and abroad are a key driving force beyond the trade and current account balance. Thus, during 2009–12, when external demand plummeted more than domestic demand, some worsening of the trade and current account balance was on the expected lines. At the same time, real exchange rate dynamics also have a significant impact on the external balance, even though price elasticities are lower than income elasticities. In this context, we may note that sustained higher domestic inflation over the past 4–5 years had a negative impact on external competitiveness through a higher REER. Thus, low and stable inflation would aid the maintenance of external competitiveness and reduce pressures for nominal depreciation, which then has adverse implications for domestic inflation, the government's fiscal position, and for corporate balance sheets.

Given the twin and elevated deficits, concerns were expressed during the first half of 2013 that India may face a 1990-like balance of payments crisis (Acharya 2013; Mody and Walton 2013; Tarapore 2013b). These concerns were evident during the June–August 2013 turmoil in the financial markets, notwithstanding a number of alleviating factors. The NAFC has clearly shown that all countries, even advanced countries with sophisticated financial markets, are susceptible to financial crisis. Therefore, prudent macroeconomic and financial policies play an important role in ensuring that a country does not face a crisis. In the Indian context, the range of macroeconomic and financial policies followed since the early 1990s had strengthened India's macroeconomic fundamentals before the NAFC and this helped India, as well as many other EMEs which had followed prudent policies, to see through the worst global financial crisis. These policies

focused on pursuing a cautious approach to financial sector and capital market liberalization, management of the capital account, a flexible but managed exchange rate, improvement in the monetary–fiscal interface facilitated by fiscal consolidation, and continued structural reforms. These policies contributed to sustained high growth in an environment of macroeconomic and financial stability. It would be prudent to continue such policies, going forward.

Rapid financial sector and capital account liberalization often ends up in crisis. Opening the financial account appears to raise the frequency and severity of economic crises; financial openness is not a panacea and it could instead be poison. Benefits of financial openness are most likely to be realized when implemented in a phased manner, when external balances and reserve positions are strong, and when complementing a range of domestic policies and reforms to enhance stability and growth (Obstfeld 2009). Debt capital flows increase vulnerability to future crises, and this was clearly seen in the NAFC. Emerging and Developing Economies (EDEs) such as those in Central and Eastern Europe which saw large increases in debt flows and which also had large CADs did face crises in the aftermath of the NAFC. Given the structural growth, inflation, and interest differentials in favor of EDEs, a fully open capital account would inevitably lead to large flows in search of arbitrage—creating booms when they come in and busts once they leave. Thus, the management of debt flows assumes importance. Indeed, one factor that reduces India’s external vulnerability, despite large twin deficits, is the fact the public debt is largely internally held.

It would be prudent to continue with this approach and further opening up of government securities market to non-resident investment needs to be carefully watched. Debt investments by non-residents in domestic securities are more volatile than in equities and can add to foreign exchange market pressures. More often, these flows react to monetary policy developments in advanced economies. For example, during June–September 2013, in response to Chairman Bernanke’s comments on the likely time path for the roll-back of quantitative easing policies, foreign institutional investors sold both equities and debt securities in the Indian market, but the sell-off in debt securities (around US\$10 billion) was five times that of equity investments (US\$2 billion).<sup>4</sup> Open debt markets can lead to large destabilizing capital inflows and outflows in response to external developments and complicate

4. The stock of foreign portfolio equity at end-June 2013 was US\$139 billion, while that of foreign portfolio debt was US\$32 billion.

domestic macroeconomic management, particularly in the presence of perceived arbitrage opportunity resulting from high interest rate differentials.

There is a view that the traditional fears about foreign-currency borrowing by residents are not applicable to investments by non-residents in local-currency denominated bonds and hence the limits on the latter category of investments should be removed (Patnaik et al. 2013). Such a notion was clearly disproved during the June–August 2013 turmoil. High external borrowings denominated in foreign currencies add to the individual borrowing entity’s vulnerability in the event of sharp currency movements, especially if such borrowings are not fully hedged. In the case of non-residents’ investments in domestic rupee securities, although the domestic entities who have issued such paper do not bear the exchange rate risk, a sudden large sell-off by non-residents (for example, as witnessed during June–August 2013) puts sharp downward pressure on the currency, which then has adverse implications for the various sectors of the economy, including the corporate and the fisc, as well adding to inflationary pressures. Thus, large borrowings from foreign sources, whether these are denominated in foreign-currency or local-currency, add to the vulnerability of the domestic economy. The massive sell-off by non-residents in the local-currency bonds has an immediate impact on the currency and broader economy.

### *Price and Financial Stability: Institutional Issues*

Inflation in India had seen a perceptible decline in the post-reform period. Alternative indicators of inflation had averaged 5–6% per annum between mid-1990s and the late 2000s, after averaging higher at 8–9% in the previous three decades. Inflation has now increased in the post-NAFC period, despite continued price stability globally at low levels. Both headline WPI and CPI inflation still remain well above comfort levels. Moreover, there is a substantial gap between the headline WPI inflation and the core WPI inflation on the one hand and between headline CPI and headline WPI inflation on the other. This poses challenges for monetary policy in its conduct, formulation, and communication, given that inflation expectations are likely to be influenced more by headline inflation, particularly headline CPI inflation. This also has implications for real interest rates facing the different economic agents—households, corporates, and government. Given the continued large weight of food in the various price indices, including the new consumer price indices, and the high volatility in food prices, it is apparent that an inflation targeting framework—with a focus on one inflation indicator as a target for monetary policy—is beset with a number of conceptual and

practical challenges in the Indian context (Mohan 2011a). In the new CPI, food items have a weight of 59%, 37%, and 50% in the rural, urban, and all-India indices, respectively. The fuel group has a weight of 8–10%, taking the combined weight of food and fuel to 46–70% in the three indices. Given these large weights, the use of core measures of inflation in the conduct and formulation of monetary policy would lack credibility and thereby limit the use of an inflation targeting framework focused on a single inflation number. As a former chairman of the US Federal Reserve has recently noted, it is “neither necessary nor desirable to try to pin down the price stability objective by setting out a single highly specific target or target zone for a particular measure of prices” (Volcker 2013). While a conventional inflation targeting framework is problematic, price stability, with the objective of low and stable inflation, ought still to remain the key objective of monetary policy. In fact, against the backdrop of persistently high inflation and inflation expectations, the *Expert Committee to Revise and Strengthen the Monetary Policy Framework* has, inter alia, now recommended that headline CPI inflation should be the nominal anchor for the monetary policy framework. Low inflation should be the predominant objective of monetary policy in India, and this should be communicated without ambiguity to the public (RBI 2014).

Sustained price stability and financial stability are both essential for high growth. The NAFC has clearly shown that price stability per se does not guarantee financial stability. There is, therefore, now greater recognition that financial stability could be endangered if central banks were to be mandated with only price stability/inflation targeting objectives (Eichengreen et al. 2011). The United Kingdom, which had taken lead in separating financial regulation and supervision from the central bank in the 1990s, has again taken lead in reversing its earlier decision by returning responsibility for financial regulation and supervision back to the Bank of England. In a number of other countries too, the regulatory architecture is being revisited and central banks are being given responsibility for financial sector regulation and financial stability. A central bank’s concern for stability must range beyond prices for goods and services to the stability and strength of financial markets and institutions generally (Volcker 2013).

A cross-country survey of regulatory and supervisory institutional arrangements with regard to the banking system and covering 136 countries shows the predominance of central-bank-led arrangements (Barth et al. 2013). In 89 countries, the central bank is the only such authority. In contrast, in 38 countries the central bank is not a supervisory authority at all. In the remaining nine countries, the central bank is one among multiple supervisors, with the United States being one of these countries. With regard to the



broader financial system, the survey also provides information on whether a country has a single financial supervisory authority or multiple authorities. The results indicate that in 101 countries there are multiple authorities covering the financial sector, while in 25 countries there is a single authority covering the entire financial sector. “Most of the countries with a single authority are relatively small in terms of both population and GDP” (Barth et al. 2013: 11).

Issues relating to financial stability and the institutional arrangements thereof have attracted interest in the post-NAFC period. Advanced economies, particularly in Europe, are integrating prudential functions into the central bank (for example, Belgium, France, the United Kingdom, and the United States). Ireland has opted for a stronger form of integration where all supervision of markets and institutions is conducted by the central bank (Nier et al. 2011).

It may often be desirable to identify a lead authority or policymaking committee and to vest it with the mandate and powers to conduct macroprudential policy. The central bank should play an important role, so as to harness its expertise in risk assessment and its incentives to mitigate systemic risk, as well as to ensure coordination with monetary policy. While participation of the treasury in the policy process is useful, a strong role can pose risks to the established autonomy of separate policy fields, such as monetary and microprudential policy, and lead to delay when policies are needed to constrain financial markets in good times. Separate arrangements for crisis prevention and crisis management will be useful in many cases” (Nier et al. 2011: 3).

In practice, these basic principles have led to the increasing prevalence of three models for macroprudential policymaking (IMF 2013b: 30):

- **Model 1:** The macroprudential mandate is assigned to the central bank, with macroprudential decisions ultimately made by its Board (as in Malaysia, and the Czech Republic). This setup is a natural choice in highly integrated arrangements where the central bank already concentrates the relevant regulatory and supervisory powers.
- **Model 2:** The macroprudential mandate is assigned to a dedicated committee within the central bank structure (as in the United Kingdom). This arrangement can help counter the risk of dual mandates for the central bank, by creating dedicated decision-making structures for monetary and macroprudential policy even as both functions are under the roof of the central bank. It also allows for the participation of separate supervisory agencies and external experts on the decision-making committee.

- **Model 3:** The macroprudential mandate is assigned to a committee outside the central bank, with the central bank participating on the macroprudential committee (as in Australia, France and the United States). This model can more easily accommodate a desire for a strong role of the Ministry of Finance (MoF). However, since a dominant role of the MoF risks delaying macroprudential action and can compromise the independence of participating agencies, including the central bank and separate supervisory agencies, some of these risks can be countered by assigning the central bank the chairmanship (as in Australia), a strong voice (as in Mexico), or a veto over policy decisions (as in Germany). They can also be countered by establishing only soft powers for the decision-making committee (IMF 2013b).

Against this backdrop, the proposals of the Financial Sector Legislative Reforms Commission (FSLRC) (Government of India 2013b) to restrict the Reserve Bank's role mainly to monetary policy and price stability need to be seriously debated (Tarapore 2013a). The FSLRC recommendation that the executive responsibility for safeguarding systemic risk should vest with the Financial Stability and Development Council (FSDC) Board runs counter to the post-crisis trend around the world of giving the collegial bodies responsibility only for coordination and for making recommendations: Should the responsibility of the FSDC Board be extended from being a coordination body to one having authority for executive decisions (Subbarao 2013b)? The proposed arrangement would compromise the synergy between monetary policy and policies for financial stability.

