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# The State of the Indian Economy 2009-10

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## Foreword

This is the second working paper by the Macro Team in ICRIER on the state of the Indian economy. The main findings were presented in a seminar on "The State of Macro Economy" jointly organized by ICRIER and the Centre for Monitoring Indian Economy (CMIE) on 14th October 2009. This was chaired by Dr C. Rangarajan. The paper provides an analytical overview of the Indian economy as it emerges out of the global crisis while simultaneously confronting the twin problems of incipient inflation and fiscal sustainability. The growth forecasts are made separately for the agricultural and non-agricultural sectors. I hope that the paper will provide useful inputs to policymakers and contribute to a better understanding of Indian macroeconomic conditions. Comments and feedback would be greatly appreciated.

(Rajiv Kumar)
Director & Chief Executive

October 23, 2009

**Abstract**

Despite signs of recovery from the global financial crisis, the GDP growth rate for the Indian economy is likely to be between 5.8 to 6.1 per cent in 2009-10, below the 6.7 per cent recorded in fiscal 2008-09. While there has been an improvement in Indian industry, particularly the manufacturing sector, the adverse impact of the fall in *kharif* production due to a rainfall deficiency will act as a drag on the overall growth of the economy. In the current financial year, the major policy challenges for the government will come from the rather sharp rise in inflation and deteriorating public finances. The balance of payments situation may also require policy attention despite a narrowing of the current account deficit and a considerable capital account surplus because of the appreciation of the rupee.

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***JEL Classification:*** *E17, E66, G01*

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## 1. Introduction

After a year of crisis leading to deep recession, advanced economies have stopped contracting and are showing signs of recovery. Japan, Germany and France have come out of recession in the second quarter of 2009 and the US is expected to do the same in the third quarter. IMF, for the first time after the crisis, has revised upward the global GDP growth forecast for 2009 and 2010. The global economy is now projected to shrink by only 1.1 per cent in 2009 as against the 1.4 per cent contraction projected in July 2009. For 2010, the global economic growth is now projected at 3.1 per cent against 2.5 per cent envisaged earlier. However, recovery is expected to be slow and weak. Michael Mussa expects a V-shaped recovery for the US economy relying upon what is called the "Victor Zarnovitz law" that steep recoveries tend to follow deep recessions. Some analysts, however, point towards the possibility of a "double-dip" recession.

India's engagement with the global economy became deeper since the 1990s. This deepening global integration has made it vulnerable to the global financial and economic crisis. However, three factors helped India to cope with the crisis and soften the blow. They are: (1) the robust, well-capitalised and well-regulated financial sector; (2) gradual and cautious opening up of the capital account; and (3) the large stock of foreign reserves. India's GDP growth declined to 5.8 per cent (year-on-year) in the second half of 2008-09 from 7.8 per cent in the first half. The growth improved to 6.1 per cent in the first quarter of 2009-10. There are now visible signs of recovery indicated by the emergence of manufacturing from stagnant or negative growth, the strong rally in equity markets, the huge mobilisation of funds by private corporates from the capital market etc. However, the poor monsoon this year, after successive good rains in the past seven years, is casting a shadow on recovery. In this context, this paper examines how the global crisis got propagated to India, the impact of policy measures, the emerging challenges on monetary and fiscal policy and the prospects of recovery.

## 2. Spread of the Crisis to India

The beginning of the global crisis, triggered by the US sub-prime crisis, can be said to be in August 2007. The run on the Northern Rock, the UK mortgage bank, in mid-September 2007, the Wall Street crash in November 2007 and the merger of Bear Sterns with JP Morgan in mid-March 2008 and, finally, the collapse of the Lehman Brothers in mid-September 2008 are some of the important milestones in the building up of the crisis. The global crisis got transmitted to India in January 2008 with the

[*] Includes Mathew Joseph, Karan Singh, Pankaj Vashisht, Dony Alex, Alamuru Soumya, Ritika Tewari and Ritwik Banerjee. We are grateful to Dr. Rajiv Kumar, Director and Chief Executive of ICRIER for his guidance and helpful comments. We would like to gratefully acknowledge the fruitful comments given by Dr. C. Rangarajan, Dr. Shankar Acharya, Dr. Subir Gokarn and Dr. Surjit Bhalla at the conference on "The State of Macro Economy" which was jointly organized by ICRIER and CMIE on 14th October 2009.

beginning of a massive withdrawal of FII investments from India and the consequent crash of the equity market.

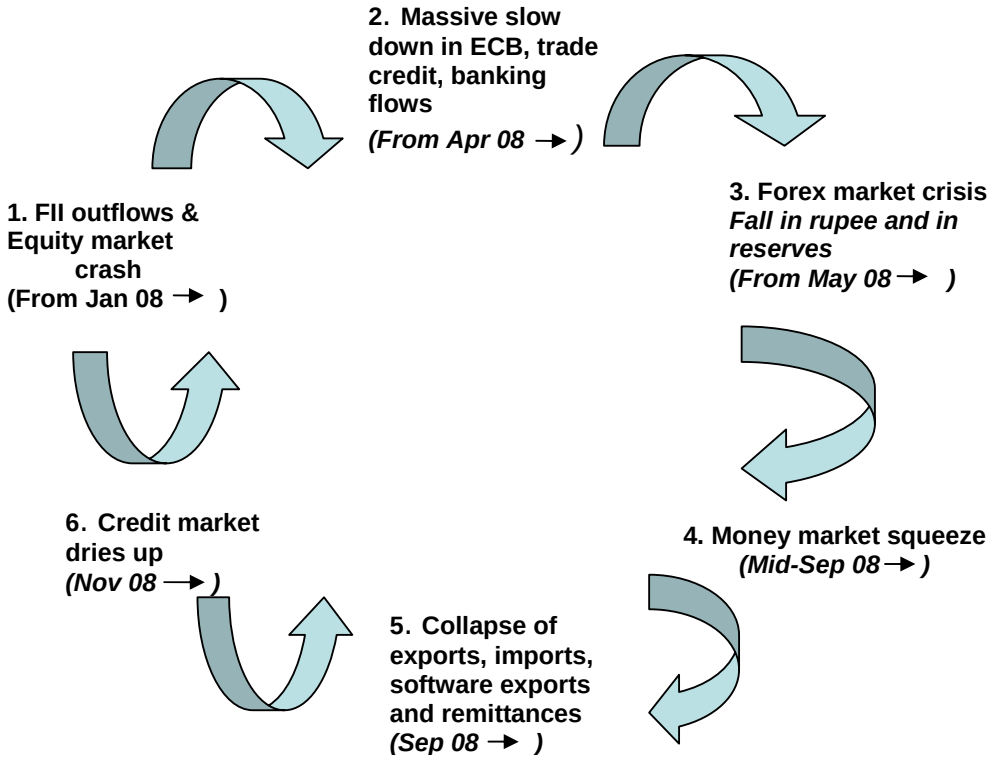
However, policy makers in India and abroad could not respond to the crisis early as they were concerned about rising inflation triggered by the hike in global commodity prices. In India, while monetary tightening continued till the end of August 2008, fiscal expansion took place in the beginning of 2008-09, motivated more by populist considerations than for combating the impact of the global crisis.

The impact of the global crisis on the Indian economy can best be seen as a sequence of six discrete phases or stages as is given in the next section.

### *2.1 A "Sudden Stop" Episode in India*

The US financial meltdown led to a sudden withdrawal of capital flows from emerging markets. India too was buffeted by the "sudden stop" of capital flows[1]. The chart below depicts the channels through which the global financial crisis spread to India.

**Chart 1: A "Sudden Stop" Episode in India**




[1] The concept of "sudden stop" was first introduced by Dornbusch et al. (1995) and later given an analytical framework by Calvo (1998) to examine the impact of a sudden and largely unexpected cut-back in foreign capital inflows to emerging economies. This is reminiscent of the old bankers' saying that "it's not speed that kills, it's the sudden stop" (Dornbusch, 2001). Calvo (2009) noted the likelihood of India going through a "sudden stop" episode with the onset of the global crisis.

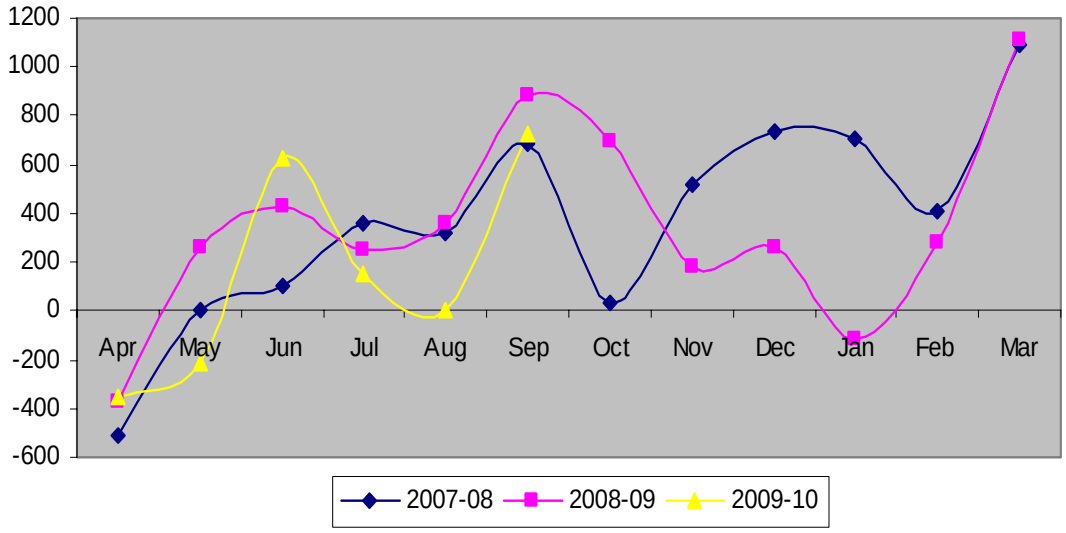
The reversal of capital flows started in January 2008 through a massive disinvestment by foreign institutional investors (FII) from India's equity markets which led to a crash in stock markets (Stage 1). There had been a net FII disinvestment of US$13.3 billion from January 2008 to February 2009 (14 months) in contrast to a net investment of US$17.7 billion during 2007 (12 months). This was followed by a massive slowdown in external commercial borrowing by India's companies, trade credit and banking inflows (Stage 2) from April 2008. Short-term trade finance and bank borrowings from abroad swung to outflows of US$9.5 billion and US$11.4 billion respectively in the second half of 2008-09. The crisis struck the foreign exchange markets by May 2008 and the rupee fell by about 20 per cent from May to November 2008 (Stage 3). The Reserve Bank of India intervened heavily to support the rupee by selling dollars, leading to some depletion of the stock of reserves[2]. By mid-September 2008, the crisis gripped India's money market (Stage 4). The drying up of funds in the foreign credit markets led to a virtual cessation of external commercial borrowing for India, including the access to short-term trade finance. The collapse of the stock market ruled out the possibility of companies raising funds from the domestic stock market. Indian banks also lost access to funds from abroad, as inter-bank borrowing seized up in the US and Europe and banks had to send funds to their branches abroad in those countries. All these put heavy pressure on domestic banks, leading to a liquidity crisis from mid-September to end-October 2008. This was reflected in the inter-bank call money markets where the call money rates rose to 20 per cent or so.

