REPORT ON CURRENCY AND FINANCE 2009-12
FISCAL-MONETARY CO-ORDINATION

RESERVE BANK OF INDIA

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FOREWORD

The issue relating to fiscal-monetary co-ordination has received renewed focus across advanced economies and emerging market and developing economies (EMDEs) in the aftermath of the global financial crisis. While the onset of the crisis saw close co-ordination between fiscal and monetary policies, both at the national and international levels, in the exit mode individual countries adopted different strategies to deal with their respective concerns of economic growth, inflation and financial stability. In the aftermath of the Great Recession, the recovery prospects in the euro area were jeopardised by the emergence and persistence of the sovereign debt problems with wide ramifications. Though the recent fiscal cliff deal in the US and policy actions in the euro area have reduced the tail risks to global growth and led to improvements in the global financial conditions, certain downside risks from slack policy implementation in the euro area and uncertainties in fiscal policies in the United States and Japan remain elevated. In the given scenario, the need for credible fiscal consolidation plans and co-ordination strategies to ensure an optimum fiscal-monetary mix assumes greater significance.

In contrast, EMDEs outside of Europe, which had remained relatively resilient to external shocks from major economies during the global financial crisis of 2007-09, have been facing the challenge of strengthening the recovery process while keeping inflation under control, necessitating unwinding of their accommodative monetary and fiscal policies. The persistence of the euro area crisis has made them more susceptible to volatility in capital flows as financial markets exhibit sudden bouts of risk-averse behaviour, leading to shifts in portfolios towards safe haven assets, impacting a wide range of economic activities in these economies. The fiscal-monetary co-ordination is becoming even more challenging for EMDEs in the backdrop of weak global recovery prospects, volatility in commodity prices and capital flows, posing challenges to macroeconomic policymaking.

Like other EMDEs, India was also impacted during the global financial crisis, which led to moderation in its real GDP growth in 2008-09. The policy response was seen in the use of both conventional and unconventional monetary policy measures as also fiscal stimulus measures to revive aggregate demand and support the growth process. The concomitant surge in government market borrowings was also effectively managed in a non-disruptive manner through additional monetary/liquidity management measures. With the growth process getting more entrenched and with the resurgence of inflationary pressures, an exit from the accommodative monetary policy pursued till October 2009, was calibrated between January 2010 and October 2011, while the fiscal consolidation process was resumed in 2010-11. The resurfacing of downside risks to economic growth in the second half of 2011-12 necessitated a pause in monetary tightening stance; on the fiscal side, government finances deteriorated, with a sharp widening of fiscal deficit, indicating a significant deviation from the recommended path of fiscal consolidation. During 2012-13 so far, a continuance of economic slowdown and moderation of inflation led to the calibrated easing of monetary policy, even as government undertook measures to rein in fiscal deficit. Alongside, in the aftermath of the global financial and the euro area debt crises, a substantial body of opinion has favoured the widening of the mandate of central banking beyond price stability to encompass financial stability and sovereign debt sustainability, keeping in view the close inter-linkages between the three objectives. This has cast a rethink on the institutional arrangements for debt management in India, going forward.

Against this backdrop, it was felt that it will be timely to reflect upon the dynamics of fiscal and monetary co-ordination, both in terms of its topical relevance and the challenges ahead in the context of return of fiscal

dominance after the global financial crisis, at the national and international levels. Accordingly, the theme of this Report for 2009-12 was selected as "**Fiscal-Monetary Co-ordination**". After tracing the evolution of macroeconomic theory and international experiences in major advanced and select EMDEs, the Report undertakes an in-depth assessment of fiscal-monetary co-ordination in India in terms of its macroeconomic and monetary implications, impact on the Reserve Bank's balance sheet and the medium-term outlook for fiscal-monetary coordination as well as the institutional arrangements for debt and cash management.