Globally, the mandates of the central banks have shifted over time in response to the evolving macroeconomic and financial conditions, but the outcomes have not been entirely satisfactory. For example, the US Federal Reserve was set up in 1913 with the objective of ensuring financial stability. Over time, the Fed succeeded in maintaining financial stability after the Great Depression, which policymakers and financial markets took for granted during the post-war era (Reinhart and Rogoff 2013). The consequence was that the objective of financial stability increasingly got de-emphasized, culminating in the 2008 financial crisis. Similar developments have taken place in other countries and the same logic seems to underlie the FSLRC's recommendations. Arguably, the success of the policymakers in India with maintaining financial stability over the past two decades, even as a number of emerging economies faced financial crises during the 1990s and the advanced economies in the 2008–2009 episode, has led to a situation where financial stability is being taken for granted. This might

be a factor behind the recommendations designed to entrust the RBI with the narrow objectives of monetary policy/inflation targeting. Such an approach, as the international experience shows, runs the risk of financial instability down the road. Thus, the central bank needs to continue to be entrusted with multiple objectives. Multiple objectives need multiple instruments. As Reinhart and Rogoff (2013) note,

Policies, such as changes in reserve and margin requirements and a variety of credit measures that have been discarded as antiquated, should be a part of the toolkit of the central bank in the United States and other advanced economies. These instruments have continued to play a central role in defining monetary policy in many emerging markets to the present day. [O]ver the past three decades both the academic literature and the policy practice have increasingly drifted to a world view where the short-term policy rate is a sufficient policy instrument. The theoretical underpinnings supporting that view usually assume complete markets, an assumption that is particularly at odds with a post-crisis environment riddled with a broad assortment of frictions arising from both market failures and a steady stream of complex regulatory changes set in motion by the crisis (pp. 49 and 53).

### *Fiscal Policy*

Fiscal consolidation is necessary for sustained growth in an environment of macroeconomic and financial stability. As the NAFC has shown, high fiscal deficits and debt limit policy flexibility significantly, and contribute to the worsening of the overall economic situation. Weak public finances derail inflationary expectations, provide upward bias to the interest rate, impede investment activity and threaten sovereign credit ratings (Kelkar Committee 2012). The recent fiscal consolidation initiatives in India, including measures to rein in subsidies, are encouraging. In this context, it is relevant to note that fuel subsidies in India are found to be badly targeted, with the richest 10% of households receiving seven times more in benefits than the poorest 10% (Anand et al. 2013). Thus, there is scope for better targeting of fuel subsidies and fiscal consolidation, while protecting lower income households. Fiscal consolidation would allow government resources to enhance public investment and also to provide a durable way out of the ongoing slowdown. Historically, effective revival of the economy has been through a step up in public sector investment, which then triggered private sector investment and a revival of industrial growth (Tarapore 2013b).

While fiscal consolidation is clearly positive from a medium-term perspective, it could have a negative short-term impact on growth. However, this negative short-term impact on growth can be minimized, or even avoided, by calibrating the adjustment in expenditures. For example,

according to estimates by Jain and Kumar (2013), the impact fiscal multiplier for non-defense capital outlays (2.1) is substantially higher than that of revenue expenditure (0.2) for the Central government. Thus, fiscal consolidation that directs expenditures away from revenue expenditure (subsidies) toward capital outlays could have a less negative, or even positive, impact on growth. Moreover, such a fiscal consolidation approach with relatively greater additions to the economy's productive capacity would provide monetary policy greater maneuverability and that could also be short-term growth positive.

A key lesson of the NAFC is that policymakers should have significant policy buffers, which can then be used in times of crises to stabilize the economy. In the Indian context, for example, the buffers were limited at the onset of the crisis and, in the face of the stimulus measures and the slowing economy, the combined deficits quickly reached high levels, exacerbated by high public debt levels, leaving India as an outlier among major emerging markets. Against this backdrop, a more ambitious medium-term fiscal consolidation plan beyond 2017–18 is critical. The earlier Fiscal Responsibility and Budget Management (FRBM) plan had targeted a 3% of GFD/GDP ratio for the Central government and the revised path also targets 3% deficit by 2017–18. Accordingly, it would be judicious to aim for balanced budget targets, say by the end of the decade. Stronger fiscal consolidation on these lines, along with the quality of its adjustment, would provide an environment conducive for higher domestic savings, lower domestic interest rates, and more flexibility to monetary policy in its operations.

## 6. Conclusion

The current growth slowdown has occurred after almost a decade of consistent high growth, including a sharp recovery from the 2008–09 crises. High growth during the pre-NAFC period, especially 2003–08, was underpinned by continuing fiscal correction, which then had a number of positive spillovers: increase in public savings, low inflation and anchored inflation expectations, low nominal and real interest rates, and sharp increase in corporate profitability and investments. The largely market-determined exchange rate system, in the context of a prudent approach to management and liberalization of the capital account and sterilized interventions, and in an environment of progressive deregulation and liberalization of the real economy, led to sustained increase in the exports of goods and services, which then kept the CAD at moderate levels.

The sustained growth process of the pre-NAFC period has suffered a setback in the past couple of years. This reflects a number of factors. First, while the macroeconomic policy response to the NAFC—both monetary and fiscal policy—was admirably rapid, there was, at least with hindsight, overshooting of the stimulus. The overshooting was reflected in very high growth—averaging 9%—during 2009–10 and 2010–11 but which sowed the seeds for inflation and current account pressures. Moreover, the quality of the fiscal stimulus, with its focus on tax cuts and increased revenue expenditure (particularly in subsidies) while keeping capital outlays stagnant, added to demand pressures, which were then reflected in high inflation. While the fiscal and monetary stimuli were large and rapid, their withdrawal was gradual and it remains incomplete in the case of fiscal measures. The incomplete and delayed pass-through of higher international oil prices to domestic prices added to fiscal pressures, while also impeding domestic expenditure adjustment in both oil and non-oil consumption that would have emanated from higher domestic oil prices. The adjustment in domestic oil consumption, had domestic prices been appropriately adjusted, would have also contributed to lower oil imports and lower CAD. The large monetary stimulus facilitated financing of the near trebling of the government borrowing needs at lower yields. The delayed and the incomplete withdrawal of the fiscal stimulus has also led to crowding out of the private sector, which in conjunction with other policy bottlenecks, has contributed to the massive decline in private corporate investment.

High inflation and negative real deposit rates have led to a switch away from financial savings toward savings in the form of gold, leading to higher gold imports and adding to CAD pressures. The current account was also hit by domestic policy bottlenecks, which, *inter alia*, have led to more coal imports and lower iron ore exports. The CAD was in any case expected to widen, given the two-speed global recovery since the NAFC, but domestic policies resulting in higher oil, gold and coal imports magnified the impact on the CAD. Unlike many other major EMEs, especially Asian EMEs, India had a deficit on its current account before the NAFC and the combination of domestic and global factors quickly took it up to 4.8% by 2012–13. The rapid policy response subsequent to the market turbulence of mid-2013 has reduced the CAD to an estimated 1.7% of GDP for 2013–14.

Overall, the above analysis suggests need for appropriate policies in regard to domestic oil prices which will help to contain fiscal subsidies as well as oil imports. In this context, the steps taken by the government in the past few months are welcome and would need to be continued with. Restoration of tax/GDP ratios, along with the proposed efforts toward the

institution of the country-wide goods and services tax and the introduction of direct tax code bill and the recent measures to contain subsidies, should help to contain the fiscal deficit in the next couple of years. Taking into account the fiscal correction that is being programmed as also the fiscal consolidation record of 2002–07, the public sector savings should recover, and that would result in a recovery in the gross domestic savings rate by around 2–3% of GDP. A similar event occurred about 10 years ago when public sector savings had become negative (Mohan 2011b). The envisaged fiscal correction will make more resources available to the private sector and contribute to the recovery of private sector investment and private sector savings.

Fiscal consolidation would also provide the basis for a durable reduction in inflation and low and positive real interest rates for both depositors and borrowers and, in turn, a moderating impact on gold imports and the CAD. The analysis presented in this paper suggests that the ongoing slowdown has a large cyclical component, reflecting both domestic and global factors (see also, IMF 2013c). Growth has indeed slowed down since 2011–12, but this is not on account of any reversal in the reforms process, although the pace of new reforms may have been somewhat slower. India's "poor infrastructure, excessive regulation, small manufacturing sector, and a workforce that lacks adequate education and skills" cannot explain the current slowdown, as these deficiencies had existed when India was growing rapidly, although they must be addressed if India is to grow strongly and stably (Rajan 2013). The structural drivers of growth—the favorable demographics and the high savings and investment rates—are broadly intact. Based on these assumptions, even a conservative estimate would result in a sustained gross domestic savings rate of about 35%, which should facilitate growth of 8–8.5%, given the moderate incremental capital output ratios. This would also be contingent on the removal of the recent impediments to domestic investment activity and the recovery in the global economy. Finally, given the growth and inflation expectations, interest rates in India can be expected to remain above those in advanced economies, even when we move away from the present aberrations of near zero interest rates in the major advanced economies; therefore, a prudent approach with regard to opening up of debt flows to foreign investors needs to be pursued.

What then are the key policy priorities that can help to restore Indian growth to sustained rates in excess of 8%, which would be consistent with investment levels in the 35–40% range? For sustained growth, it is first essential to restore macroeconomic stability: of the highest importance is a reduction in medium-term inflation to levels achieved in the decade prior to the NAFC. This needs coordinated supply side and demand management

measures: fiscal consolidation and appropriate monetary policy coupled with active measures to loosen supply constraints. Factor market reforms related to both labor and land are essential to make the economy more flexible in the face of burgeoning demand resulting from growing incomes. Among Asian EMEs, India is notable in the low share of its manufacturing sector in terms of both value-added and employment: this has also impeded the pace of rural–urban transformation. A realistic exchange rate policy combined with policies promoting labor flexibility and skill development need to be taken up consciously to promote growth in the manufacturing sector. The animal spirits released in Indian industry by the 1991 reforms seem to be dying down: they need to be revived in a focused manner. The revival of manufacturing competitiveness is essential to achieve 10% plus growth in this sector, without which it will not be feasible to achieve sustained growth rates in GDP of 8% plus.

It is well recognized by all that infrastructure investment is crucial to loosening supply side constraints and promoting manufacturing. Fiscal consolidation is also important here. Despite increasing private investment in infrastructure, it is necessary to enhance public investment in infrastructure on a sustained basis. For this to take place, the culture of economic user charges must be reinforced so that infrastructure investment is remunerative; second, with increasing incomes, expenditures on non-merit subsidies must be curtailed and directed toward infrastructure investments. The trend in recent fiscal consolidation efforts has been focused excessively on reduction in expenditures, more in capital expenditures, and less in revenue expenditures, such as subsidies. This needs to be reversed. Moreover, the Indian tax/GDP ratio has been relatively stagnant for a decade, despite high GDP growth and rising incomes. Revenue receipts/GDP ratio of the central government is now below the levels prevailing in the late 1980s. Public investment in both physical and social infrastructure will be difficult to achieve without revenue enhancement consistent with income growth.