From September 2008, the trade sector collapsed (Stage 5). In the second half of 2008-09, merchandise exports declined by 18 per cent against a growth of 35 per cent in the first half and imports fell by 11 per cent against a growth of 45 per cent in the first half. The growth in software exports dropped to less than 4 per cent in the second half of 2008-09 (38 per cent growth in the first half) and remittances declined in absolute terms by about 20 per cent in the second half (growth of 41 per cent in the first half of 2008-09).

Domestic banks responded to the sudden loss of different avenues of funds for the Indian commercial sector and increased their lending during the period of "credit crunch". In September and October 2008, bank finance (non-food credit and investments in shares, bonds, debentures, commercial paper, etc.) expanded more than the previous year, partly compensating for the drying up of funds from other sources (Chart 2).

[2] In fact, a large part of the decline in reserves is due to the valuation effect as the dollar appreciated against other major currencies. In 2008-09, there was a depletion of India's foreign reserves of US$57.7 billion of which US$37.7 billion was due to valuation change.

**Chart 2: Expansion of Bank Finance to Commercial Sector (Rs. Billion)**




*Source: Reserve Bank of India*

In the next stage (Stage 6), the crisis spread to the domestic credit market. The real economy deteriorated from September 2008, shown first by the sharp fall in export growth to 10 per cent in that month from about 35 per cent during April-August 2008, and negative growth thereafter; virtually negligible or negative growth in industrial output from October 2008; and negative growth in central tax revenue collection, also from October 2008. Business and consumer confidence began to ebb leading to a decline in overall demand. By November 2008, the situation had fundamentally transformed. Expansion of bank finance to the commercial sector slumped to Rs.609 billion during the four-month period, November 2008 to February 2009, just about a quarter in comparison with the expansion of Rs.2,362 billion during the same period a year ago (Chart 2). This was primarily due to a sharp fall in demand for funds as investment and consumption dropped. It was also partly due to banks becoming extremely risk averse with the perception of default rising considerably.

## 3. Policy Response

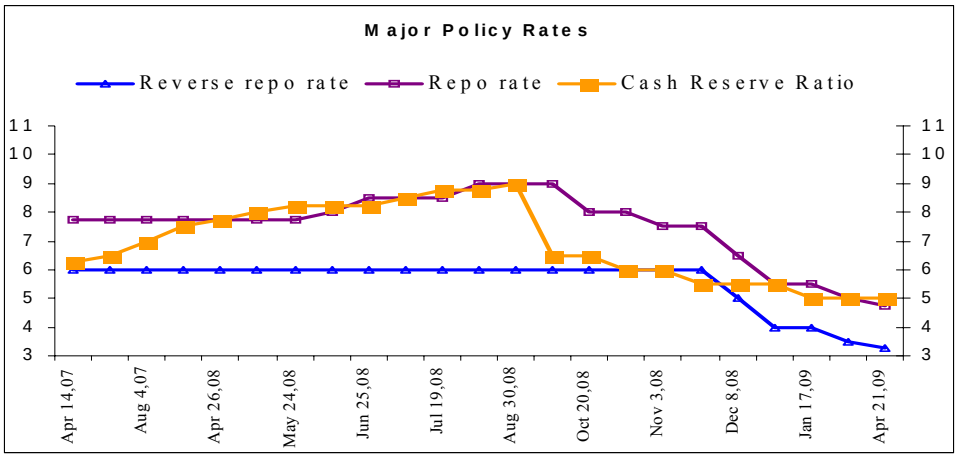
The major policy response to the crisis came in the form of loosening monetary policy and administering fiscal stimulus packages. There were a few other measures like the relaxation of external commercial borrowing rules, raising the cap of FII investment in debt and the permission given to India Infrastructure Financing Company Limited (IIFCL) to float tax-free bonds for infrastructure funding, etc.

### *3.1 Monetary Measures*

In mid-September, the central bank started to ease liquidity but no cuts were made yet in policy rates. Inflation measured in terms of the wholesale price index (WPI) peaked at 12.9 per cent in early August 2008 and remained high for some time. From mid-September till end-October 2008, the economy was in the grip of a serious liquidity crisis and credit crunch as detailed earlier. The Reserve Bank of India (RBI) acted aggressively from mid-October to ease the situation by a series of rate cutting and liquidity injecting measures that went on till April 2009.

Through successive steps, the RBI brought down the cash reserve ratio (CRR) from 9 to 5 per cent, the statutory liquidity ratio (SLR) from 25 to 24 per cent, the repo rate from 9 to 4.75 per cent and reverse repo rate from 6 to 3.25 per cent (Chart 3).

**Chart 3: Monetary Policy Rate Changes**




*Source: Reserve Bank of India*

The RBI opened a special window for banks to lend to mutual funds, non-banking financial companies (NBFCs) and housing finance companies. The central bank also opened refinance facilities for banks, the Small Industrial Development Bank of India (SIDBI), the National Housing Bank (NHB), and the EXIM Bank besides introducing a liquidity facility for NBFCs through a special purpose vehicle (SPV), and increasing export credit refinance. The actual/potential release of primary liquidity by the central bank since mid-September 2008 has been massive at about Rs. 5617 billion amounting to about 9.5 per cent of GDP (Table 1). The RBI also made dollar swap arrangements for branches of Indian banks in the US and Europe facing shortage of dollar funds with the seizing up of the inter-bank markets there.

**Table 1: Actual/Potential Release of Primary Liquidity since Mid-September 2008**

| | | **(Rs. billion)** |
|---|---|---|
| 1 | Cash Reserve Ratio (CRR) Reduction | 1,600 |
| 2 | Open Market Operations | 801 |
| 3 | MSS Unwinding /Buyback/ De-sequestering | 1,555 |
| 4 | Term Repo Facility (14 days) | 600 |
| 7 | Increase in Export Credit Refinance | 266 |
| 6 | Special Refinance Facility for SCBs (Non-RRBs) | 385 |
| 7 | Refinance Facility for SIDBI/NHB/EXIM Bank | 160 |
| 8 | Liquidity Facility for NBFCs through SPV | 250 |
| | **Total (1 to 8)** | **5,617** |
| **Memo**: Statutory Liquidity Ratio (SLR) Reduction | | 400 |

*Source: Reserve Bank of India*

### *3.2 Fiscal Stimulus Packages*

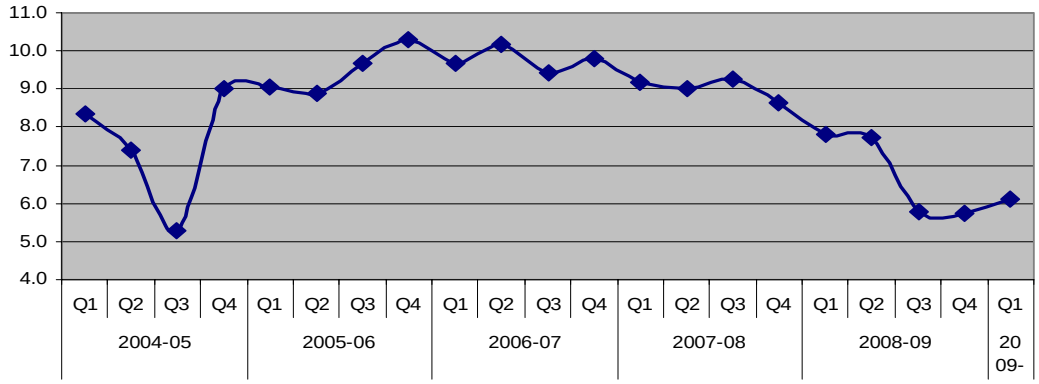
The central government announced three successive fiscal stimulus packages: one in early December 2008, the second one in early 2009 and the last one in early March 2009. These included an across-the-board central excise duty reduction by 4 percentage points; additional plan spending of Rs.200 billion; additional borrowing by state governments of Rs.300 billion for plan expenditure; assistance to certain export industries in the form of interest subsidy on export finance, refund of excise duties/central sales tax, and other export incentives; and a 2 percentage-point reduction in central excise duties and service tax. The total fiscal burden for these packages amounted to 1.8 per cent of GDP.

The central budget, 2008-09, announced in February 2008 showed a low fiscal deficit of 2.5 per cent of GDP. But the actual deficit turned out to be much higher due to a salary hike for the government staff, debt waiver scheme for farmers, additional expenditure on rural employment schemes, duty reductions for petroleum products and revenue shortfalls because of the economic slowdown. There were also off-budget items like the issue of oil bonds and fertiliser bonds which had to be added to give a true picture of fiscal deficit in 2008-09. The combined fiscal deficit of the centre and states including the off-budget bonds is now estimated to be at 10.7 per cent of GDP for 2008-09, a huge rise from 2007-08 figure of about 5 per cent of GDP and the original budget estimate of 4.6 per cent of GDP. Therefore, the total fiscal stimulus administered by India can be put at 5.7 per cent of GDP! Based on the budget presented in July 2009, the total fiscal deficit would be at about 10.5 per cent of GDP for 2009-10.

## 4. Impact on the Economy

The growth in GDP dropped to 5.8 per cent (year-on-year) during the second half of 2008-09 from 7.8 per cent in the first half. Growth improved slightly to 6.1 per cent in the first quarter of 2009-10 (Chart 4).

**Chart 4: GDP Growth (% Y-OY)**

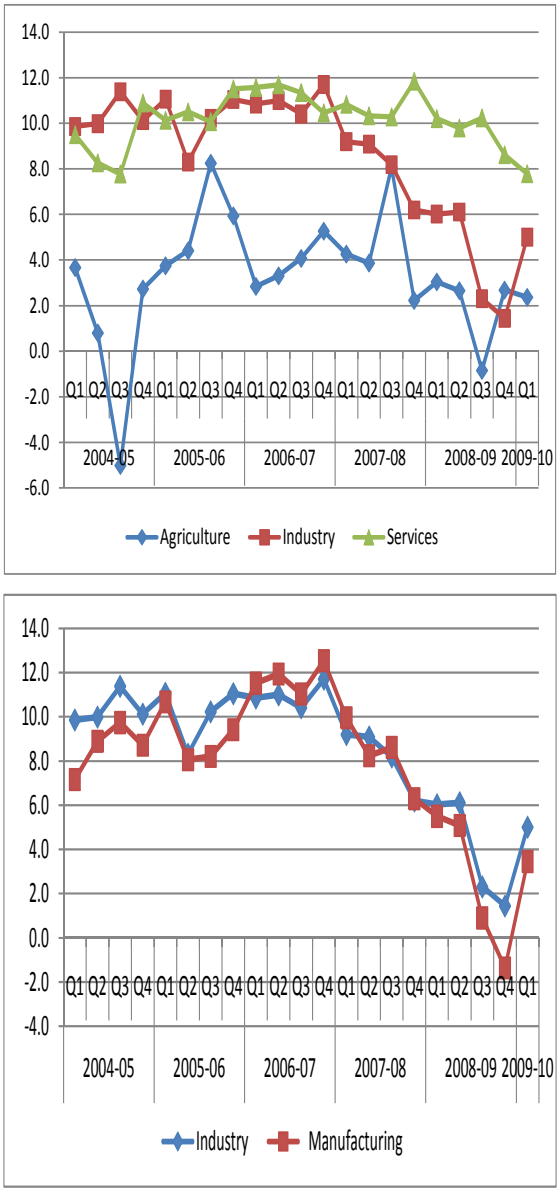



*Source: CSO*

Industry, and particularly the manufacturing sector, was the most severely affected by the crisis. Industrial growth plunged to 1.9 per cent in the second half of 2008-09 from 6.1 per cent in the first half and manufacturing growth collapsed to -0.3 per cent

in the second half from 5.3 per cent in the first half. Industrial growth picked up to 5.0 per cent in the first quarter of 2009-10 and manufacturing to 3.4 per cent (Chart 5). The services sector as a whole had been resilient up to the third quarter of 2008-09 but later showed signs of weakness with its growth declining to 8.6 per cent in the last quarter of 2008-09 (average 10 per cent growth in the previous three quarters) and further to 7.8 per cent in the first quarter of 2009-10.