This Report has been prepared in the Department of Economic and Policy Research by a team of officers led by Smt. Balbir Kaur, Adviser under the overall supervision and guidance of Shri Deepak Mohanty, Executive Director. The core team comprised Dr. Mridul Saggar, Shri Somnath Chatterjee, Dr. Partha Ray, Shri Dhritidyuti Bose, Smt. Deepa S Raj, Dr. Anupam Prakash, Shri Indrajit Roy, Shri Arghya Kusum Mitra, Shri Anand Prakash, Dr. Rajeev Jain, Smt. Sangita Misra, Smt. Atri Mukherjee, Shri Binod Bhoi, Shri Sunil Kumar, Dr. Saurabh Ghosh, Smt. Sangeeta Das, Shri S.M. Lokare, Kum Indrani Manna, Shri Rakesh Kumar, Shri Dhirendra Gajbhiye, Shri Bichitrananda Seth, Shri G. V. Nadhanael, Smt. P. B. Rakhe, Shri D.K.Raut, Shri Prabhat Kumar and Shri Anand Prakash Ekka. Shri Rajib Das and Shri Bhupal Singh also made significant contributions to the drafting of the Report. Valuable inputs from officers of other Departments, particularly Kum. J.M.Jivani and Shri N.Ramasubramanian, are highly appreciated. The peer reviewing team comprised Dr. Himanshu Joshi, Dr. Mohua Roy, Shri Sitikantha Pattanaik and Dr. Abhiman Das.

Many of the issues raised in the Report are evolving and debatable. They, however, provide an insight into the process of resolving conflicts between various policy priorities to achieve the desired outcomes. This group of young economists, who undertook the challenge of drawing a fine balance, did so, with courage, determination and forthrightness. I place on record my deep appreciation of their efforts.

Subir Gokarn
Deputy Governor

December 31, 2012

CONTENTS

LIST OF BOXES

LIST OF CHARTS

LIST OF TABLES

ABBREVIATIONS

ADF	-	Augmented Dickey-Fuller
ADR	-	Asset Development Reserve
APM	-	Administered Pricing Mechanism
ARDL	-	Auto-regressive Distributed Lag
BIS	-	Bank for International Settlements
BoE	-	Bank of England
BoR	-	Bank of Russia
CAS	-	Central Accounts Section
CB	-	Central Bank
CDS	-	Credit Default Swap
CENVAT	-	Central Value Added Tax
CFIM	-	Co-ordination Framework for Implementation Monitoring
CFSA	-	Committee on Financial Sector Assessment
CGFS	-	Committee on the Global Financial System
CGRA	-	Currency and Gold Revaluation Account
CMBs	-	Cash Management Bills
CNB	-	Czech National Bank
CR	-	Contingency Reserve
CRR	-	Cash Reserve Ratio
DFHI	-	Discount and Finance House of India
DM	-	Deutsche Mark
DMO	-	Debt Management Office
DSS	-	Debt Swap Scheme
EC	-	European Commission
ECB	-	European Central Bank
EEA	-	Exchange Equalisation Account
EFC	-	Economic and Financial Committee
EFR	-	Exchange Fluctuation Reserve
EFSF	-	European Financial Stability Facility
EMDEs	-	Emerging Market and Developing Economies
EMEs	-	Emerging Market Economies
EMU	-	European Monetary Union
ERM	-	Exchange Rate Mechanism
ESAs	-	European Supervisory Authorities
ESM	-	European Stability Mechanism
ESRB	-	European Systemic Risk Board
EU	-	European Union
FCNRA	-	Foreign Currency Non-Resident Accounts Scheme
Fed	-	Federal Reserve Board
FIIs	-	Foreign Institutional Investors
FLS	-	Funding for Lending Scheme
FMD	-	Financial Markets Department
FPC	-	Financial Policy Committee
FRBM	-	Fiscal Responsibility and Budget Management
FSA	-	Financial Services Authority
FSB	-	Financial Stability Board
FSDC	-	Financial Stability and Development Council
FSLRC	-	Financial Sector Legislative Reforms Commission
FSOC	-	Financial Stability Oversight Council
FTPL	-	Fiscal Theory of Price Level
FTT	-	Financial Transaction Tax
G20	-	Group of Twenty
GDP	-	Gross Domestic Product
GEAR	-	Growth, Employment and Redistribution
GFCE	-	Government Final Consumption Expenditure
GFD	-	Gross Fiscal Deficit
GOI	-	Government of India
IIFCL	-	India Infrastructure Finance Company Limited
ILAF	-	Interim Liquidity Adjustment Facility
IMF	-	International Monetary Fund
IRA	-	Investment Revaluation Account
IT	-	Inflation Targeting
LAF	-	Liquidity Adjustment Facility