It is apparent that reforms in key areas such as agriculture, and physical and social infrastructure, including urban infrastructure are needed on a continuing basis. The main organizing principle of most reforms carried out so far has been that of freeing the private sector from the myriad government controls that had existed for a long time. Whereas this process itself still has some distance to go, an issue is: Whether we have reached the limit of private sector-led acceleration in investment and output growth and will this now be increasingly constrained by the lack of public investment, both physical and social (Mohan 2011d)?

An underlying theme encompassing most constraints now is the lack of adequate delivery of public services in both quality and quantity. While the first generation of reforms empowered the private sector to perform to the best of its abilities, the second generation of economic reforms must focus on a similar empowerment of the public sector to deliver public goods and services for the benefit of all segments of the private sector, corporate entities, and the public alike. This proposition is not an argument for greater empowerment of the public sector to increase its control over the economy, as was the case in the past. The “public sector” needs to be seen in its widest definition, to encompass all levels of government from the local level to state and national levels, and their entities, which deliver public goods and services. Illustratively, four areas where we need to give focused attention and which can mainly be done by the public sector, even if some of it is to be delivered through public–private partnerships, are agricultural development, urban development, human resource development, and management of public services. What is common among these sectors is the lack of competence in public systems that govern these areas (Mohan 2011d). These issues assume added importance in view of governance issues that have come to the forefront in the recent period, and which call for significant improvement in the delivery of public services.

## Annexes

### *Annex 1: Oil Consumption and Prices*

In the context of the large increase in oil subsidies, an attempt is made to examine the determinants of demand for the key administered items (diesel, kerosene, and LPG) and also for petrol which has been controlled at times. Demand for the various oil products is postulated to depend upon income (real GDP) and the prices of the particular products relative to overall price movements (Asali 2011). Demand for total petroleum products is also modeled, and movements in the minerals oil index of the WPI are used as the relevant price variable. Thus, we estimate the following specification:

$$\text{Log}(C_t) = a_1 + a_2.\text{log}(Y_t) + a_3.\text{log}(P_t/\text{WPI}_t) + e_t$$

where  $C$  is the consumption of the specific petroleum item or total petroleum products,  $Y$  is the real GDP,  $P$  is the price of the specific petroleum item (measured by the respective indices in the WPI basket), and WPI captures the general price level in the country. The empirical exercise covers the



period from April 2001 to March 2013. Since the various variables are non-stationary, we employ a cointegration framework, and use the autoregressive distributed lag approach to cointegration.<sup>5</sup> Given the short sample period, the robustness of the results is tested and supported by the Johansen–Juselius approach.

The results indicate that the income elasticity is more than unity (around 1.2) for petrol and almost unity for diesel as shown in Annex Table 1. Income elasticity for LPG demand is below unity, perhaps indicative of supply constraints in meeting the demand. Income elasticity of demand for kerosene oil is negative, indicating its diminishing role; the share of kerosene in total petroleum products' consumption has halved from around 10% to 5% over the study period (2002–12). The elasticity of demand for overall petroleum products is estimated to be 0.5.

Turning to the price responsiveness, the price elasticities are found to be statistically significant for petrol, diesel and kerosene. The price elasticity is the highest for petrol (–0.66) followed by kerosene (–0.54) and diesel (–0.36). Thus, an increase of 10% in domestic prices is associated with a reduction of 3.6–6.6% for these three products. The price elasticities for LPG and overall petroleum consumption are negative, but not significant. The insignificant price elasticity of total petroleum consumption, even as the major components have significant and relatively high price elasticities, suggests merits of pursuing a disaggregated approach in order to assess the determinants of demand for oil.

### *Annex 2: Growth Slowdown*

Accommodative monetary and fiscal policies boosted the growth during 2009–11 and the phased reversal of these policies, partial so far in the case of fiscal policy, contributed to the growth slowdown during 2011–12 and 2012–13. Anemic global growth over both these two periods has also been a factor. To assess the impact of monetary policy and global conditions on domestic growth—the two factors which are seen as the major contributors to the growth slowdown—we model growth on the lines of the IS curve framework in Kapur and Behera (2012). Given the monsoon induced volatility in agricultural output and the impact of government expenditures on “community, social and personal services,” the empirical exercise focuses on GDP excluding these two components. Growth is postulated to depend on real domestic interest rates, external demand, real exchange rate, and

5. F-tests (not reported) confirm the presence of a cointegrating relationship among the variables.

**ANNEX TABLE 1. Estimates of Oil Consumption in India**

1	<i>Dependent variable</i>				
	<i>LHSDSA</i>	<i>LPETROLSA</i>	<i>LSKOSA</i>	<i>LLPGSA</i>	<i>LPOLTOTSA</i>
	2	3	4	5	6
LGDPRSA	0.96 (37.37)	1.18 (19.33)	-0.49 (9.18)	0.66 (8.61)	0.50 (32.70)
LP_HSDSA	-0.36 (5.62)				
LP_PETROLSA		-0.66 (3.70)			
LP_SKOSA			-0.54 (4.78)		
LP_LPGSA				-0.35 (1.20)	
LMINOILSA					-0.06 (1.48)
R-bar <sup>2</sup>	0.996	0.997	0.940	0.986	0.984
Serial correlation	0.25	0.14	0.06	0.30	0.19
Normality	0.52	0.00	0.12	0.04	0.57
<i>Short-run model</i>					
ECM(-1)	-0.42 (6.10)	-0.18 (3.23)	-0.38 (3.73)	-0.29 (2.69)	-
R-bar <sup>2</sup>	0.48	0.53	0.27	0.21	-
ARDL model	1,0,0	2,0,1	1,0,3	1,0,0	0,3,3

Source: Authors' estimates.

Notes: Estimates are based on autoregressive distributed lag (ARDL) methodology, with model selection based on Schwarz Bayesian Information Criteria.

Estimates are based on quarterly data for the sample period 2001:2 to 2013:1.

Variables are defined as follows:

LHSDA, LPETROLSA, LSKOSA, LLPGSA and LPOLTOTSA are domestic consumption of diesel, petrol, kerosene, LPG and all POL products, respectively.

LP\_HSDA, LP\_PETROLSA, LP\_SKOSA, LP\_LPGSA and LP\_MINOILSA are WPI indices of diesel, petrol, kerosene, LPG and the sub-group "mineral oils", respectively. All these indices are taken relative to overall WPI index.

LGDPRSA = Real gross domestic product.

All data are in log terms and seasonally adjusted.

Data for consumption of petroleum products are from Petroleum Planning and Analysis Cell.

Figures in parentheses are t-statistics.

real bank credit. Real interest rate is defined as an effective nominal policy rate less 4-quarter average of NFMP inflation. External demand is captured through real world exports or global GDP. For real exchange rate, RBI's 36-currency export-weighted REER index is used. The equation is estimated for the period of 1996–97 to 2007–08 using quarterly data and then used to make out of sample forecasts for the subsequent period. All the variables, except for the real interest rate, are in growth terms (quarter-on-quarter, based on seasonally adjusted data) and are found to be stationary.

The results show that an increase of 100 bps in the real interest rate leads to a reduction of 26–33 bps in GDP growth with a lag of two quarters; see Annex Table 2 (columns 2–5). Global demand impacts domestic economy in the same quarter and the estimated coefficients suggest that one percentage point reduction in global exports reduces domestic growth by almost 13 bps, while the impact of one percentage point reduction in global GDP growth is almost 40–56 bps. The coefficient on world exports is lower than that on world GDP, given the differences in the magnitudes of the two variables:

**ANNEX TABLE 2. Determinants of Real GDP Growth (Non-Agricultural Non-Community Services GDP)**

<i>Explanatory variable</i>	<i>Dependent variable: GDRGQ</i>				
	<i>Sample period: 1996:2 2008:1</i>				
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	
Constant	6.38 (5.91)	6.45 (6.10)	5.62 (4.78)	5.15 (4.10)	
RIRQ(-2)	-0.32 (3.26)	-0.33 (3.23)	-0.26 (2.76)	-0.27 (2.82)	
WEXPRGQ	0.13 (2.40)	0.13 (2.43)			
GDPWORLDQ			0.40 (1.99)	0.56 (2.42)	
REERXQ				-0.09 (1.74)	
REERXQ(-3)		-0.08 (1.95)			
NFCRQ(-2)	0.14 (3.21)	0.14 (3.15)	0.14 (3.26)	0.14 (3.10)	
R-bar <sup>2</sup>	0.30	0.32	0.29	0.31	
DW	1.97	1.76	2.15	2.12	
White test	0.43	0.62	0.69	0.90	
JB test	0.91	0.89	0.91	0.69	
LB-Q test	0.34	0.20	0.47	0.33	

Source: Authors' estimates.

Notes: Dependent variable = GDRGQ = growth (q-o-q) in real GDP excluding agriculture and community services.

RIRQ = real interest rate = nominal policy rate less 4-quarter average of q-o-q non-food manufactured products (NFMP) inflation.

WEXPRGQ = growth (q-o-q) in world real exports.

GDPWORLDQ = growth (q-o-q) in world real GDP.

REERXQ = variation (q-o-q) in RBI's 36-currency real effective exchange rate.

NFCRQ = growth (q-o-q) in real non-food credit.

q-o-q growth rates are first-differences (annualized) of (log) seasonally adjusted data.

White test = significance level (p-value) for White test for the null of homoscedasticity of residuals.

JB test = significance level (p-value) for Jarque-Bera test for the null of normality of residuals;

LB-Q test = significance level (p-value) of Box-Pierce-Ljung Q-statistic for the null of no residual autocorrelation for four lags.

annual growth in real world exports averaged 7.7% vis-à-vis that of 3.8% in global GDP over the sample period (1997:3–2008:1). Real exchange rate movements have the expected impact: appreciation reduces the domestic output, while depreciation boosts the output. The estimated equations satisfy the regression diagnostics.