**Chart 5: GDP Growth Rates by Broad Sectors**




*Source: CSO*

The lower GDP growth can be attributed partly to the decline in private consumption growth to just 2.5 per cent in the second half of 2008-09 from an already low growth of 3.3 per cent in the first half and an average consumption growth of 8.5 per cent in the whole of 2007-08 (Chart 6). Private consumption growth dropped further to 1.6

per cent in the first quarter of 2009-10. The growth in fixed investment declined to 5.7 per cent in the second half of 2008-09 from 10.9 per cent in the first half and an average of 12.9 per cent in 2007-08. The growth in fixed investment dropped further to 4.2 per cent in the first quarter of 2009-10. Government consumption growth, on the other hand, rose steeply to 35.9 per cent in the second half of 2008-09 from just 0.9 per cent in the first half and 7.4 per cent in 2007-08 (Chart 7). The sharp rise in government consumption growth cushioned the drop in growth of other components of aggregate demand and prevented a larger fall in GDP growth in the second half of 2008-09. However, the growth in government consumption expenditure came down to 10.2 per cent in the first quarter of 2009-10 and may not be sustained in the coming quarters.

**Chart 6: Demand Growth, Q1 2004-05 to Q1 2009-10**

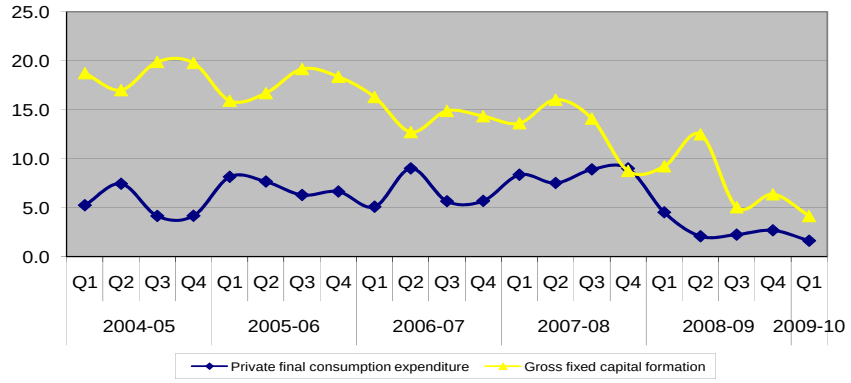
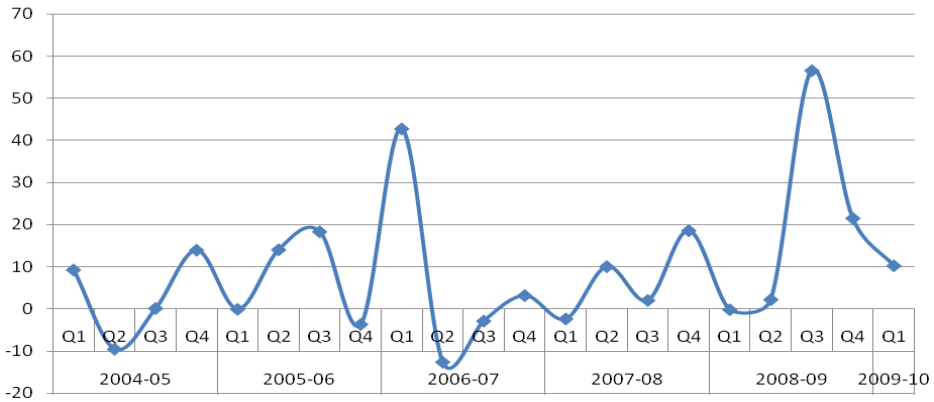



**Chart 7: Growth in Government Consumption Expenditure,Q1 2004-05 to 2009-10**



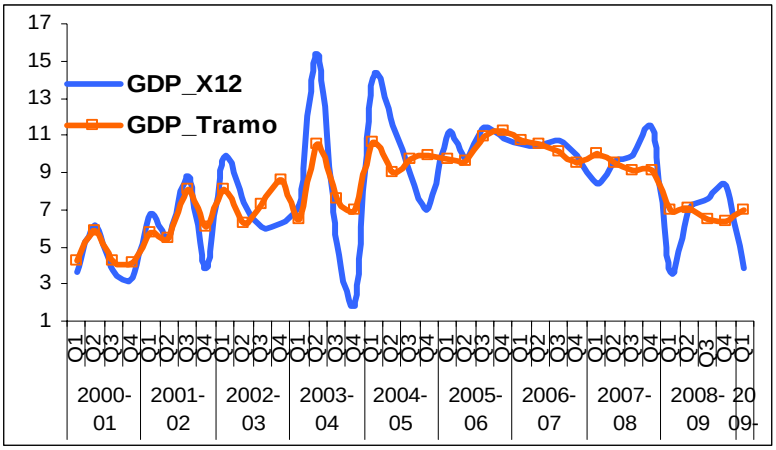

*Source: CSO*

### *4.1 Analysis of Quarter-on-Quarter Data*

The above analysis has been based on year-on-year data. Year-on-year growth rates represent cumulated changes over a year and it is pointed out that to understand recent trends, one has to look at quarter-on-quarter or month-on-month growth rates. However, such growth rates are vitiated by seasonality and the data has to be adjusted for seasonality to get rid of such vitiation. Two major ways to deseasonalise a data

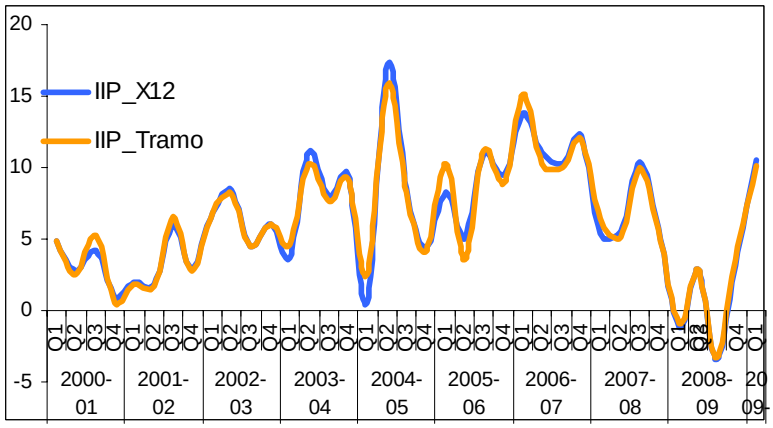
series are called the "X12" and "Tramo" methods[3]. We have applied them for India's non-agricultural GDP and index of industrial production (IIP). The growth rate results are given in Charts 8 and 9 below.

**Chart 8: Non-Agriculture GDP Annualised Seasonally Adjusted Q-o-Q Growth Rate**




*Source: CSO*

**Chart 9: IIP Annualised Seasonally Adjusted Q-o-Q Growth Rate**




*Source: CSO*

[3] Both U.S. Census Bureau's X12 and Tramo/Seats are seasonal adjustment procedures based on extracting components from a given series. Methodologically, X12 uses a non-parametric, moving average-based method to extract its components, while Tramo/Seats bases its decomposition on an estimated parametric ARIMA model. The recent addition of ARIMA modelling in X12 appears to be used mainly to identify outliers and to obtain backcasts and forecasts for end-of-sample problems encountered when applying moving average methods. Tramo ("Time Series Regression with ARIMA Noise, Missing Observations, and Outliers") performs estimation, forecasting, and interpolation of regression models with missing observations and ARIMA errors, in the presence of possibly several types of outliers. Seats ("Signal Extraction in ARIMA Time Series") perform an ARIMA-based decomposition of an observed time series into unobserved components.
For the practitioner, the main difference between the two methods is that X12 does not allow missing values while Tramo/Seats will interpolate the missing values (based on the estimated ARIMA model). While both handle quarterly and monthly data, Tramo/Seats also handles annual and semi-annual data.

Chart 8 shows some bottoming out with regard to non-agricultural GDP growth by the "Tramo" method, and a declining trend by "X12" method. Chart 9, on the other hand, indicates a positive upward movement in IIP growth in the last two quarters. These are indicative of a nascent recovery but not yet of a strong and sustained one.

## 5. Impact on the Manufacturing Sector

As noted earlier, the industrial sector, particularly manufacturing, bore the brunt of external shock. Manufacturing value added, which was already slowing down since the beginning of 2007-08, registered a negative growth of -0.3 per cent in the second half of 2008-09 (year-on-year) in sharp contrast to a positive 5.3 per cent growth in the first half. In the first quarter of 2009-10, manufacturing recovered somewhat showing a growth of 3.4 per cent. The index of industrial production (IIP) further validates the revival of manufacturing by showing a manufacturing growth of 7.4 per cent in July 2009 and 10.2 per cent in August. Do these signify that the economy is now on a strong recovery path? To understand this, we now examine the data from the corporate manufacturing sector below.

### *5.1 Corporate Performance of the Manufacturing sector*

Corporate manufacturing performed exceptionally well during the six-year period ending 2007-08. Driven by high sales growth, income from financial transactions and other income and lower growth in interest expenses, the earnings of the corporate manufacturing sector grew substantially during 2002-08 (Table 2).

**Table 2: Corporate Performance: Manufacturing Sector (Average Annual Growth in Per Cent)**

| | 1997-02 | 2002-08 |
|---|---|---|
| Net Sales | 11.4 | 17.9 |
| Income from financial transactions | 1.9 | 32.6 |
| Other income | 9.1 | 20.5 |
| Total expenses | 11.5 | 17.3 |
| Raw materials, spares, etc. | 11.2 | 22.1 |
| Power and fuel | 8.1 | 11.5 |
| Employee compensation | 10.2 | 11.8 |
| Interest expenses | 6.5 | 3.4 |
| Depreciation | 14.8 | 10.2 |
| Profit after tax | -1.4 | 41.6 |

*Source: CMIE Prowess (1473 Companies)*

Corporate profitability began to suffer from the fourth quarter of 2007-08 and turned negative from the first quarter of 2008-09 (Table 3). This was due to a combination of

factors. Sales growth continued to be robust till the second quarter of 2008-09. However, companies lost opportunities to earn income through financial transactions and asset sales with the fall in asset prices from the last quarter of 2007-08 in the wake of the global financial crisis. On the other hand, rising fuel and other commodity prices raised input costs. The corporate sector also had to meet rising employee costs. Most importantly, interest expenses rose sharply as the central bank tightened policy to curb inflation. All these factors squeezed corporate profitability, which remained in the negative till the third quarter of 2008-09.