LOLR	-	Lender-of-the-last-resort
LPG	-	Liquefied Petroleum Gas
LTRO	-	Long-term Repo Operations
M_0	-	Monetary Aggregate
M_3	-	Broad Money
MAP	-	Mutual Assessment Plan
MoF	-	Ministry of Finance
MoU	-	Memorandum of Understanding
MPC	-	Monetary Policy Committee
MSMEs	-	Micro, Small and Medium Enterprises
MSS	-	Market Stabilisation Scheme
MTFS	-	Medium-Term Financial Strategy
MTM	-	Mark to Market
NABARD	-	National Bank for Agriculture and Rural Development
NAIRU	-	Non Accelerating Inflation Rate of Unemployment
NBFCs	-	Non-Banking Financial Companies
NBFC-NDSI	-	Non-Banking Financial Companies-Non-Deposit Taking-Systemically Important
NDAs	-	Net Domestic Assets
NDTL	-	Net Demand and Time Liabilities
NFAs	-	Net Foreign Assets
NSSF	-	National Small Savings Fund
NTMA	-	National Treasury Management Agency
OD	-	Overdraft
OECD	-	Organisation for Economic Cooperation and Development
OMOs	-	Open Market Operations
OPEC	-	Organisation of the Petroleum Exporting Countries
OTC	-	Over-the-counter
PBC	-	People's Bank of China
PDs	-	Primary Dealers
PRA	-	Prudential Regulation Authority
QE	-	Quantitative Easing
QFAs	-	Quasi-fiscal Activities
RBI	-	Reserve Bank of India
RCF	-	Report on Currency and Finance
RHS	-	Right Hand Scale
RMSE	-	Root Mean Square Error
SARB	-	South African Reserve Bank
SARS	-	Severe Acute Respiratory Syndrome
SCBs	-	Scheduled Commercial Banks
SDM	-	Sovereign Debt Management
SGP	-	Stability and Growth Pact
SLR	-	Statutory Liquidity Ratio
SMOs	-	Special Market Operations
SOEs	-	State-Owned Enterprises
SPV	-	Special Purpose Vehicle
SSM	-	Single Supervisory Mechanism
TARP	-	Troubled Asset Relief Programme
TSA	-	Treasury Single Account
UK	-	United Kingdom
US	-	United States
VECM	-	Vector Error Correction Model
WMA	-	Ways and Means Advances
WPI	-	Wholesale Price Index
ZLB	-	Zero Lower Bound

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URL : www.rbi.org.in

1 THE THEME OF THE REPORT

There is a renewed focus on fiscal-monetary co-ordination in the wake of activist fiscal response to the global financial crisis of 2008. These developments have raised apprehensions of greater fiscal dominance at the global level particularly when the central banks have resorted to unconventional monetary policy measures to restore orderly conditions in financial markets and to stimulate aggregate demand in the economies affected by the global crisis. The Indian experience shows that the rule-based fiscal legislation may have reduced, but not eliminated fiscal dominance. The changing dynamics of fiscal-monetary interface has imparted flexibility in the Reserve Bank's balance sheet management amid greater challenges from the openness of the economy and the increase in government market borrowings. Keeping in view the international experience gained from the recent financial crisis that would impinge on debt management, monetary management and maintenance of financial stability, as well as the specific circumstances in India, a broad guidance on the implications of the evolving path of fiscal deficit, output gap and inflation gap for monetary policy over the medium term is provided.

1.1 Fiscal-monetary co-ordination continues to engage attention in macroeconomic theory and policy practice, and more so with the return to fiscal dominance after the impact of the global financial crisis. As both fiscal and monetary policies can influence aggregate demand and potentially complement/substitute for modulating economic activity, co-ordination between these twin arms of macroeconomic policymaking becomes essential. Expansionary fiscal policies could raise inflationary concerns for a central bank by fuelling aggregate demand pressures or by requiring the monetisation of deficits. Market financing of deficits may, at times, come in the way of keeping long-term interest rates low and conducive for investment and economic growth. On the other hand, a tighter monetary policy could raise market interest rates and interest payments on government borrowings, leading, in turn, to larger fiscal deficits. The monetary policy could also impact seigniorage and the inflation tax revenue for the government. More recently, issues of sovereign debt sustainability in the euro area are impinging on the financial stability concerns of central banks, either through the adverse impact of sovereign debt burden on the health of the banking system or through traditional concerns of fiscal dominance on monetary management.

1.2 The fiscal-monetary interface has remained one of the central tenets for the conduct of policymaking in the Reserve Bank over the years, and some policy-relevant analytical issues on this subject have been highlighted in the Bank's publications in the past including in earlier issues of the Report on Currency and Finance (RCF).[1] The motivation for choosing fiscal-monetary co-ordination as the theme for this issue of RCF is based on several considerations.