### *Annex 3: Determinants of Exports and Imports*

Following Hooper et al. (2000) and Chinn (2013), export demand is postulated to depend on external demand and the real exchange rate and import demand on domestic activity and the real exchange rate. Since the variables of interest are non-stationary, we use cointegration and a vector error correction mechanism framework (Johansen–Juselius methodology) to assess the long-run and the short-run dynamics, as follows.

$$\begin{aligned}\Delta \text{LEXPQ}_t &= a_1 + a_2 \text{ECM}(t-1) + \sum a_{3i} \Delta \text{LEXPQ}(t-i) + \sum a_{4i} \Delta \text{LREER}(t-i) \\ &\quad + a_5 \Delta \text{LWEXPR}(t-i) + u_t \\ \Delta \text{LIMPQ}_t &= b_1 + b_2 \text{ECM}(t-1) + \sum b_{3i} \Delta \text{LIMPQ}(t-i) + \sum b_{4i} \Delta \text{LREER}(t-i) \\ &\quad + b_5 \Delta \text{LY}(t-i) + v_t\end{aligned}$$

Here  $\Delta$  is the first-difference,  $L$  is logarithm,  $\text{EXPQ}$  and  $\text{IMPQ}$  are real volumes of exports and imports (measured by DGCIS' quantum index for exports and imports, respectively),  $\text{WEXPR}$  is world real exports (world exports in US \$ terms divided by their unit value index) as an indicator for external demand,  $Y$  is an indicator of domestic activity (real GDP or real industrial GDP or real domestic demand), and  $\text{REER}$  is the REER. The ECM terms capture the deviations of exports and imports from their long-run equilibrium [(LEXPQ— $c_1$ — $c_2$ .LREER— $c_3$ .LWEXPR) and (LIMPQ— $d_1$ — $d_2$ .LREER— $d_3$ .LY), respectively]. The coefficients on the ECM terms measure the speed with which the deviation from the long-run equilibrium is corrected each period and are expected to be negative. World real exports are treated as weakly exogenous in the cointegrating Vector Autoregression (VAR) for exports, and domestic activity is found to be weakly exogenous in the imports VAR.

The baseline period for the study is 1980–81 to 2007–08 using annual data. In view of the NAFC and the severe disruptions in the global economy, we focus on the pre-NAFC period; as a robustness check, we also report results for the period up to 2011–12. The starting period of the study, 1980–81, coincides with the first phase of reforms that started in the early 1980s and hence the period is relatively homogeneous. The structural

reforms introduced in the early 1990s and continued in the subsequent years with the objective of deregulation and liberalization provided a greater role for market forces and market prices. Thus, the role of price signals can be, a priori, expected to be more in the post-1990s period vis-à-vis the 1980s; for China, for example, Aziz and Li (2008) find evidence of increased responsiveness of exporters to market signals over time. Moreover, given the large intra-year volatility and two-way movements in exchange rates, econometric analysis based on annual data might not appropriately capture the impact of exchange rate changes on trade volumes. If so, the price elasticities using the annual data for 1980–2008 could be an underestimate of the actual elasticities. Therefore, as a robustness measure, we also present results for the post-reforms period using quarterly data on trade volumes for overall exports as well as major categories of manufactured products (for 1996–97 to 2007–08). The focus on the post-reforms period reduces the sample size substantially, and potentially limits the inferences drawn from cointegration analysis.

As regards the REER, as the earlier discussion showed, there is a substantial divergence in the movements indicated by the available REER indicators. Bayoumi et al. (2011) and Chinn (2006) report a similar divergence of alternative REER measures—ULC-based REER, CPI-based REER and WPI-based REER—in the context of the United States, the euro area, and other countries. For example, for Ireland, the CPI-based REER indicated an appreciation of 20% between 1995 and 2009, while the ULC- and WPI-based REER showed depreciation of 20–30%. And, based on their econometric analysis, Bayoumi et al. (2011) suggest that WPI- and ULC-based REERs are better indicators of price competitiveness than CPI-based measures. Accordingly, we present results for the three available REERs.

The share of oil exports in total exports has fluctuated substantially over the sample period, reflecting the movements in international crude oil prices as well as the quantum on the back of higher domestic crude production (mid-1980s) and the increase in domestic refining capacity (beginning early 2000s). Since these fluctuations in oil exports are unrelated to price and income variables, we also report results for an augmented specification with real oil exports (oil exports in US dollar terms divided by average crude oil prices) and also dummies for the outliers.

#### *EXPORTS: ANNUAL ESTIMATES*

Beginning with exports, and using annual data for 1980–81 to 2007–08, the null hypothesis of at least one cointegrating vector cannot be rejected for both the basic and the augmented specifications for the REER-RBI measure

and for the augmented specification for the REER-OECD and REER-IMF measures. Both external demand (world real exports) and the REER have the expected impact and these are statistically significant.<sup>6</sup> An increase of 1% in world real exports<sup>7</sup> is associated with an increase of 1.1–1.4% in India's exports in the long run; see Annex Table 3. The long-run coefficient on the REER is 0.21 to 0.65 across alternative specifications, and the coefficients are lower for the specifications using the OECD and the IMF measures of REER. In the short-run model, the coefficients on the ECM term for both the exports and REER equations are correctly signed and significant. Thus, deviations of exports from the long-run equilibrium get adjusted through adjustments in both exports and the REER. The short-run coefficients indicate significant contemporaneous impact of external demand on exports, although partly offset in the next year. The regression diagnostics for the short-run model are satisfactory. The results broadly carry through when the sample period is extended to 2011–12 and are more supportive.

**ANNEX TABLE 3. Determinants of Exports (Annual Estimates)**

	<i>Results for REER-RBI</i>		<i>Results for REER-OECD</i>	<i>Results for REER-IMF</i>
L(EXPQ)	1.00	1.00	1.00	1.00
L(REER)	0.37 (4.50)	0.65 (6.25)	0.27 (3.33)	0.21 (2.22)
L(WEXPR)	-1.33 (33.60)	-1.10 (17.02)	-1.35 (22.07)	-1.42 (19.83)
L(OILR)		0.06 (4.20)	0.04 (2.39)	0.02 (1.06)
constant	3.93 (6.04)	1.02 (1.08)	4.50 (5.42)	5.26 (5.51)

*Short-run ECM model*

	<i>DLEXPQ</i>	<i>DLREER</i>	<i>DLEXPQ</i>	<i>DLREER</i>	<i>DLEXPQ</i>	<i>DLREER</i>	<i>DLEXPQ</i>	<i>DLREER</i>
ECM(-1)	-1.02 (5.39)	0.37 (1.98)	-0.45 (3.07)	0.69 (2.74)	-0.60 (7.70)	0.21 (2.00)	-0.47 (6.98)	0.09 (0.72)
DLEXPQ(-1)	0.40 (2.55)	0.07 (0.47)	0.12 (1.02)	0.01 (0.03)	0.27 (2.50)	-0.03 (0.22)	0.20 (1.78)	0.22 (1.03)

(Annex Table 3 Contd)

6. All estimations have been done using software WinRATS Pro 8.2 and CATS 2.0.

7. When real world GDP is used as indicator of external demand in lieu of real world exports, the null of no cointegration cannot be rejected for the 1980–2008 sample period. The null hypothesis is however rejected for the extended sample (1980–2012) as well as for the quarterly sample (1996:2–2008:1).

(Annex Table 3 Contd)

<i>Short-run ECM model</i>								
	<i>DLEXPO</i>	<i>DLREER</i>	<i>DLEXPO</i>	<i>DLREER</i>	<i>DLEXPO</i>	<i>DLREER</i>	<i>DLEXPO</i>	<i>DLREER</i>
DLREER(-1)	0.41 (1.86)	0.26 (1.19)	0.22 (1.42)	-0.10 (0.38)	0.24 (2.04)	0.61 (3.89)	0.12 (1.04)	0.58 (2.77)
DLEXPO(-2)	0.25 (1.55)	-0.26 (1.59)	-0.10 (0.83)	-0.58 (2.73)				
DLREER(-2)	0.72 (2.84)	-0.45 (1.79)	0.27 (1.12)	-1.22 (2.97)				
DLWEXPR	1.08 (4.12)	-0.14 (0.53)	0.76 (4.02)	-0.44 (1.35)	0.40 (2.18)	0.37 (1.48)	0.38 (1.93)	0.01 (0.03)
DLOILR			0.03 (3.51)	0.00 (0.14)	0.02 (3.55)	0.00 (0.01)	0.02 (2.50)	0.00 (0.09)
DLWEXPR(-1)	-0.86 (2.80)	-0.01 (0.02)	0.00 (0.00)	0.42 (1.19)	-0.52 (2.98)	0.00 (0.00)	-0.44 (2.55)	-0.18 (0.56)
DLOILR(-1)			-0.02 (2.17)	0.02 (1.31)	-0.03 (3.42)	0.02 (1.62)	-0.02 (2.81)	0.00 (0.25)
DLWEXPR(-2)	-0.31 (1.02)	0.44 (1.49)	0.37 (2.02)	0.67 (2.12)				
DLOIL(-2)			0.01 (1.38)	0.03 (1.74)				
dum85			-0.14 (4.48)	0.01 (0.22)	-0.11 (3.98)	-0.02 (0.51)	-0.12 (4.14)	0.00 (0.04)
dum95			0.13 (2.76)	0.18 (2.10)	0.17 (5.82)	-0.03 (0.84)	0.18 (5.87)	-0.07 (1.15)
dum97			-0.13 (2.82)	0.07 (0.83)	-0.11 (3.15)	0.05 (1.05)	-0.12 (3.41)	0.07 (0.98)
Serial correlation @	0.41		0.26		0.07		0.69	
ARCH @	0.53	0.50	0.24	0.43	0.56	1.00	0.32	0.61
Normality @	0.83	0.19	0.74	0.40	0.99	0.22	0.91	0.05
R <sup>2</sup>	0.58	0.27	0.90	0.49	0.88	0.66	0.87	0.40
VAR lags	3		3		2		2	
PV (r=0)	0.02		0.04		0.05		0.05	
PV (r=1)	0.21		0.89		0.47		0.41	

Source: Authors' estimates.

Notes: Sample period for the estimation is 1980-81 to 2007-08.

Variables are defined as follows: EXPO = quantum index of India's exports; WEXPR = world real exports (nominal exports, deflated by unit export values); OILR = India's real oil exports (nominal oil exports divided by international crude oil prices); REER = real effective exchange rates compiled by RBI (36-currency export weighted), OECD and IMF, respectively.

dum85, dum95 and dum97 are dummies for 1985-86, 1995-96 and 1997-98, respectively.

PV (r=0) and PV (r=1) give p-values (Bartlett-corrected) for the null of no and one cointegrating vector, respectively.

@: p-values for the null hypotheses of no serial correlation, no conditional heteroscedasticity and normality of residuals.

Figures in parentheses are t-statistics.