**Table 3: Corporate Performance: Manufacturing Sector (Year-on-Year Growth in Per Cent)**

| | 2007-08 | | 2008-09 | | | | 2009-10 |
|---|---|---|---|---|---|---|---|
| | *Q3* | *Q4* | *Q1* | *Q2* | *Q3* | *Q4* | *Q1* |
| Net sales | 16.0 | 24.2 | 39.6 | 38.1 | 6.9 | -5.9 | -13.3 |
| Other & extra-ordinary income | 56.7 | 0.6 | -40.6 | -8.3 | -13.6 | 6.0 | 63.8 |
| Total expenses | 16.6 | 26.7 | 43.3 | 47.0 | 7.1 | -11.7 | -15.4 |
| Raw materials, stores, spares, etc. | 15.5 | 31.7 | 48.3 | 53.3 | 5.1 | -17.7 | -19.9 |
| Salaries and wages | 18.4 | 24.3 | 31.1 | 26.1 | 19.1 | 2.5 | -1.2 |
| Power & fuel | 18.9 | 27.4 | 29.0 | 39.1 | 20.1 | 0.9 | -0.7 |
| Interest expenses | 30.3 | 26.6 | 39.8 | 64.1 | 81.8 | 49.4 | 14.5 |
| Net Profit | 14.9 | 3.7 | -4.5 | -61.1 | -57.3 | 25.3 | 21.8 |

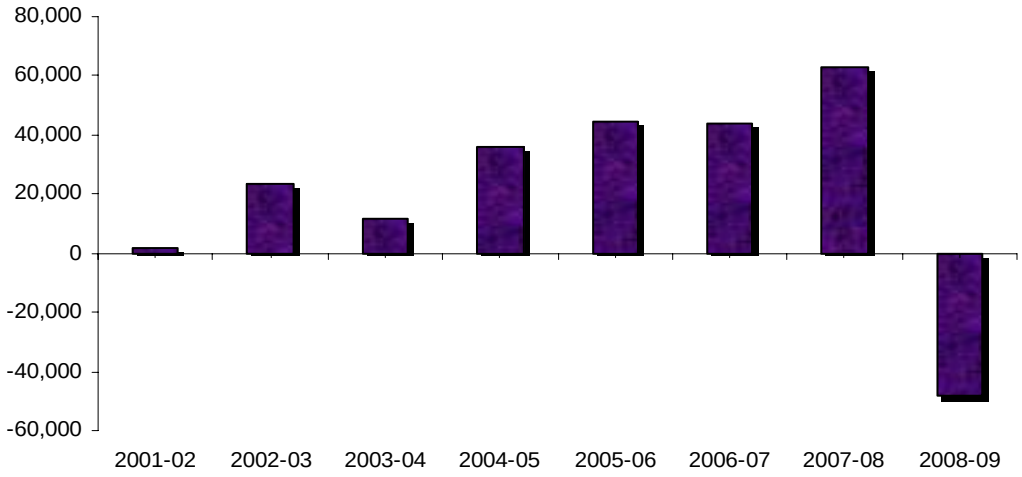
*Source: CMIE Prowess (1870 companies).*

In the fourth quarter of 2008-09, there was a sharp turnaround; corporate profitability increased substantially in that quarter and the following first quarter of 2009-10. This was due to a sharp decline in input costs of raw materials, fuel and salaries. Companies also benefited from treasury transactions, particularly in the first quarter of 2009-10. However, it should be noted that despite improving profitability, sales fell in the last quarter of 2008-09 and more so in the first quarter of 2009-10. This reflects the persistence of low demand. Thus, recent reports of higher corporate tax collections in the first half of 2009-10 may be misleading as a sign of corporate recovery.

### *5.2 Manufacturing Collapse and Destocking*

During the boom period 2002-08, the manufacturing companies had been building up inventories in proportion to their sales which had been growing at the rate of about 18 per cent (Chart 10). As manufacturing demand fell after the external shock, production also fell but by more than the fall in demand; this could only occur by drawing down inventory levels. Against an annual average rise at about 17 per cent during 2002-08, inventories declined by 14 per cent in 2008-09. The sharp deterioration in manufacturing production in the second half of 2008-09 can be seen to be related to this huge inventory adjustment.

**Chart 10: Inventories of the Corporate Manufacturing (Rs. crore)**




*Source: CMIE Prowess.*

As stock levels have dipped considerably in 2008-09, the recent pick-up in manufacturing output could possibly be more due to inventory rebuilding than due to a real pick-up in demand. Unless demand picks up strongly, manufacturing growth cannot be sustained. That may take time, especially as the one-off effects of the fiscal hand-outs may be wearing off and rural demand, which had held up during the earlier period, could be dampened by the poor monsoon.

## 6. Fiscal Stability and Debt Sustainability

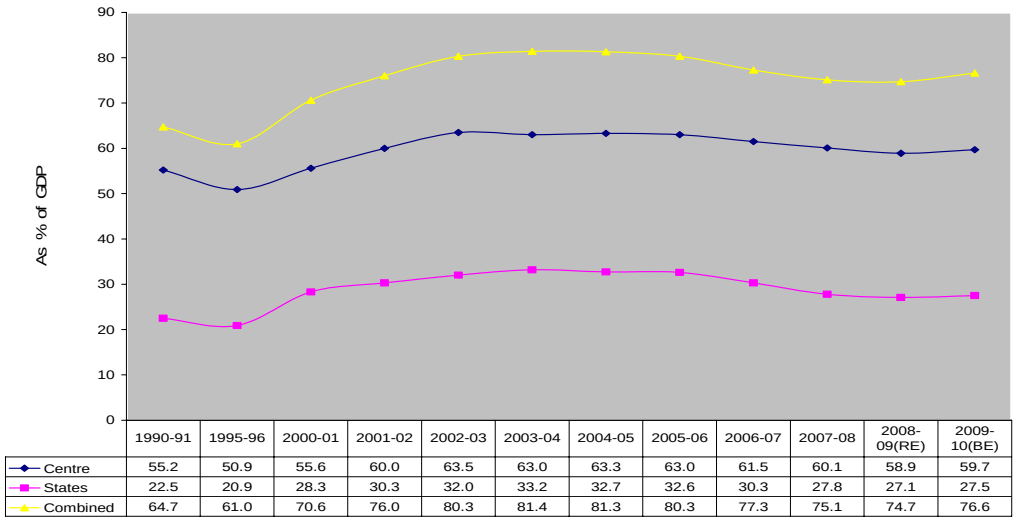
Public finances had improved considerably and the targets laid down in the centre's Fiscal Responsibility and Budget Management (FRBM) Act and fiscal responsibility legislations of the states had been achieved in 2007-08, a year ahead of schedule, except for the revenue deficit target of the centre. The fiscal deficit (centre and states combined) came down to 4.2 per cent of GDP in 2007-08 (well below the permitted 6 per cent), the primary deficit (fiscal deficit net of interest payments) turned into a surplus of 1.3 per cent of GDP and total public debt as a proportion of GDP also came down from the peak of 81.4 per cent in 2003-04 to 75.1 per cent in 2007-08 (Table 4 and Chart 11). The situation changed drastically in 2008-09: the fiscal deficit shot up to 8.9 per cent of GDP (10.7 per cent including off-budget bonds against 5 per cent in 2007-08) and the primary surplus turned into a deficit of 3.5 per cent of GDP. The public debt, however, declined marginally to 74.7 per cent of GDP. Budget estimates for 2009-10 indicate a further worsening in the current year with the fiscal deficit rising to 10.2 per cent of GDP, primary deficit to 4.5 per cent and debt ratio deteriorating to 76.6 per cent. This has raised afresh the issue of India's fiscal stability and debt sustainability.

**Table 4: Combined Finances of the Centre and States: Selected Indicators (As per cent of GDP)**

| Period | Fiscal Deficit | Primary Deficit | Debt |
|---|---|---|---|
| 1980-89 | 7.9 | 4.9 | 56.0 |
| 1990-99 | 7.7 | 2.7 | 63.2 |
| 2000-06 | 8.2 | 2.1 | 78.1 |
| 2006-07 | 5.6 | 0.0 | 77.3 |
| 2007-08 | 4.2 | -1.3 | 75.1 |
| 2008-09 (RE) | 8.9 | 3.5 | 74.7 |
| 2009-10 (BE) | 10.2 | 4.5 | 76.6 |

*Note: This does not include off-budget bonds*
*Source: Reserve Bank of India*

**Chart 11: Debt of the Centre and the States (As % of GDP)**




| | 1990-91 | 1995-96 | 2000-01 | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09(RE) | 2009-10(BE) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Centre | 55.2 | 50.9 | 55.6 | 60.0 | 63.5 | 63.0 | 63.3 | 63.0 | 61.5 | 60.1 | 58.9 | 59.7 |
| States | 22.5 | 20.9 | 28.3 | 30.3 | 32.0 | 33.2 | 32.7 | 32.6 | 30.3 | 27.8 | 27.1 | 27.5 |
| Combined | 64.7 | 61.0 | 70.6 | 76.0 | 80.3 | 81.4 | 81.3 | 80.3 | 77.3 | 75.1 | 74.7 | 76.6 |

*Source: Reserve Bank of India*

The basic rule in debt dynamics is that the debt ratio will rise if there is a primary deficit and if the interest rate of debt exceeds the growth rate of GDP. Therefore, to reduce the ratio of debt to GDP, there must be either a primary surplus or the economy should grow faster than the rate of interest, or both. If one condition holds, it must be large enough to outweigh the adverse effect of the other[4]. The basic equation for debt ratio is given below[5]:

[4] See Mason (1985), Hamilton and Flavin (1986), Spaventa (1987), Bispham (1987), Blanchard (1990), Feldstein (2004), Rangarajan and Srivastava (2005).
[5] See Appendix for the derivation of the debt-ratio equation.

$$d_t = p_t + d_{t-1}(i-g_t) / (1+g_t) + d_{t-1}$$

where,

$d_t$ = debt-GDP ratio in time t
$p_t$ = primary deficit-GDP ratio
$d_{t-1}$ = debt-GDP ratio in time t-1
i = interest rate on debt
$g_t$ = GDP growth rate in nominal terms in time t.

We have estimated various scenarios of India's debt-GDP ratios from 2009-10 to 2016-17 on three alternative assumptions of nominal GDP growth rate (12 per cent, 13 per cent and 14 per cent), interest rate on debt (7 per cent, 8 per cent and 9 per cent) and primary deficit as per cent of GDP (3 per cent, 4 per cent and 5 per cent). These are shown in Tables 5, 6 and 7.

**Table 5: Debt Ratios with GDP Growth at 12 % and Alternative Interest Rates and Primary Deficits**

| Year | g = 12%, i = 7%, | | | g = 12%, i = 8%, | | | g = 12%, i = 9%, | | |
|---|---|---|---|---|---|---|---|---|---|
| | P = 3% | p = 4% | p = 5% | p = 3% | p = 4% | p = 5% | p = 3% | p = 4% | p = 5% |
| 2008-09 | 74.7 | 74.7 | 74.7 | 74.7 | 74.7 | 74.7 | 74.7 | 74.7 | 74.7 |
| 2009-10 | 74.4 | 75.4 | 76.4 | 75.0 | 76.0 | 77.0 | 75.7 | 76.7 | 77.7 |
| 2010-11 | 74.0 | 76.0 | 78.0 | 75.4 | 77.3 | 79.3 | 76.7 | 78.6 | 80.6 |
| 2011-12 | 73.7 | 76.6 | 79.5 | 75.7 | 78.6 | 81.4 | 77.6 | 80.5 | 83.5 |
| 2012-13 | 73.4 | 77.2 | 80.9 | 76.0 | 79.7 | 83.5 | 78.5 | 82.4 | 86.2 |
| 2013-14 | 73.2 | 77.7 | 82.3 | 76.2 | 80.9 | 85.6 | 79.4 | 84.2 | 88.9 |
| 2014-15 | 72.9 | 78.3 | 83.6 | 76.5 | 82.0 | 87.5 | 80.3 | 85.9 | 91.5 |
| 2015-16 | 72.6 | 78.8 | 84.9 | 76.8 | 83.1 | 89.4 | 81.2 | 87.6 | 94.1 |
| 2016-17 | 72.4 | 79.3 | 86.1 | 77.0 | 84.1 | 91.2 | 82.0 | 89.3 | 96.6 |

**Table 6: Debt Ratios with GDP Growth at 13 % and Alternative Interest Rates and Primary Deficits**

| Year | g = 13%, i = 7%, | | | g = 13%, i = 8%, | | | g = 13%, i = 9%, | | |
|---|---|---|---|---|---|---|---|---|---|
| | p = 3% | p = 4% | p = 5% | p = 3% | p = 4% | p = 5% | p = 3% | p = 4% | p = 5% |
| 2008-09 | 74.7 | 74.7 | 74.7 | 74.7 | 74.7 | 74.7 | 74.7 | 74.7 | 74.7 |
| 2009-10 | 73.7 | 74.7 | 75.7 | 74.4 | 75.4 | 76.4 | 75.1 | 76.1 | 77.1 |
| 2010-11 | 72.8 | 74.8 | 76.7 | 74.1 | 76.1 | 78.0 | 75.4 | 77.4 | 79.3 |
| 2011-12 | 72.0 | 74.8 | 77.6 | 73.8 | 76.7 | 79.6 | 75.7 | 78.6 | 81.5 |
| 2012-13 | 71.1 | 74.8 | 78.5 | 73.6 | 77.3 | 81.0 | 76.0 | 79.8 | 83.6 |
| 2013-14 | 70.4 | 74.9 | 79.3 | 73.3 | 77.9 | 82.5 | 76.4 | 81.0 | 85.7 |
| 2014-15 | 69.6 | 74.9 | 80.1 | 73.1 | 78.4 | 83.8 | 76.7 | 82.1 | 87.6 |
| 2015-16 | 68.9 | 74.9 | 80.9 | 72.8 | 79.0 | 85.1 | 76.9 | 83.2 | 89.5 |
| 2016-17 | 68.3 | 74.9 | 81.6 | 72.6 | 79.5 | 86.3 | 77.2 | 84.3 | 91.4 |

**Table 7: Debt Ratios with GDP Growth at 14 % and Alternative Interest Rates and Primary Deficits**

| Year | g = 14%, i = 7%, | | | g = 14%, i = 8%, | | | g = 14%, i = 9%, | | |
|---|---|---|---|---|---|---|---|---|---|
| | p = 3% | p = 4% | p = 5% | p = 3% | p = 4% | p = 5% | p = 3% | p = 4% | p = 5% |
| 2008-09 | 74.7 | 74.7 | 74.7 | 74.7 | 74.7 | 74.7 | 74.7 | 74.7 | 74.7 |
| 2009-10 | 73.1 | 74.1 | 75.1 | 73.8 | 74.8 | 75.8 | 74.4 | 75.4 | 76.4 |
| 2010-11 | 71.6 | 73.6 | 75.5 | 72.9 | 74.8 | 76.8 | 74.2 | 76.1 | 78.1 |
| 2011-12 | 70.2 | 73.0 | 75.9 | 72.0 | 74.9 | 77.7 | 73.9 | 76.8 | 79.6 |
| 2012-13 | 68.9 | 72.6 | 76.2 | 71.3 | 75.0 | 78.6 | 73.7 | 77.4 | 81.2 |
| 2013-14 | 67.7 | 72.1 | 76.5 | 70.5 | 75.0 | 79.5 | 73.4 | 78.0 | 82.6 |
| 2014-15 | 66.5 | 71.7 | 76.8 | 69.8 | 75.1 | 80.3 | 73.2 | 78.6 | 84.0 |
| 2015-16 | 65.4 | 71.3 | 77.1 | 69.1 | 75.1 | 81.1 | 73.0 | 79.1 | 85.3 |
| 2016-17 | 64.4 | 70.9 | 77.4 | 68.5 | 75.2 | 81.8 | 72.8 | 79.7 | 86.5 |

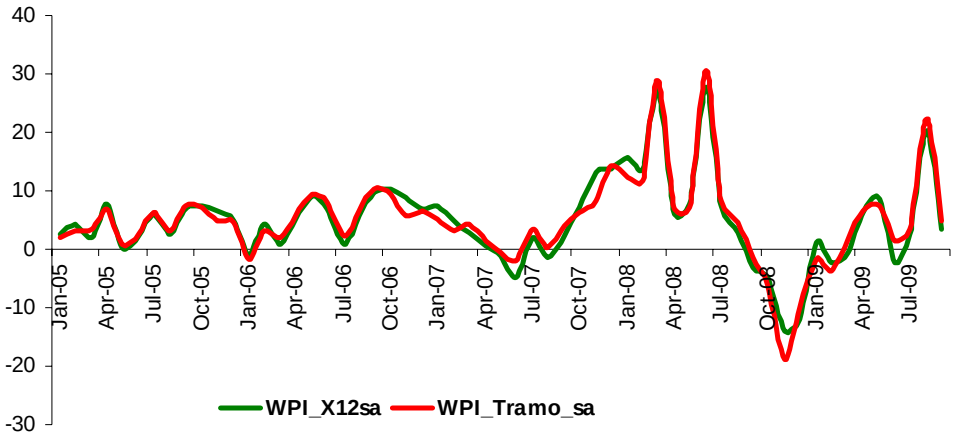
From the above alternative scenarios, the best case scenario is when GDP is growing at 14 per cent, primary deficit is 3 per cent of GDP and interest rate on debt is 7 per cent. In this case, the debt ratio will decline to 64.4 per cent in 2016-17 from 74.7 per cent in 2008-09. The worst case scenario is when GDP is growing at 12 per cent, primary deficit is 5 per cent of GDP and interest rate on debt is 9 per cent. In that case, the debt ratio will rise to 96.6 per cent by 2016-17. For the current year, with a nominal growth rate below 12 per cent, a primary deficit of 4.5 per cent and an interest rate of about 7.5 per cent, the emerging debt position is not a sustainable one.

The policy implication is that we should strive to reduce primary deficit or achieve a primary surplus, raise the growth rate and reduce the interest rate. The growth is in nominal terms and there is surely an option of inflating our way out of debt. However, this is not feasible given the political sensitivity regarding inflation. Now we turn to inflation.

## 7. Inflation

In India, the year-on-year change in the wholesale price index (WPI) is used as the measure of inflation. As noted earlier, month-on-month changes capture the recent trends where as year-on-year changes capture the cumulated changes over a longer period. But month-on-month changes suffer from seasonality and, therefore, a deseasonlised price series would better reflect recent inflation. Chart 12 depicts the seasonally-adjusted month-on-month annualised percentage change of the WPI using two alternative methods, "X-12" and "Tramo". It shows that we had a deflationary phase during September 2008–March 2009, which is over. There is a rising trend in inflation since April. However, the latest data indicate a moderation in September.

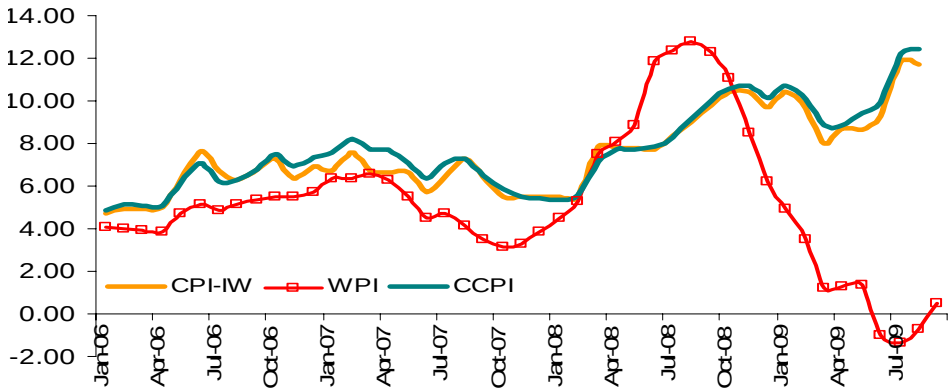
**Chart 12: WPI Annualised M-o-M Seasonally Adjusted Inflation Rate**




*Source: Data from Economic Adviser, Ministry of Industry.*

The wholesale price index has long been discarded by countries for measuring inflation. The Economic Survey 2008-09 notes that 157 out of 181 countries in the IMF statistics use consumer price index (CPI) for tracking inflation. India does not have an aggregate CPI but computes sectional CPIs for four different consumer categories (agricultural labour (AL), rural labour (RL), industrial workers (IW) and urban non-manual employees (UNE)). Using all four CPIs, we have constructed a composite CPI (CCPI) with the weights assigned based on the proportion of households in each employment category (based on NSSO Employment Survey, 2004-05)[6]. The contrasting trends between WPI and CPI inflation from September 2008 can be seen from Chart 13. While WPI inflation is very low or negative from March 2009, CPI inflation was high and rising from April 2009. It touched about 12 per cent in July 2009.