*EXPORTS: QUARTERLY ESTIMATES*

Moving to the post-reforms sample (1996–97 to 2007–08) and using quarterly data,<sup>8</sup> we observe some differences. First, the elasticity with respect to external demand (proxied by world exports) is in a range of 1.6–1.9 across alternative estimates, somewhat higher than the annual estimates as shown in Annex Table 4. The elasticity with respect to world GDP, as an indicator of external demand, is as expected higher at 2.6–3.6. Second, the coefficient on REER is sensitive to the choice of the REER and inclusion of oil exports. With REER-RBI, the (absolute) coefficient is more than unity and significant when oil exports are included. With REER-OECD and IMF, the (absolute) coefficient is more than 1.6 and is statistically significant only when oil exports are excluded. Third, the results for overall exports are broadly true for exports of major categories of manufactured products (chemicals, manufactures, and machinery). The income elasticities range from 1.5 to 2.8 (with respect to world exports) and 2.9–5.1 (with respect to world GDP) for these three categories of exports. For the sub-group “manufactured goods classified chiefly material” (comprising exports of leather, textile yarn, textile fibers, made-up articles of textile yarn, non-metallic minerals, iron and steel, non-ferrous metals, and manufactures of metals), the elasticity of exports with respect to the REER is 1.6–3.8 across the various REER indicators. For exports of machinery and transport equipment, the price elasticities are 2.4–3.3 for the OECD and the IMF indicators, but are wrongly signed for the RBI’s REER measure. Finally, for the “chemicals and related products” sub-group, the exchange rate elasticity is 1.7–2.9 for the OECD-IMF indicators, but is not significant (although correctly signed) for the RBI’s REER measure. The regression diagnostics for the short-run model are satisfactory for most of the specifications, barring some issues with the normality of residuals for the “chemicals and related products” sub-group.

As a robustness check, given the small sample size, Annex Table 5 presents estimates for overall exports based on the Dynamic Ordinary Least Squares (DOLS) approach. Given the sensitivity of results to lags and the sample period, the table presents results for the baseline model (i.e., without including oil exports) for one and two leads and lags in the DOLS and also for rolling samples starting the second quarter of 1996 (the effective sample period begins the quarter ended December 1996 given the lags). The estimates based on the DOLS approach with one lead and lag are broadly in line with those from the Johansen–Juselius methodology.

8. These results are based on DGCI&S’ quantum index of exports available for quarter-end months.





(Annex Table 4 Contd)

	Chemicals and related products		Manufactured goods classified chiefly by material		Machinery and transport equipment		Total exports		
LREEROEC	1.73 (1.73)		1.56 (1.26)		2.88 (3.53)		1.63 (2.48)	0.82 (1.15)	
LREERIMF		2.48 (2.60)		2.37 (1.94)		2.37 (2.31)		2.10 (3.41)	
LWGDPR	-4.63 (12.75)	-5.05 (12.51)	-3.24 (9.42)	-2.89 (5.76)	-3.76 (12.70)	-4.58 (12.96)	-3.44 (13.47)	-3.14 (9.85)	-3.23 (11.81)
L(OILR)							-0.06 (3.91)	-0.02 (1.52)	
<i>Short-run ECM model</i>									
ECM(-1)	-0.47 (4.10)	-0.57 (4.12)	-0.61 (5.77)	-0.66 (4.87)	-0.71 (5.13)	-0.88 (6.24)	-0.49 (4.42)	-0.63 (4.55)	-0.76 (5.47)
Serial correlation @	0.91	0.96	0.77	0.50	0.15	0.43	0.85	0.57	0.94
ARCH @	0.50	0.71	0.80	0.53	0.62	0.54	0.58	0.27	0.40
Normality @	0.01	0.00	0.00	0.22	0.04	0.06	0.05	0.78	0.56
R <sup>2</sup>	0.32	0.30	0.34	0.57	0.36	0.42	0.41	0.31	0.42
VAR lags	1	1	2	1	1	1	2	1	1
PV (r=0)	0.07	0.07	0.02	0.00	0.01	0.00	0.04	0.03	0.01

Source: Authors' estimates.

Notes: Sample period for the estimation is 1996:2 to 2008:1.

Variables are defined as follows:

WEXPR = world real exports (nominal exports, deflated by unit export values); WGDPR = world real GDP; REER = real effective exchange rates compiled by RBI (36-currency export weighted), OECD and IMF, respectively.

OILR = India's real oil exports (nominal oil exports divided by international crude oil prices).

PV (r=0) gives p-values (Bartlett-corrected) for the null of no cointegrating vector.

@: p-values for the null hypotheses of no serial correlation, no conditional heteroskedasticity and normality of residuals.

Figures in parentheses are t-statistics.

**ANNEX TABLE 5. Determinants of Exports—Quarterly DOLS Estimates (Using World Exports)**

Sample starting from	Results using one lead and lag in DOLS						Results using two leads and lags in DOLS					
	REER			WEXPR			REER			WEXPR		
	Coefficient	T-statistic	LB-Q(2)	Coefficient	T-statistic	LB-Q(4)	Coefficient	T-statistic	LB-Q(2)	Coefficient	T-statistic	LB-Q(4)
<b>Results using REER-RBI</b>												
Dec-96	0.22	0.16	0.01	1.65	12.82	0.03	-0.04	-0.02	0.02	1.74	11.17	0.06
Mar-97	-0.31	-0.23	0.02	1.72	13.09	0.05	-1.31	-0.70	0.05	1.85	11.59	0.19
Jun-97	-0.81	-0.62	0.04	1.78	13.37	0.14	-2.88	-1.46	0.04	1.99	11.61	0.09
Sep-97	-1.56	-1.12	0.07	1.87	12.61	0.22	-4.94	-2.12	0.02	2.19	10.30	0.03
Dec-97	-1.99	-1.31	0.09	1.93	11.39	0.28	-5.22	-2.02	0.08	2.22	9.13	0.09
Mar-98	-2.66	-1.44	0.13	2.01	9.45	0.36	-5.83	-2.05	0.00	2.30	8.19	0.00
Jun-98	-2.84	-1.43	0.02	2.04	8.60	0.08	-4.89	-1.43	0.01	2.20	6.36	0.01
Sep-98	-2.16	-1.01	0.03	1.94	7.49	0.09	-5.52	-1.28	0.00	2.26	5.21	0.00
Dec-98	-1.79	-0.73	0.02	1.90	6.40	0.10	-6.61	-1.30	0.00	2.37	4.63	0.00
Mar-99	-1.78	-0.70	0.02	1.91	6.20	0.08	-6.70	-1.31	0.00	2.35	4.56	0.00
Jun-99	-1.93	-0.71	0.02	1.90	5.76	0.09	-6.81	-1.44	0.00	2.35	4.50	0.00
Sep-99	-1.91	-0.75	0.02	1.90	6.29	0.08	-7.82	-1.93	0.01	2.38	5.98	0.00
Dec-99	-2.05	-1.03	0.11	1.84	7.79	0.31	-6.22	-1.47	0.04	2.16	5.03	0.00
Mar-00	-2.01	-1.08	0.40	1.75	7.80	0.43	-4.54	-1.03	0.04	1.95	4.19	0.00
Jun-00	-1.54	-0.81	0.24	1.66	6.87	0.20	-3.37	-0.78	0.09	1.79	3.76	0.00
Sep-00	-1.40	-0.81	0.26	1.61	7.07	0.29	-2.07	-0.50	0.19	1.57	3.31	0.23
Dec-00	-1.26	-0.78	0.32	1.54	7.02	0.49	-1.79	-0.41	0.26	1.49	2.96	0.53
Mar-01	-0.82	-0.48	0.53	1.46	6.14	0.85						

(Annex Table 5 Contd)



(Annex Table 5 Contd)

Results using REER-IMF												
Dec-96	-3.03	-3.69	1.94	18.65	0.36	0.27	-3.53	-3.65	2.00	19.22	0.28	0.22
Mar-97	-2.74	-3.27	1.94	19.00	0.43	0.40	-3.39	-3.27	1.99	19.01	0.31	0.25
Jun-97	-2.60	-2.99	1.94	19.29	0.44	0.45	-3.14	-2.74	1.99	18.67	0.37	0.31
Sep-97	-2.42	-2.66	1.95	18.87	0.46	0.52	-3.01	-2.59	1.99	18.67	0.40	0.37
Dec-97	-2.43	-2.58	1.94	18.40	0.48	0.53	-3.15	-2.64	1.99	18.57	0.27	0.29
Mar-98	-2.43	-2.55	1.95	17.65	0.36	0.47	-3.22	-2.81	1.99	19.78	0.14	0.13
Jun-98	-2.48	-2.83	1.94	18.98	0.22	0.26	-3.79	-3.82	1.95	22.60	0.08	0.05
Sep-98	-2.60	-3.17	1.89	19.39	0.23	0.19	-4.04	-3.95	1.92	21.54	0.04	0.03
Dec-98	-2.52	-2.91	1.88	17.89	0.19	0.17	-4.12	-3.87	1.94	20.56	0.03	0.04
Mar-99	-2.48	-2.75	1.89	16.93	0.14	0.26	-4.09	-3.61	1.91	18.30	0.02	0.03
Jun-99	-2.45	-2.53	1.86	15.03	0.12	0.19	-4.37	-3.57	1.95	16.77	0.02	0.02
Sep-99	-2.50	-2.61	1.88	14.87	0.09	0.16	-3.86	-3.17	1.89	16.11	0.07	0.06
Dec-99	-2.36	-2.90	1.81	16.06	0.23	0.31	-3.15	-2.34	1.79	12.72	0.27	0.06
Mar-2000	-2.00	-2.45	1.72	14.22	0.60	0.26	-2.68	-1.62	1.73	9.45	0.22	0.01
Jun-2000	-1.74	-1.97	1.65	11.72	0.30	0.04	-2.62	-1.31	1.72	6.97	0.21	0.01
Sep-2000	-1.64	-1.83	1.63	10.35	0.32	0.06	-1.50	-0.65	1.52	4.70	0.34	0.29
Dec-2000	-1.44	-1.63	1.57	9.59	0.30	0.21	-1.11	-0.47	1.39	3.94	0.63	0.92
Mar-01	-1.24	-1.33	1.52	8.64	0.49	0.57						

Source: Authors' estimates.

Notes: Sample period for the estimation ends in 2008:1 and starts from the quarter indicated in the first column.

Variables are defined as follows: WEXPR = world real exports (nominal exports, deflated by unit export values); REER = real effective exchange rates compiled by RBI (36-currency export weighted), OECD and IMF, respectively.

LB-Q(2) and LB-Q(4) = p-values of Box-Pierce-Ljung Q-statistic for the null of no residual autocorrelation for two and four lags, respectively.

*IMPORTS*

As regards the domestic activity variable, industrial GDP is found to be a better indicator vis-à-vis overall GDP, reflecting the tilt of the commodity composition of imports toward industrial raw materials. The null hypothesis of one cointegrating vector cannot be rejected. The long-run coefficients are on the expected lines and are statistically significant. Annex Table 6 shows that income elasticity of imports with respect to domestic industrial GDP turns out to be around 1.55 in all the cases. The coefficient on the REER ranges from 0.19 to 0.42 and, as in the case of exports, is higher for the RBI-REER. The short-run dynamics indicate that the ECM terms are correctly signed and, both the variables—imports and REER—adjust to the deviations from the equilibrium.