**Chart 13: Various Measures of Inflation (Y-O-Y)**

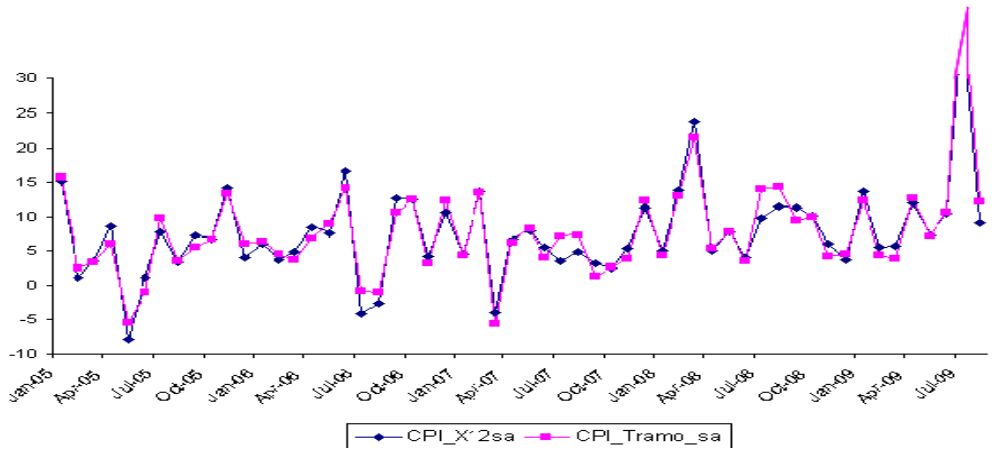



*Source: Data from CSO, Labour Bureau and Ministry of Industry*

Chart 14 provides the computation of annualised month-on-month CPI (IW) inflation by Tramo and X12 methods. Both the methods give very high, almost identical, levels of inflation by July 2009 but a considerable fall in the rate of inflation in August.

[6] See Singh, Karan and Joseph, Mathew (2009).

**Chart 14: CPI (IW) Annualised m-o-m Seasonally Adjusted Inflation Rate**




*Source: Data from Labour Bureau, Ministry of Labour*

### *7.1 Product-wise Inflation*

Although year-on-year WPI inflation was negative till August 2009, food items under both primary articles and manufactured products have shown rising and high inflation at double digit levels in recent months (Table 8). The negative inflation continues in the case of fuel and metal groups.

**Table 8: WPI Inflation by Product Group (%)**

| | WPI | Primary articles | | Fuel, power, light & lubricants | Manufactured products | | |
|---|---|---|---|---|---|---|---|
| | | Food | Non-food | | All | Food | Basic metals alloys & metals |
| Weights | 100.0 | 15.4 | 6.1 | 14.2 | 63.8 | 11.5 | 8.3 |
| Apr-08 | 8.0 | 5.5 | 11.0 | 7.0 | 8.1 | 9.1 | 21.6 |
| May-08 | 8.9 | 5.7 | 14.0 | 7.7 | 9.0 | 11.4 | 20.3 |
| Jun-08 | 11.8 | 5.9 | 17.1 | 16.3 | 10.6 | 14.4 | 21.3 |
| Jul-08 | 12.4 | 6.0 | 17.0 | 17.2 | 11.1 | 14.0 | 22.8 |
| Aug-08 | 12.8 | 6.9 | 17.0 | 17.2 | 11.7 | 14.5 | 23.3 |
| Sep-08 | 12.3 | 7.7 | 17.0 | 16.6 | 10.9 | 14.0 | 21.0 |
| Oct-08 | 11.1 | 9.9 | 13.8 | 14.0 | 9.4 | 8.6 | 19.4 |
| Nov-08 | 8.5 | 10.3 | 12.1 | 6.4 | 7.8 | 5.4 | 14.6 |
| Dec-08 | 6.2 | 10.0 | 9.3 | -0.2 | 6.6 | 4.2 | 12.6 |
| Jan-09 | 4.9 | 11.0 | 6.7 | -1.7 | 5.3 | 6.9 | 7.4 |
| Feb-09 | 3.5 | 9.3 | 2.1 | -3.4 | 4.8 | 9.3 | 2.2 |
| Mar-09 | 1.2 | 7.5 | -0.9 | -6.0 | 2.3 | 8.9 | -9.4 |
| Apr-09 | 1.3 | 8.6 | 1.9 | -5.7 | 1.8 | 12.5 | -14.3 |
| May-09 | 1.4 | 8.4 | 3.0 | -6.1 | 2.2 | 13.9 | -13.3 |
| Jun-09 | -1.0 | 10.9 | 0.1 | -12.5 | 0.6 | 11.5 | -14.1 |
| Jul-09 | -0.9 | 12.0 | -2.6 | -10.3 | 0.0 | 9.8 | -15.1 |
| Aug-09 | -0.7 | 13.4 | -2.1 | -9.8 | -0.4 | 10.8 | -15.0 |
| Sep-09 | 0.5 | 15.7 | -3.2 | -8.2 | 0.3 | 12.2 | -13.3 |

*Source: Office of Economic Adviser, Ministry of Industry*

If we look at inflation from the beginning of this financial year, WPI inflation in the first five months till the end of September had reached 6.4 per cent. The inflation rate for food items under primary articles touched 15.3 per cent and those under manufactured products 9.6 per cent (Table 9). CPI (IW) inflation in the first four months (April-July) of the current financial year has crossed 8 per cent.

**Table 9: WPI inflation from end-March 2009 by Major Product Group (%)**

| | WPI | Primary articles | | Fuel, power, light & lubricant | Manufactured products | | |
|---|---|---|---|---|---|---|---|
| | | Food | Non-food | | All | Food | Basic metals alloys & metals |
| (Base = March 2009) | | | | | | | |
| weights | 100 | 15.4 | 6.1 | 14.2 | 63.8 | 11.5 | 8.3 |
| Apr-09 | 1.4 | 2.6 | 2.7 | 0.7 | 1.2 | 3.8 | -0.5 |
| May-09 | 2.7 | 3.7 | 5.8 | 1.5 | 2.6 | 6.1 | -0.6 |
| Jun-09 | 3.0 | 5.7 | 7.0 | 2.0 | 2.6 | 6.6 | -0.5 |
| Jul-09 | 4.3 | 8.8 | 6.5 | 5.4 | 2.8 | 6.2 | -0.6 |
| Aug-09 | 5.0 | 10.6 | 6.8 | 6.2 | 3.2 | 8.0 | -0.4 |
| Sep-09 | 6.4 | 15.3 | 6.2 | 7.3 | 4.0 | 9.6 | 1.1 |

*Source: Office of Economic Adviser, Ministry of Industry.*

The above analysis gives the impression that inflation is concentrated in food items and what we have is "food inflation" and not a general inflation. This does not appear entirely correct when we examine the CPI (IW) inflation by product group as given in Table 10. For products like 'personal care and effects' and other miscellaneous items, the rates of inflation have touched 12 per cent and 20 per cent respectively in June 2009.

**Table 10: CPI Inflation by Product Group (%)**

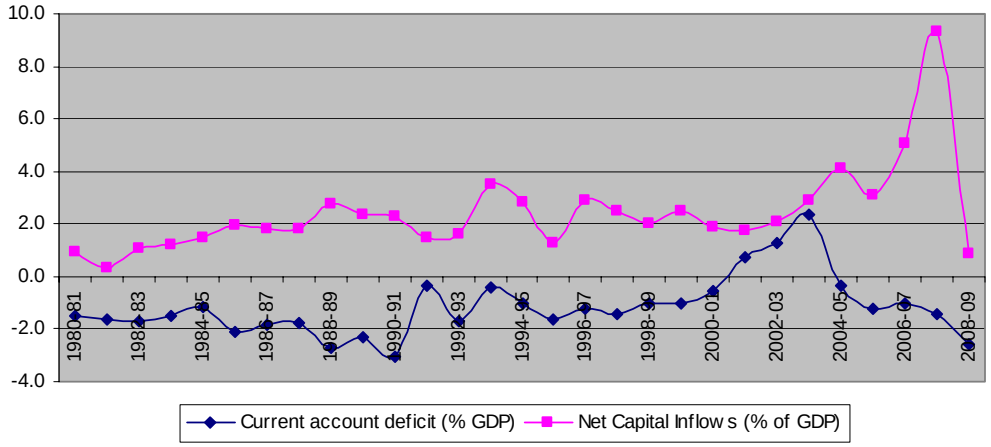
| | | | | | | | | Miscellaneous group | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *CPI* | *Food group* | *Pan. Supari tobacoo & intoxicants* | *Fuel & light* | *Housing* | *Clothing bedding & footwear* | *All* | *Of which* | | | | |
| | | | | | | | | *Education recreation & amusement* | *Medic al care* | *Persona l care & effects* | *Transport & communica tion* | *Other misc. Items* |
| *weights* | *100* | *46.2* | *2.3* | *6.4* | *15.3* | *6.6* | *23.3* | *6.2* | *4.6* | *4.2* | *4.9* | *3.4* |
| Apr-08 | 7.8 | 11.6 | 13.6 | 3.0 | 4.7 | 3.4 | 6.3 | 6.5 | 8.6 | 8.5 | 2.8 | 10.1 |
| May-08 | 9.4 | 12.4 | 12.6 | 4.6 | 4.7 | 4.3 | 7.1 | 6.5 | 7.8 | 9.4 | 2.1 | 10.0 |
| Jun-08 | 9.4 | 13.1 | 8.9 | 8.4 | 4.7 | 3.4 | 7.0 | 6.5 | 7.7 | 9.3 | 4.9 | 10.8 |
| Jul-08 | 10.9 | 14.5 | 8.0 | 9.2 | 6.3 | 3.4 | 8.6 | 7.3 | 6.9 | 14.3 | 6.9 | 18.2 |
| Aug-08 | 11.5 | 15.0 | 7.9 | 9.9 | 6.3 | 3.4 | 8.5 | 7.1 | 6.9 | 10.1 | 6.9 | 13.1 |
| Sep-08 | 10.6 | 14.0 | 8.7 | 9.9 | 3.8 | 3.4 | 9.3 | 7.1 | 6.1 | 10.8 | 8.3 | 15.6 |
| Oct-08 | 11.3 | 16.1 | 9.1 | 10.7 | 3.9 | 3.1 | 9.8 | 8.2 | 5.7 | 11.5 | 8.5 | 16.9 |
| Nov-08 | 11.5 | 16.0 | 9.4 | 10.0 | 3.9 | 3.4 | 9.6 | 7.5 | 5.8 | 11.6 | 8.8 | 18.3 |
| Dec-08 | 9.6 | 11.5 | 9.7 | 11.1 | 3.9 | 4.6 | 9.0 | 5.3 | 7.0 | 11.8 | 6.2 | 19.7 |
| Jan-09 | 10.5 | 12.8 | 10.4 | 11.1 | 8.5 | 3.7 | 9.6 | 5.9 | 7.0 | 13.2 | 5.7 | 21.0 |
| Feb-09 | 10.5 | 13.7 | 10.3 | 8.8 | 8.5 | 5.0 | 8.7 | 6.3 | 4.8 | 12.9 | 2.7 | 21.7 |
| Mar-09 | 10.8 | 14.2 | 8.1 | 8.2 | 6.1 | 4.6 | 8.0 | 6.3 | 4.1 | 11.7 | 2.7 | 21.4 |
| Apr-09 | 11.0 | 15.5 | 8.5 | 7.7 | 6.1 | 4.3 | 8.2 | 6.4 | 4.6 | 11.2 | 1.8 | 21.0 |
| May-09 | 10.5 | 15.0 | 9.3 | 6.1 | 6.1 | 5.9 | 7.9 | 6.6 | 4.9 | 11.8 | 1.2 | 21.6 |
| Jun-09 | 10.8 | 14.8 | 9.0 | 6.1 | 6.1 | 5.0 | 8.2 | 6.8 | 4.2 | 11.6 | 0.7 | 20.3 |

*Source: Labour Bureau, Ministry of Labour.*

## 8. Balance of Payments

India's balance of payments underwent major shifts in 2008-09 that resulted from the transmission of the direct impact of the global crisis to India. The current account deficit shot up to 2.6 per cent of GDP in 2008-09 from 1.5 per cent of GDP in 2007-08. And this is the highest level of current account deficit for India since 1990-91 (Chart 15). The impact on the capital account was more pronounced as the capital account surplus dropped from a record high of 9.2 per cent of GDP in 2007-08 to a meagre 0.8 per cent of GDP in 2008-09. And this is the lowest level of capital account surplus for India since 1981-82. The year ended with a decline in reserves of US$ 20.1 billion (inclusive of valuation changes) against a record rise in reserves of US$ 92.2 billion for 2007-08.

**Chart 15: Current and Capital Account Balances as % of GDP**




*Source: Reserve Bank of India.*

In the current year, there has been a turnaround. Exports continue to drop but imports are falling faster mainly due to lower oil prices. Therefore, the trade deficit up to August 2009 is lower compared to the same period last year. However, surplus on the invisibles account has declined in the first quarter from last year as software exports have declined by 12 per cent although private remittances have grown by 10 per cent. The most striking is the reversal of capital outflows of last year. While foreign direct investment, external commercial borrowings and bank capital flows (other than NRI deposits) remain lower or negative so far, huge inflows are taking place this year under portfolio investment and, to some extent, under NRI deposits. This is very much the result of the policy stance in OECD economies, characterised by aggressive monetary easing and near zero policy rates.

We have attempted a projection of balance of payments for the current year. This is based on the following major assumptions:

1. Exports to decline by 10 per cent (5.4 per cent growth in 2008-09) and imports by 12.5 per cent (14.3 per cent growth last year). This assumes a slowdown in the contraction of exports so far in the current year.

2. Oil import price at an average US$ 70 per barrel against US$ 80.6 in 2008-09. The average import price during April-August 2009 has been US$ 61.1 per barrel.
3. The quantity of oil imports is the difference between domestic production and consumption. Consumption in 2009-10 is computed on the basis of a consumption elasticity with respect GDP of 0.35
4. Software exports to rise by 5 per cent as against 19 per cent growth last year. This assumes a substantial improvement over the performance in the first quarter.
5. Private remittances to decline by 7 per cent against a growth of 5 per cent last year. This reflects a deteriorating employment situation in developed countries.
6. Net capital inflows under all major heads to be positive and much above last year levels.

Table 11 sets out the balance of payments projections for 2009-10. It shows that trade deficit is to contract to 8.2 per cent of GDP from 10.3 per cent last year, the current account deficit to shrink sharply to 0.8 per cent of GDP and capital account surplus to rise steeply to 5.5 per cent of GDP. There is to be a substantial build-up of reserves to the tune of US$57 billion by the end of 2009-10. This suggests that India would be quite comfortable this year on its external payments front.

**Table 11: India's Balance of Payments: Projections for 2009-10 (US$ million)**

| | **2006-07** | **2007-08** | **2008-09** | **2009-10 (P)** |
|---|---|---|---|---|
| Exports | 128888 | 166163 | 175184 | 157666 |
| Imports | 190670 | 257789 | 294587 | 257764 |
| Trade balance | -61782 | -91626 | -119403 | -100098 |
| **% of GDP** | **-6.8** | **-7.8** | **-10.3** | **-8.2** |
| Invisible receipts | 114558 | 148604 | 162556 | 165562 |
| Invisible payments | 62341 | 74012 | 72970 | 75513 |
| Invisibles, net | 52217 | 74592 | 89586 | 90049 |
| **% of GDP** | **5.7** | **6.4** | **7.7** | **7.4** |
| Current account | -9565 | -17034 | -29817 | -10049 |
| **% of GDP** | **-1.0** | **-1.5** | **-2.6** | **-0.8** |
| Capital account (net) | 46171 | 109198 | 9737 | 67415 |
| **% of GDP** | **5.1** | **9.3** | **0.8** | **5.5** |
| -Foreign direct investment | 7693 | 15401 | 17496 | 19547 |
| -Portfolio investment | 7060 | 29556 | -14034 | 23820 |
| -External commercial borrowings | 16103 | 22633 | 8158 | 10000 |
| -Short-term trade credit | 6612 | 17183 | -5795 | 2000 |
| -External assistance | 1775 | 2114 | 2638 | 3406 |
| -NRI deposits | 4321 | 179 | 4290 | 8642 |
| -Other banking capital | -2408 | 11578 | -7687 | 0 |
| -Other flows | 5015 | 10554 | 4671 | 0 |
| **Change in Reserves (-increase/ +decline)** | **-36606** | **-92164** | **20080** | **-57366** |

*Source: Reserve Bank of India for data up to 2008-09 and our projections for 2009-10*

However, the emerging balance of payments would pose serious policy challenges. The rupee will face upward pressure and large capital inflows would bring back the dilemma for the central bank wanting to tighten money to contain rising inflation. Some appreciation of the rupee may not be harmful as this is coming after a large depreciation in the rupee's real effective exchange rate (REER) since 2007-08 (Table 12).

**Table 12: India's Exchange Rate and Current Account Balance, 1993-94 to 2009-10**

| Year | Index of US$/Re Exchange Rate | Index of 36-Country Trade-weighted NEER | Index of 36-Country Trade-weighted REER | Current Account Balance as % of GDP |
|---|---|---|---|---|
| 1993-94 | 100.0 | 100.0 | 100.0 | -0.4 |
| 1994-95 | 99.9 | 98.9 | 104.3 | -1.0 |
| 1995-96 | 94.1 | 91.5 | 98.2 | -1.6 |
| 1996-97 | 88.4 | 89.3 | 96.8 | -1.2 |
| 1997-98 | 84.5 | 92.0 | 100.8 | -1.4 |
| 1998-99 | 74.6 | 89.1 | 93.0 | -1.0 |
| 1999-00 | 72.4 | 91.0 | 96.0 | -1.0 |
| 2000-01 | 68.7 | 92.1 | 100.1 | -0.6 |
| 2001-02 | 65.8 | 91.6 | 100.9 | 0.7 |
| 2002-03 | 64.8 | 89.1 | 98.2 | 1.3 |
| 2003-04 | 68.3 | 87.1 | 99.6 | 2.3 |
| 2004-05 | 69.8 | 87.3 | 100.1 | -0.4 |
| 2005-06 | 70.9 | 89.9 | 102.4 | -1.2 |
| 2006-07 | 69.3 | 85.9 | 98.5 | -1.1 |
| 2007-08 | 78.0 | 93.9 | 104.8 | -1.5 |
| 2008-09 | 68.3 | 86.2 | 94.6 | -2.6 |
| **2009-10 ( Apr-Jul)*** | **64.4** | **82.8** | **91.0** | **-2.1** |

** Current account deficit is for Apr-Jun 2009*
*Source: Reserve Bank of India*

## 9. Growth Forecasts for 2009-10 and 2010-11

Researchers in ICRIER had developed a model for forecasting GDP based on an index of leading economic indicators (LEI). One limitation of the model was that it was an aggregate model with no indicators for the agricultural sector in the index. This has been now rectified by treating the agricultural and non-agricultural sectors separately. The weighted average for growth in the two sectors will now give forecasts for aggregate GDP.

### *9.1 Forecast of Agricultural GDP Growth*

What will be the impact of the poor monsoon on agricultural growth and GDP for the year 2009-10? The last time the country experienced a severe monsoon failure was in 2002-03. During that year, agricultural output declined by 7 per cent bringing down

the GDP growth rate by about 2 per cent. Are we likely to see a similar decline this year? Or will the significant improvement in the monsoon during the latter half of the season substantially mitigate the effects of the shortfall during the first half of the season? Unlike in 2002-03, when the 19 per cent overall deficit in the monsoon was concentrated in July, which saw a 49 per cent deficiency in rainfall, the monsoon this year was near normal in July and revived somewhat from the middle of August but rains were deficient again in the last three weeks of September. The rain deficiency of 48 per cent up to end of June fell sharply thereafter and was about 23 per cent by the end of September. Area sown until the first week of October for all crops has been about 6 per cent lower than for the same period last year.

Here we attempt to answer the question of a possible decline, using an agricultural growth model with three variables: (1) the deviations of rainfall from normal (RF), (2) the net sown area (SA), and (3) the last three-year moving average of agricultural growth (L3AGRIGR). The model is estimated for the period, 1990-91 to 2008-09.

The first two variables, viz., RF and SA, capture the shock resulting from the failure of the monsoon. The lagged three-year moving average of growth in agriculture captures the capacity constraints facing Indian agriculture.

We estimate the following regression model for agricultural growth (AGRIGR):

$$AGRIGR = \alpha + \beta * RF_t + \gamma * SA_t + \delta * L3AGRIGR_t + e_t$$

Three models are defined, each one taking a different monsoon period. The first model specifies the rainfall for the period from June to the first half of July, the second for the period from July to the first half of August and the third for the entire monsoon period of June to September.

The results show that the net area sown and the lagged three-year moving agricultural growth are significant at the 99 per cent level and the co-efficients have the expected signs in all the three models. The results from the alternative 'rainfall' variables indicate that the impact on growth of rainfall deviations during the periods June to September and July to the first half of August is not statistically significant and, that during June to the first half of July is statistically significant at 95 per cent level.

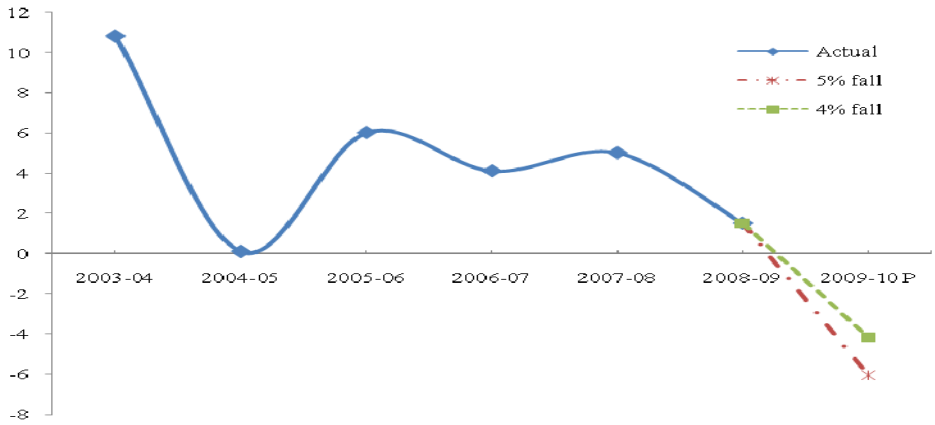
| **Explanatory Variables** | **Model 1** | | **Model 2** | | **Model 3** | |
|---|---|---|---|---|---|---|
| | Co-efficient | t-Value | Co-efficient | t-Value | Co-efficient | t-Value |
| SOWNAREA | 1.30 | 5.07 | 1.32 | 5.00 | 1.22 | 3.94 |
| LAG3MAAGRIGR | -1.35 | -3.97 | -1.62 | -4.87 | -1.52 | -4.48 |
| RAINFALL | | | | | | |
| *June &1st half of July* | 0.07 | 1.62 | | | | |
| *July &1st half of August* | | | 0.07 | 1.22 | | |
| *June to September* | | | | | 0.09 | 0.77 |
| Constant | -175.88 | -4.88 | -178.42 | -4.79 | -163.89 | -3.73 |
| No of observations | | 19 | | 19 | | 19 |
| R-bar square | | 0.71 | 0.69 | | 0.67 | |
| DW statistic | | 2.73 | 2.55 | | 2.88 | |

Furthermore, the past three-year moving average of agricultural growth is inversely related to the current growth. This negative and significant relation between the current agricultural growth and past three-year growth may be capturing the limits to growth in Indian agriculture due to capacity constraints. The high R-bar square indicates that the model efficiently forecasts the agricultural growth rate in India.