*Annex 4: Determinants of Gold Imports*

In view of the significant jump in gold imports, we empirically assess the role of the potential determinants—gold prices, domestic inflation, domestic interest rates, currency movements, and returns on other assets—highlighted in previous studies (RBI 2013a; Starr and Tran 2008; Vaidyanathan 1999). Using monthly data from April 2004 to December 2012—the period selection is governed by availability of monthly data on the value of gold imports—the following alternative specifications are estimated. The first uses nominal variables augmented by domestic price variables (equation 1) and the second uses the real variables (equation 2):

$$\begin{aligned}
 MG_t &= a + \text{trend} + b. \Delta LPG_t + c. \Delta LP_t + d. RN_t + e. \Delta LBSE_t + f. \Delta E_t + u_t \quad (1) \\
 MG_t &= a1 + \text{trend} + b1. \Delta LPGR_t + d1. RR_t + e1. \Delta LBSE_{Rt} + f1. \Delta ER_t \\
 &\quad + u_t \quad (2)
 \end{aligned}$$

Here  $\Delta L$  is the first difference of log terms of the variables and the variables enter in the first difference as they turn out to be stationary.<sup>9</sup>  $MG$  is the volume of monthly gold imports,  $PG$  is the local-currency gold price,  $P$  is domestic prices (measured by WPI or CPI),  $RN$  is the nominal deposit interest rate,  $BSE$  is Bombay Stock Exchange (BSE Sensitive) index,  $E$  is the exchange rate (Rupees per US dollar),  $PGR$  is the local-currency gold price in real terms,  $RR$  is the real deposit interest rate,  $BSE_{R}$  is the real BSE index, and  $ER$  is the real exchange rate. The real variables are obtained by

9. Augmented Dickey–Fuller (ADF) tests indicate that the null of unit root cannot be rejected for the level series (other than monthly imports and WPI), but can be rejected at the 5% level of significance for their first-differences.

**ANNEX TABLE 6. Determinants of Imports (Annual Estimates)**

	Results for REER-RBI			Results for REER-OECD			Results for REER-IMF		
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
L(IMPO)	1.00								
L(REER)	-0.39 (3.70)	-0.42 (3.74)	-0.32 (5.85)	-0.19 (4.90)	-0.21 (5.17)				
L(INDR)	-1.57 (32.33)	-1.57 (32.04)	-1.57 (45.04)	-1.55 (59.84)	-1.55 (60.60)				
CONSTANT	15.58 (15.12)	15.70 (14.86)	15.45 (23.26)	14.67 (29.34)	14.63 (29.68)				
<i>Short-run ECM model</i>									
ECM(-1)	-0.38 (1.80)	-0.33 (1.77)	0.48 (4.87)	0.48 (5.65)	0.54 (2.39)	0.48 (5.65)	0.48 (2.93)	0.54 (2.53)	0.60 (2.77)
DLIMPO(-1)	0.17 (0.68)	0.21 (0.94)	-0.37 (3.17)	-0.43 (4.39)	0.34 (1.58)	-0.43 (4.39)	0.39 (1.58)	-0.12 (0.71)	0.34 (1.48)
DLREER(-1)	0.09 (0.32)	0.17 (0.63)	-0.17 (1.16)	0.16 (1.08)	0.47 (1.56)	0.16 (1.08)	0.47 (1.56)	-0.03 (0.13)	0.50 (1.75)
DLIMPO(-2)	0.30 (1.42)	0.21 (1.10)	-0.04 (0.40)	0.23 (1.99)	0.27 (1.47)	-0.04 (0.40)	0.38 (1.99)	0.23 (1.66)	0.17 (1.26)
DLREER(-2)	0.32 (1.10)	-0.45 (3.06)	-0.48 (3.35)	-0.48 (3.35)	0.53 (1.84)	-0.48 (3.35)	0.53 (1.84)	-0.08 (0.37)	0.36 (1.30)
DLINDR	2.32 (4.76)	1.98 (4.32)	0.21 (0.87)	0.16 (0.74)	2.10 (4.92)	0.21 (0.87)	2.44 (5.46)	-0.37 (1.14)	2.10 (4.92)
DLINDR(-1)	-2.27 (3.17)	-1.84 (2.74)	1.03 (2.89)	0.45 (2.19)	-2.17 (3.40)	1.03 (2.89)	-2.17 (3.40)	-0.01 (0.01)	-1.70 (2.71)
DLINDR(-2)	0.28 (0.48)	-0.38 (0.59)	-0.32 (1.10)	0.01 (0.02)	0.05 (0.09)	-0.32 (1.10)	0.01 (0.02)	0.11 (0.28)	0.23 (0.59)

(Annex Table 6 Contd)

(Annex Table 6 Contd)

	Results for REER-RBI	Results for REER-OECD	Results for REER-IMF
dum84	-0.17 (2.48)	-0.22 (2.87)	-0.16 (2.40)
Serial correlation @	0.21	0.32	0.04
ARCH @	0.78	0.89	0.78
Normality @	0.41	0.46	0.92
R <sup>2</sup>	0.64	0.67	0.58
VAR lags	3	2	3
PV (r=0)	0.01	0.01	0.03
PV (r=1)	0.48	0.39	0.78

Source: Authors' estimates.

Notes: Sample period for the estimation is 1980-81 to 2007-08.

Variables are defined as follows: IMPQ = quantum index of India's imports; INDR = India's real industrial GDP;

REER = real effective exchange rates compiled by RBI (36-currency trade weighted), OECD and IMF, respectively.

dum84 is dummy for 1984-85.

Rows PV (r=0) and PV (r=1) give p-values (Bartlett-corrected) for the null of no and one cointegrating vector, respectively.

@: p-values for the null hypotheses of no serial correlation, no conditional heteroskedasticity and normality of residuals.

Figures in parentheses are t-statistics.



deflating the nominal variables with either WPI or CPI in the respective specifications. The real interest rate is computed as the nominal deposit rate less y-o-y WPI (or CPI) inflation. Monthly dummies are included to capture seasonality. A trend term is also included, as a proxy for higher incomes over the time period, which could have a positive impact on demand (Vaidyanathan 1999); however, Starr and Tran (2008), in their panel study, find a negative relationship between recent income growth and gold demand, but a positive impact of income volatility on gold demand.

In all, four specifications are estimated as shown in Annex Table 7: columns 2 and 3 estimate equation (1) for CPI and WPI, respectively. Correspondingly, columns 4 and 5 estimate equation (2) for the real variables (nominal variables deflated by CPI and WPI, respectively).<sup>10</sup> All the specifications have relatively good explanatory power and the regressions diagnostics are satisfactory.

**ANNEX TABLE 7. Determinants of Gold Demand**

Explanatory variable	Dependent variable: Monthly gold imports (LMG)			
	Sample Period			
	2004:4–2012:12	2004:4–2012:12	2004:4–2012:12	2004:4–2012:12
1	2	3	4	5
Constant	1.77 (5.14)	1.73 (4.98)	1.79 (4.77)	1.76 (4.83)
TREND	0.00 (3.83)	0.00 (4.25)	0.00 (3.01)	0.00 (3.47)
LMG(-1)	0.25 (3.86)	0.24 (3.67)	0.34 (5.18)	0.31 (4.54)
DLPG	-6.24 (8.39)	-6.43 (8.62)		
DLPG(-3)	-1.05 (1.55)	-0.99 (1.45)		
DLPG(-4)	1.23 (1.76)	0.91 (1.33)		
DLPG(-5)	1.56 (2.19)	1.61 (2.24)		
DLPG_R			-6.39 (8.42)	-6.77 (8.99)
DLPG_R(-3)				-1.33 (1.86)
DLPG_R(-5)			1.82 (2.40)	1.45 (1.95)

(Annex Table 7 Contd)

10. The equations are estimated with six lags of each variable and the insignificant variables are excluded using the STWISE command in WinRATS.

(Annex Table 7 Contd)

Explanatory variable	Dependent variable: Monthly gold imports (LMG)			
	Sample Period			
	2004:4–2012:12	2004:4–2012:12	2004:4–2012:12	2004:4–2012:12
1	2	3	4	5
DLCPI{1}	6.84 (1.83)			
DDRATE{1}	0.26 (1.79)	0.20 (1.38)		
DDRATE{2}	0.43 (3.13)	0.46 (3.27)		
DDRATE_R{2}			0.08 (2.39)	
DLBSES{4}	0.58 (1.38)	0.77 (1.86)		
DLBSES_R{4}			0.74 (1.70)	
DLEXCH	-2.58 (1.81)	-1.92 (1.38)		
DLEXCH_R{1}				-1.94 (1.39)
DLEXCH_R{5}			-3.21 (2.12)	-3.48 (2.49)
DUM2006M6	-1.63 (5.62)	-1.65 (5.61)	-1.64 (4.95)	-1.63 (5.05)
R-bar <sup>2</sup>	0.68	0.67	0.62	0.63
DW	2.07	2.10	2.16	2.00
White test	0.52	0.53	0.34	0.65
JB test	0.47	0.46	0.68	0.58
LB-Q test	0.28	0.27	0.16	0.18

Source: Authors' estimates.

Notes: MG = monthly gold imports; PG = Price of gold in rupees;

CPI = Consumer price index; WPI = Wholesale price index.

PG\_R = Price of gold in rupees deflated by CPI (column 4) and WPI (column 5).

BSES = Bombay Stock Exchange Index (BSE-30); EXCH = Exchange rate (Rupees per US dollar)

Prefix DL stands for log difference.

DDRATE = Variation in deposit rate; DDRATER = Variation in real (CPI-adjusted) deposit rate;

DLEXCH\_R = exchange rate depreciation less CPI inflation (col. 4) and WPI inflation (col. 5)

Figures in parentheses are t-statistics.

White test = significance level (p-value) for White test for the null of homoskedasticity of residuals.

JB test = significance level (p-value) for Jarque-Bera test for the null of normality of residuals;

LB-Q test = significance level (p-value) of Box-Pierce-Ljung Q-statistic for the null of no residual autocorrelation for 6 lags.

Sample period for regression is April 2004–December 2012 and the regressions include monthly dummies.

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# Comments and Discussion

**Shankar Acharya**

*ICRIER*

The paper by Kapur and Mohan (henceforth KM) provides an informative and thoughtful review of the deterioration in India's macroeconomic performance since the global financial crisis of 2008–09 (which KM dub the North Atlantic Financial Crisis) and up to the summer of 2013. It adds the welcome dimension of placing India's performance in the context of overall macro performance of other major developing countries. However, for a paper presented in mid-July 2013, it is surprisingly muted, almost soothing, on the evolution of the serious *crisis* in the Indian economy that had clearly unfolded by then.<sup>11</sup> How else would one describe a situation where economic growth had collapsed, industrial output had stagnated for two years, jobs were being shed, consumer inflation was close to 10% for the fifth consecutive year, the current account deficit (CAD) in the balance of payments was nearly 5% of GDP by 2012–13, investment was fleeing abroad, external debt maturing in fiscal 2013–14 exceeded US\$170 billion, and the rupee was depreciating rapidly, touching new lows (or highs against the US\$!) each week?

The paper is also somewhat reticent in drawing pointed attention to the major policy errors of the United Progressive Alliance (UPA) government, which had been mainly responsible for engendering this sorry state of India's economic affairs. In this brief comment I will outline five key policy errors (out of a long list), which not only helped precipitate the crisis but also made it difficult to bring about any swift recovery.

Before doing this, I must point out one conspicuous dimension which is missing from KM's macroeconomic review, namely, employment. This is a particularly striking omission when one recalls that the father of modern macroeconomics, John Maynard Keynes, was motivated in his seminal work principally by the high and persisting unemployment in the 1930s in the United Kingdom and other industrial nations. Admittedly, there are big problems with India's employment data. But it would still have been

11. For more critical reviews of macroeconomic developments, see Acharya (2012a, 2012b).



useful to use the available information to outline trends, especially given that India's much touted demographic dividend is in serious danger of turning into a major unemployment/underemployment disaster. Let me now turn to the government's major policy errors.

### *Fiscal Blowout of 2008–09*

In the six years to 2007–08 the combined (Centre and states) fiscal deficit had been brought down from nearly 10% of GDP to 4%. This remarkable fiscal consolidation was squandered in the single, pre-election year of 2008–09 when the combined deficit (inclusive of off-budget items) leapt to over 10% of GDP. The Central government budget deficit target of 2.5% of GDP, presented by the Finance Minister, Mr P. Chidambaran, in February 2008, was massively overshoot in the course of the year to yield an outcome of 8.2% of GDP (including off-budget items), easily the biggest overshooting in India's history. Although later it was rationalized as “fiscal stimulus” to counteract the global crisis, in fact, the great bulk of the overshooting occurred before the Lehman crisis of September 2008, mainly in the form of pay increases, subsidy hikes, and MGNREGA rollout.

This unprecedented splurge of fiscal profligacy may indeed have cushioned the fall-out from the global crisis for a year or two. But the composition of the huge expenditure hikes (mainly government pay, subsidies and entitlement programs) made subsequent retraction politically difficult. As a result, the persisting high fiscal deficits since 2008 have fuelled the long bout of inflation, kept interest rates high, reduced public savings, and fed the rising CAD.

### *Exchange Rate Mismanagement since 2009*

Although senior government spokesmen tended, in 2013, to project India's external deficit pressures as a recent problem, in fact, the CAD had been consistently above the Prime Minister's “safe benchmark” of 2.5% of GDP since 2009–10, and rising to 4% of GDP in 2011–12 and 2012–13. This meant that by summer 2013 that we were in the fifth year of a dangerously high CAD. A significant contributory factor had been the authorities' (government plus RBI) shift, since the Spring of 2009, to a relatively “hands-off” policy toward the rupee's exchange rate. So when capital inflows recovered after 2009, the rupee was allowed to appreciate strongly in 2009 and 2010, despite a sharply rising CAD. This is borne out by most indices of real effective exchange rates, as KM point out. The authorities would have done better to have followed the well-tested, pre-2008 policy of limiting appreciation

and building reserves through dollar purchases by the RBI, accompanied by calibrated sterilization policies. The failure to do this led to an overvalued rupee, which weakened India's international competitiveness and helped fuel the pattern of rising external deficits that culminated in extreme external liquidity pressures and steep depreciation of the rupee in summer 2013.

### *The Supply Shocks of 2010–12*

These were multiple, all reflecting policy and governance weaknesses. They include the sudden and damaging tightening of environmental regulations in 2010; the eruption of serious scams in 2G telecom spectrum allocation, coal block allocations, and various land scams (all with roots in earlier years), and their debilitating aftermaths in the impacted sectors; the sweeping judicial restraints on iron ore mining in Karnataka and Goa; the fiasco of missing coal and gas supply for many thousand megawatts of freshly completed power projects; the anti-investment, retrospective tax measures of the 2012 budget; and the generalized “policy paralysis” in regard to activation, completion and clearances of major projects. All these supply problems reduced production, investment and growth and some also directly hurt the external balance, as in the case of coal and iron ore.

While each of these supply-side problems had distinct characteristics and policy histories, together they constituted a major (and persisting) supply shock to the Indian economy and seriously undermined the business climate.

### *The Neglect of Manufacturing*

In a more medium-term framework, and in marked contrast to the great majority of emerging nations, the share of manufacturing in GDP has stagnated at around 15–17% for decades in India. While the problem is long-standing, the failure to enhance the share during the past decade was a significant contributory factor in the current economic crisis. During the high growth period, from 2003 to 2011, services (including construction) accounted for well over 70% of all growth, while industry (essentially manufacturing and mining) accounted for less than 20%. This lopsided pattern could not sustain high growth for long, and has not done so once services expansion started to flag. The major policy impediments to industrial growth have been unreformed rigidities in the labor market, growing impediments to land acquisition (now enshrined in the cumbersome new Land Acquisition Act), and the continuing weaknesses in infrastructure, especially power, roads, railways, and ports. Slow industrial growth has led to limited growth

of jobs for low-skilled labor and a steady widening of the merchandise trade deficit, which, in turn, widened the CAD.

More generally, the prolonged drought in economic reforms since 2004 probably has had a cumulatively negative impact on overall productivity growth in all major sectors of the economy.

### *Food Grain Procurement and Distribution Policies*

Five consecutive years of double-digit consumer price inflation has been a new and unwelcome development in India. Aside from the persistence of high fiscal deficits, major supply shocks and, perhaps, an overly accommodative monetary policy, the last few years have seen a strong pattern of rising government minimum support prices for food grains (wheat and rice) combined with high levels of government procurement, highly subsidized food entitlement distribution through an inefficient public distribution system and a reluctance to undertake open market sales of very high excess food stocks. The result has been that the government has, in effect, become the largest hoarder of food grains, thus contributing to the rise in food prices and, possibly, rural and urban wage inflation.

### *Outlook*

In their concluding section, KM seem to be fairly optimistic on reviving growth and restoring macroeconomic stability. They say “the structural drivers of growth—the favorable demographics and the high savings and investment rates—are broadly intact.” As I have pointed out, where labor demand is not buoyant, it is hard to reap a demographic dividend from burgeoning labor supply. As for high investment and savings rates, these are already trending down in a context where the returns, in the form of growth, are not happening. Much of the high investment reflects a huge backlog of unfinished or stalled projects; thus fresh investments may be less forthcoming, especially in a difficult business climate. Moreover the simultaneous existence of low growth and high investment is also due to the worsening of economic policies in recent years, some of which may not be easy to reverse. Restoring fiscal balance will also be challenging, given low buoyancy in revenues, the enduring legacy of expanded entitlement programs (and associated subsidies), and the rising claims for capital infusions from highly stressed public sector banks. With existing infrastructure companies highly leveraged, it is difficult to see how the extant infrastructure bottlenecks will be swiftly resolved.

In sum, a recovery in growth, lower inflation, and better macro balances are likely to be slower in coming and harder to achieve than KM suggest. The damage from bad economic policies of the last few years will take time to reverse.

## **Vijay Joshi**

*University of Oxford*

The purpose of the Kapur–Mohan paper is to (a) explain the main features of India's recent adverse macroeconomic experience (marked slowdown in growth, large CADs, inflation well above the target), (b) assess the extent to which macroeconomic policy was responsible for these unsatisfactory outcomes, and (c) suggest how macroeconomic policy should be managed in future.

### *Growth Slowdown*

My argument in this section is based on Tables 1 and 6 in the paper.

Unsurprisingly, in 2008/09, the year in which the global credit crisis exploded, India's growth rate fell to 6.7%, that is, two percentage points below the annual average of the previous five years. It then rebounded to almost 9% a year in the following two years (2009/10 and 2010/11) but fell back sharply to around 5.5% in the following three years (2011/12–2013/14).<sup>12</sup>

The authors have two explanations for the slowdown from 2011/12 onward. First, they argue that it was the result of the withdrawal of accommodative monetary and fiscal policies, which were implemented during the 2008/09 crisis and kept in place for the following two years. But this, as they recognize in their section on “Quantifying the Growth Slowdown,” cannot explain much because real monetary tightening from 2011/12 was quite mild, and fiscal consolidation was also very modest. The main explanation for the slowdown is clearly the large fall in corporate investment in 2011/12 and its failure to revive thereafter.<sup>13</sup> (National accounts figures for corporate investment are not yet available after 2011/12 but all informal indicators point to such non-revival.) How is this fall to be explained? Let us adopt the term “gap” to denote the difference between investment and saving. The

12. GDP is expected to grow in 2013/14 by around 5%.

13. Note that corporate investment collapsed in 2008/09 but recovered during the high-growth years of 2009/10 and 2010/11.

authors' second explanation for the slowdown is that corporate investment in 2011/12 was "crowded out" by a rise in the public sector "gap." As it happens, the rise in the public sector "gap" in 2011/12 is too small to explain the magnitude of the fall in corporate investment.<sup>14</sup> The authors appear to have a slightly different hypothesis in mind. In their view, the fall in corporate investment in 2011/12 was a delayed effect of the rise in the public sector gap in earlier years. (These earlier years must refer to 2008/09 and 2009/10, since the public sector "gap" fell in 2010/11.)<sup>15</sup>

This "lagged crowding out" hypothesis faces a serious problem. There is no explanation of the underlying theory or lag structure. Moreover, there is an obvious competing explanation of the slowdown that the authors make no attempt to evaluate. This more plausible causal story would start with an autonomous fall in corporate investment and in the corporate "gap" in 2011/12. To cushion the resulting slowdown, fiscal consolidation was put on hold, so the public "gap" rose. Since there was accompanying high inflation, household financial savings fell and the household gap increased. The sum of the rise in the public and household "gaps" outweighed the fall in the corporate "gap," so the foreign "gap," that is, the CAD, rose. I find this story much more plausible.