In order to forecast the agricultural growth for 2009-10, we have assumed a 4 to 5 per cent fall in the net area sown for the entire year. This is based on two factors. First, the estimates of area under *kharif* crops indicate a fall of 6 per cent compared to that last year. Second, the revival of the monsoon in the latter half of August is expected to ensure that *rabi* sowing may be less affected.

The agricultural growth rate based on model 1 (which is the best fit model) is forecast to fall by 4.2 to 6.0 per cent. Agricultural output will fall by 4.2 per cent if the net area sown declines by 4 per cent and fall by 6.0 per cent if the net area sown declines by 5 per cent (Chart 16).

**Chart 16: Forecast of Agriculture growth (%) 2009-10**




With a weight of 16 per cent for agriculture in GDP, this will mean that GDP will decline by 0.7 to 1.0 percentage point in 2009-10 due to the poor monsoon.

### *9.2 Forecast of Non-Agricultural GDP Growth*

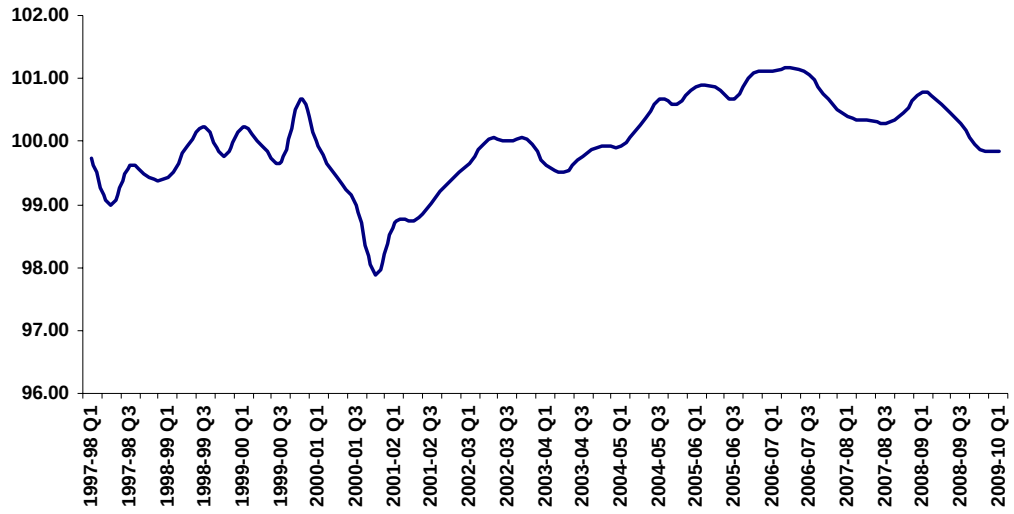
For the non-agricultural GDP forecast, we have kept our set of leading indicators unchanged. They are (i) production of machinery and equipment, (ii) non-food credit, (iii) railway freight traffic; (iv) cement sales, (v) net sales of the corporate sector, (vi) fuel and metal prices, (vii) real rate of interest, (viii) BSE sensex and (ix) exports. A composite index has been constructed for the period 1997-2009 with the quarterly series of growth of these variables (except for the real rate of interest where the level, and not the growth, has been used) using the 'principal component index' (PCI) method. The advantage of PCI is that it performs the required scaling of data and assign weights to different indicators. The PCI method assigns weights to each component leading indicator by an iteration process based on its contribution to total variation in the composite index.

Once the index of leading indicators is ready, it is used to identify the appropriate model specification for the final regression analysis. In this empirical exercise, it was found that the index of leading economic indicators (LEI) with a 5-quarter lag explains the variation in non-agricultural GDP growth most precisely. However, since the selected leading indicators do not capture the impact of external shocks such the IT boom burst in 2000-01and the recent US financial meltdown, which directly or indirectly impacts the Indian economy, we used a dummy variable to capture their impact. The LEI with a 5-quarter lag and the shock represented by a dummy variable (equal to 1 with shock and 0 without) are used to forecast India's non-agricultural GDP growth. The estimated equation for non-agricultural GDP growth forecast, given below, is satisfactory with adjusted R-square value of 0.58 and all the co-efficients significant at 99 per cent level.

$$\text{GRNon-agriGDP}_t = \underset{(42.87)}{8.80} + \underset{(5.66)}{1.50}\ \text{LEI}_{t-5} - \underset{(-5.99)}{3.34}\ \text{Dummy}$$

The leading economic indicator index (LEI) given in Chart 17 below clearly shows that after a long period of upward movement, the leading economic indicator started moving down in the first quarter of 2006-07. However, the movement in LEI during the quarter ending June 2009 suggests that the indicator has bottomed out and economic activity may pick up in coming quarters.

**Chart 17: Leading Economic Indicators Index**




It can be stated that the three fiscal stimulus packages have moderated the intensity of the impact of the crisis on India's GDP growth. The shock-augmented leading indicator model validates this. The in-sample forecast suggests that the crisis had started impacting non-agricultural GDP growth partially in the third quarter of 2008-09 before having its full impact in the fourth quarter. The fiscal measures taken during December 2008 to March 2009 began to moderate the intensity of shock in the first quarter of the current financial year. With the full impact of the external shock, we were expecting a growth rate of 6.5 per cent in Q1 2009-10. With actual growth rate of 7 per cent for non-agricultural GDP, our calculation suggests that the fiscal

stimulus has neutralised nearly 20 per cent of the impact of the external shock. Continuing on these lines, it seems that the impact of the shock will further recede in the coming quarters, partly because the monetary policy measures[7] taken so far are also expected to come in to effect. We used this assumption to calibrate our growth forecast. According to our estimates the non-agricultural GDP would grow by 8.1 per cent in 2009-10, while it will rise by 8.5 per cent in the first half of 2010-11.

Table 13 brings together the forecasts for both agricultural and non-agricultural sectors. The estimated aggregate GDP growth for 2009-10 works out to between 5.8 and 6.1 per cent, which is lower than the actual growth of 6.7 per cent in 2008-09.

**Table 13: GDP forecast for the year 2009-10 and H1 2010-11**

| | Weight | 2008-09 | 2009-10 | HI 2010-11 |
|---|---|---|---|---|
| Agriculture | 0.16 | 1.6 | -4.2 to -6.0 | NA |
| Forestry & fishing | 0.02 | NA | 3.0 | NA |
| Non-Agriculture | 0.82 | 7.8 | 8.2 | 8.6 |
| **Total** | **1.00** | **6.7** | **5.8 to 6.1** | NA |

## 10. Policy Conclusions

The review has shown that the industrial sector which underwent a severe downturn in 2008-09 is beginning to recover from early 2009-10, but it is not yet clear that the pick-up is underpinned by a strong revival in real demand. The monsoon failure has created uncertainty as to whether demand growth will be sustained. The fiscal stimulus has helped in substituting for lost private demand to some extent and prevented a steeper fall in GDP growth. However, we do not expect a further boost over and above what happened already so far from fiscal expansion. While the growth in the non-agricultural sector in the current year would be somewhat higher than last year, a marked decline in agricultural output is expected to bring down this year's growth in GDP below last year's level.

In this context, high inflation, which has emanated from the agricultural shock and may be spreading to non-food products, will pose a big policy challenge. At a time when last year's aggressive monetary loosening measures seem to have just started boosting growth, the central bank may have to start tightening sooner than later. Too early a tightening, however, can harm the fragile, incipient industrial recovery. Policy can take comfort from some likely moderation of inflation in August and September.

The return of confidence to the financial market has pushed up stock prices and companies have been able to raise resources again from the capital market. However, the flow of bank finance to the economy has not improved. The return flow of capital from abroad is taking place strongly, particularly from foreign institutional investors. This, in turn, has put upward pressure on the rupee, which is appreciating rapidly.

[7] The monetary policy works with a considerable lag. Various studies have found that any change in monetary policy rate impacts the real economy after a lag of three quarters.

Some appreciation may not be problematic as the real effective exchange rate had depreciated steeply during 2008-09. But as we go forward, the central bank will be hard-pressed to balance the objectives of inflation control, exchange rate stability and growth.

The impact of monetary loosening, which happens with a lag, has perhaps begun as is seen from the recovery of manufacturing growth. However, there is virtually no more fiscal and monetary policy space left to further stimulate growth. We can expect, as is indicated by our forecast for this year and the first half of next year, that the non-agricultural sector will grow faster. Given inflationary risks and fiscal sustainability considerations, there is need to rein in fiscal expansion in the next budget. Monetary policy, however, may be better off being left in the status quo mode for the immediate future.

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## Appendix

## Debt Dynamics

Let $D_t$ and $Y_t$ be Debt and GDP respectively in year, t

$$D_t - D_{t-1} = F_t \quad (1)$$

$$D_t - D_{t-1} = P_t + I_t \quad (2)$$

Also, $I_t = iD_{t-1}$ (3)

where, i = interest rate

and $Y_t = Y_{t-1}(1+g_t)$ (4)

where, g = growth rate

Dividing (1) by $Y_t$ and substituting (2), (3), & (4)

$D_t/Y_t - D_{t-1}/Y_{t-1}(1+g_t) = P_t/Y_t + iD_{t-1}/Y_{t-1}(1+g_t)$

$d_t - d_{t-1}/(1+g_t) = p_t + id_{t-1}/(1+g_t)$

i.e., $d_t = p_t + d_{t-1}(1+i)/(1+g_t)$

where,

$D_t/Y_t = d_t$; $D_{t-1}/Y_{t-1} = d_{t-1}$; $P_t/Y_t = p_t$

Deducting $d_{t-1}$ from both sides,

$d_t - d_{t-1} = p_t + d_{t-1}(1+i)/(1+g_t) - d_{t-1}$

$d_t - d_{t-1} = p_t + d_{t-1}(1+i)/(1+g_t) - (1+g_t)d_{t-1}/(1+g_t)$

$d_t - d_{t-1} = p_t + d_{t-1}(1+i-1-g_t)/(1+g_t)$

Thus we get the debt equation:

$$\mathbf{d_t = p_t + d_{t-1}(i-g_t)/(1+g_t) + d_{t-1}} \quad \mathbf{(5)}$$

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