This alternative story needs an explanation of the "autonomous" decline in corporate investment. In my view, two factors were important. One of these the authors completely ignore, the other they underplay. The factor they ignore altogether is that corporate investment was hobbled by an overhang of debt. This arose from heavy borrowing (financed by debt, not equity) by corporates in the go-go years of 2003/04–2007/08. When the boom burst in 2008/09, companies continued borrowing to complete their unfinished projects but they became progressively more weighed down with debt. Eventually, the need to deleverage prompted the cancellation or postponement of new investment.<sup>16</sup> There is a second explanation for the drop in corporate investment in 2011/12 and thereafter. The authors do mention it briefly, in passing, but it is far more important than they make out. This is the souring of the investment climate that occurred because of various

14. Moreover, the causality could be quite different. The identity public gap + corporate gap + household gap = foreign gap (i.e. the current account deficit) is just that, an identity. It is compatible with a different causal story in which the leading factor is the fall in corporate investment, and public sector investment and saving play a passive role, as explained in the main text later.

15. Readers will notice that I have tried to tell the authors' story with more attention to the precise timing than they do themselves.

16. See Reserve Bank of India (2012) and Nagaraj (2013).

significant governance failures. From 2010, the government got mired in various scams, such as those in telecom and mining. The exposure of these was a good thing for the future of Indian democracy but the short-term economic effects were unhelpful. Output of critical materials was adversely affected (for example mine closures ordered by the Supreme Court led to a huge fall in the output of iron ore). The government entered a period of policy paralysis, ministers and civil servants became excessively cautious and unwilling to make decisions, and many projects, which required government clearances, came to a standstill. The spate of scandals heightened public sensitivities over land acquisition and environmental impacts. But the government was not able to put in place speedy and fair systems to deal with these issues, so investments were held up. On top of all this, the government shot itself in the foot by various silly initiatives like retrospective taxation of some foreign companies. The net effect of all this was that the risk premium on investment went up sharply.<sup>17</sup>

Which is the more plausible story: One that accords prime place to crowding out by the public sector or one that accords prime place to the effects of a debt overhang and an adverse change in the expected rate of profit on new investment (Keynes would have called it “a fall in the marginal efficiency of capital”)? The authors advance the “crowding out” story; I much prefer the alternative story. The main point is that the authors make no attempt to discriminate between these two explanations.

As regards restoring rapid growth, the authors have little to say apart from advocating fiscal consolidation. While the latter is indeed a crucial medium-run requirement, it is far from sufficient as a recipe for re-igniting growth in the short run, if the above analysis is correct.

### *Widening of External Imbalance*

I have no quarrel with the list of usual suspects identified in the paper to explain the pronounced widening of the CAD in 2011/12 and 2012/13: sluggish global demand, high world commodity prices, domestic supply constraints, shift toward gold in household savings, and appreciation of the real exchange rate in earlier years. How do they rank in relative importance? In my view, the authors underplay the importance of the real exchange rate.

Their views are in part guided by econometric exercises that estimate income and price elasticities of demand for exports. As one would expect,

17. The investment climate was also adversely affected by macroeconomic concerns such as the continuing high inflation and the worsening current account deficit.

they find an income elasticity of demand for exports greater than 1. But they come up with price elasticities of demand that are less than 1, not only in the short run but also in the long run, in the model with annual data (albeit somewhat higher in a quarterly disaggregated model over a shorter time-period.) Like many such estimates, theirs are unconvincing. This is because they are based on single-equation models, which mix up demand and supply. Robust elasticity estimates can only come out of a structural model in which export demand and export supply equations are estimated in a simultaneous equation framework. In my book on India's macroeconomics with Ian Little, we estimated such a model for the period 1960–90.<sup>18</sup> Across a wide range of specifications, we found the short-run price elasticity of demand to be greater than 1, and the long-run elasticity to be around 3, with more than 80% of the long-run effect coming through within two years. (But these estimates are now quite old and need to be updated.)

The importance of this point for recent Indian experience is that, in my judgment, the RBI made absolutely the wrong call on exchange rate policy for two years from August 2009 to August 2011. During this period, capital inflows were strong but the RBI abandoned its traditional policy of managing the exchange rate, and allowed the rupee to find its level in the foreign exchange market without any intervention. The rupee rose and the real effective exchange rate appreciated by around 10% (regardless of which index is chosen: RBI, BIS, IMF), and remained at that level for two years. Thereafter, the exchange rate fell but by then the damage had been done. The “strong rupee” played a major role in the export slowdown and import surge of 2011/12 and 2012/13, and the consequent widening of the CAD to well above 4% of GDP.

### *Inflation*

The authors' discussion of inflation is curiously narrow and restricted to monetary policy. I agree with their argument that in contrast to much popular commentary, monetary policy was highly accommodative in the face of rapid inflation until well into 2011/12. (At first, the real policy rate of interest fell; then it rose but only in the sense of becoming somewhat less negative.) It is only in 2012 that monetary policy became moderately restrictive, so it is not surprising that inflation proved to be so stubborn. This is correct, but there is more to the persistence of inflation than the timing of monetary policy. Two factors deserve special mention. First, government intervention in the

18. See Joshi and Little (1994) for more details.

food market has been inept. Procurement prices for cereals were raised an astonishing 75% from 2007 to 2011. At the same time, the government showed marked reluctance to unload its huge food stocks to moderate food prices. Second, indexation mechanisms are stronger than they used to be due to the indexation of wages in the NREGA program. (This scheme is important way beyond the number of workers employed under its aegis, because it sets a rising floor to rural money wages.) In turn, this makes it easier for inflationary expectations to get entrenched. It is notable that rural farm money wages grew 17% a year from 2008 to 2012.

Stronger formal and informal indexation mechanisms (large revisions of procurement prices, indexation of NREGA wages, more generous pay commission awards, in addition to dearness allowance revisions of wages in organized industry) have important implications for future policy. They imply that (a) the traditional policy of avoiding contractionary monetary policies during droughts, and simply waiting for a better harvest, is much less likely to work in future and (b) the output cost of bringing inflation down may be greater in the future than it was in the past. In other words, India will probably face a much sharper short-run trade-off between inflation and growth than hitherto.

The new inflation environment has brought into focus the question "Should India adopt inflation targeting?" The authors' discussion of this critical issue is cursory and rather superficial.

### *Fiscal Policy*

I have no quarrel with the authors' view that the fiscal stimulus was withdrawn too late after 2008/09 and that its composition was defective. But fiscal consolidation, as pointed out earlier, is not enough to revive growth.

I also agree with the authors that, in the medium run, fiscal consolidation is imperative. But the challenge is bigger than the authors make out. Since 2008, the ratio of government debt to GDP has fallen somewhat, because of high inflation. Past experience shows that nominal interest rates on government debt are quite sticky. When inflation is brought under control, the real government borrowing rate will rise. That will make it harder to reduce the debt ratio. A connected point is that the interest rate on government borrowing is artificially low due to statutory state capture of bank lending (i.e., "financial repression"). This practice needs to be unwound because it keeps deposit rates too low for savers and the cost of borrowing too high for companies. But when it is unwound, the government borrowing rate will rise. So, the true debt position today is worse than it appears. To reduce it



to safe levels, medium-term fiscal adjustment will have to be sharper than generally recognized.

### *The Boom of 2003–08*

Another shortcoming of the paper is that the authors follow the general tendency of regarding the period of 2003/04–2007/08 as a model of good policy. This is not quite right. The good outcomes during this phase were, to a significant degree, due to favorable conditions such as a strong tail-wind from the world economy and the absence of food or oil shocks. Policy was not as good as it is often cracked up to be. Several points are noteworthy: (a) During this period, there were large annual net capital inflows of up to 10% of GDP. These were taken into foreign exchange reserves, with only modest exchange rate appreciation. As a result, broad money and bank credit expanded at a very rapid rate, and the resulting monetary overhang contributed to inflation later on. More aggressive sterilization of the inflows would have helped. (b) Apparently, fiscal consolidation made large strides: the overall (i.e., Center + States) fiscal deficit fell from 9% to 4% of GDP over the period. But the improvement in the cyclically adjusted deficit was surely far less. Fiscal adjustment should have been sharper during what was a period of above-trend growth. (c) Companies borrowed like there is no tomorrow, with dire results later on. This suggests that monetary and credit policies should have been tougher. (d) The period was characterized by little, if any, genuine supply-side reform. This paved the way for a reduction in the potential rate of growth in due course.

### **General Discussion**

Surjit Bhalla liked the approach used in the paper to distinguish between domestic and external influences on the economy and he agreed with the conclusion that India's recent economic problems are very much of its own creation. However, he thought that evidence of a relationship between the fiscal deficit and inflation was lacking. Similarly, he could find little evidence of a link between interest rates and either public or private saving.

T. N. Srinivasan argued that it was difficult to evaluate the policies without a model in which a counterfactual could be developed. Without one, the authors were essentially waving their hands. He wanted the paper to be more explicit about the structure of the underlying macroeconomic model. Furthermore, he believed that the growth slowdown predated the

global financial crisis in the fall of 2008, and that it was due to long-standing problems such as the CAD and a long list of governance failures. During the global crisis, the primary shock was the drop in exports, and he did not believe that monetary easing was an appropriate offset in those circumstances.

Prema-chandra Athukorala argued that the export slowdown could be traced to demand factors. India's share in exports from developing countries is declining, and India's export slowdown is more pronounced than that of China and other East Asian countries. He believed that the primary problem was that the policy reforms had not made India an attractive location as a production node within the regional production network that has developed in East Asia. In particular, India's policy reforms have not attracted export-oriented FDI. Thus, among the supply-side issues is the question of why investors have not come to India.

Govinda Rao applauded the timeliness of the paper's focus on macroeconomic issues but he thought that they were dominated by the fiscal challenge and that within the fiscal area the problems were concentrated in the growth of subsidies and transfers. Devesh Kapur added that the elections of 2008 had to be part of the story because of the additional fiscal spending that they induce. The same problem has been predicted to rise in 2014. He also argued that there was a fundamental lack of public trust in the governance system as reflected in Indian households investing in gold and Indian corporations expanding their investments outside India. Anupam Khanna was concerned about an excessive government focus on attracting foreign capital. Much of the capital inflow has been short term in nature and could easily be reversed in the future. He thought there were similar time bombs associated with domestic capital investments that could also generate pressures for investors to exit.

Mihir Desai agreed with Vijay Joshi's emphasis on developments in the corporate sector to account for the slowdown in industrial production and investment. In addition, he thought that it was possible to see the period of 2003-08 could be seen as being anomalous, instead of as a benchmark for sustainable growth. It occurred against the backdrop of a debt-ridden global economy, and large capital inflows into India that spurred domestic investment. Thus, the baseline for expected future growth should be scaled down to a rate well below that of 2003-08. Surjit Bhalla disagreed and thought that the experience during those years was very much in line with that of countries that experience sustained growth expansions.

Renu Kohli pointed out that interest rates were abnormally low in 2010 and 2011, and the low borrowing costs encouraged the rise in government

spending. Shankar Acharya thought that both fiscal and monetary stimulus were appropriate responses to the global crisis, but that the composition of the fiscal stimulus was wrong and it proved difficult to reverse. He also disagreed with allowing the exchange rate to appreciate during the period.

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