1.3 First, after the activist fiscal response to the global financial crisis of 2008, central banks in the advanced economies confronted the additional challenge of managing sovereign debt sustainability. There is apprehension that the conduct of liquidity

1 Various issues relating to fiscal-monetary policy co-ordination discussed in past issues of the RCF include: (i) the optimal level of monetisation of the fiscal deficit ('optimality' defined in terms of obtaining an inflation rate of 5 per cent) in India (prior to the Fiscal Responsibility Budget Management Act, 2003); (ii) counter-party relations between the government and central banks (*i.e.*, whether the central bank provides overdrafts/loans to the government or is permitted to operate in the primary and secondary government securities market and the extent to which central bank profits are transferred to the government) and the fiscal theory of price level; and (iii) theoretical underpinnings, cross-country experience and the Indian experience over the period 1935 to 2005 (including issues relating to the enactment of fiscal responsibility legislations by the centre and some of the states and the separation of public debt management and monetary management functions).

management operations by central banks could potentially monetise public debts indirectly at a scale much beyond the extent of traditional direct monetisation that was prevalent during the fiscal dominance era after the Great Depression up to the 1970s. Second, turning to India, there is a need to assess whether phasing out automatic monetisation of fiscal deficit and abandoning the practice of direct subscriptions by the Reserve Bank in the primary government securities market as well as introducing a rule-based fiscal policy have actually reduced fiscal dominance in the conduct of monetary policy. Third, the evolving phases of fiscal-monetary co-ordination in India have posed new challenges to the Reserve Bank in its balance sheet management. As monetary policy switched its operating procedure from monetary targeting to a multiple indicator approach, it had to manage capital flows in a more open economy and seamlessly fine-tune its liquidity adjustment facility. Fourth, over the last couple of years, while the fiscal deficit and inflation have remained high, investment has slackened on account of both structural factors and interest rates. In this context, the reform measures announced by the government since September 2012 and the imperatives of stepping up the growth rate as envisaged in the Twelfth Plan document[2], while maintaining macroeconomic and financial stability, may require careful calibration of fiscal and monetary policies. Finally, in the light of the strengthening interactions between sovereign debt management, monetary policy and financial stability in the aftermath of the global financial crisis, a need exists to revisit the nature of institutional arrangements for debt management over the medium-term in India.

1.4 Accordingly, the present Report seeks to examine various facets of fiscal-monetary co-ordination in India as it has evolved, particularly in the recent past and keeping in view the likely developments over the medium-term, especially the macroeconomic outlook and policy priorities. The following chapter traces the evolution of fiscal-monetary co-ordination across a few advanced and emerging market and developing economies (EMDEs) and assesses the implications of the recent global financial crisis for the fiscal-monetary interface. Chapter 3 presents the Indian experience in this regard, noting that fiscal dominance of monetary policy has moderated over last two decades, though large fiscal deficits, suppressed inflation and debt dynamics continue to feed into reserve money. Chapter 4 traces the substantial transformation in the Reserve Bank's balance sheet over the years in line with the shifts in the regimes of monetary policy operations and different phases of fiscal-monetary co-ordination. Chapter 5 examines the outlook for fiscal-monetary-debt management co-ordination in India, particularly in the context of the post-crisis return to the prescribed fiscal roadmap and the renewed thinking on the institutional arrangements for debt management, against the backdrop of the global financial crisis. The concluding chapter identifies a few key lessons and future challenges for fiscal-monetary co-ordination internationally as well as in India in the light of recent experience. The coverage of various chapters along with key questions analysed therein are set out below.

How has fiscal-monetary co-ordination evolved in theory and practice? What have been the implications of the recent global financial crisis for the fiscal-monetary interface?

1.5 Addressing these questions, Chapter 2, 'Fiscal-Monetary Co-ordination: Theory and International Experience', begins by setting out the macroeconomic orthodoxy which favoured a lead role for fiscal policy to address aggregate demand deficiency in economies during the Great Depression of the 1930s and to support the post-World War II reconstruction process. With monetary policy becoming ineffective at high unemployment levels, direct monetisation of fiscal deficits and keeping

2 As approved by the National Development Council.

interest rates low were the prescribed channels whereby central banks had to acquiesce to fiscal dominance. With the failure of Keynesian policy prescriptions during the period of co-existence of high inflation and high unemployment in the 1970s amid oil price shocks and the breakdown of the multilateral fixed exchange rate system, monetary policy independence was sought to be achieved by adopting a monetary targeting approach. Nonetheless, monetary policy had to be co-ordinated with fiscal policy, particularly in cases where independently pre-set inter-temporal paths of fiscal deficits, uncertainties and objectives outnumbered the available independent instruments. Fiscal policy's potential for directly impacting price levels was brought forth by the 'Fiscal Theory of Price Level' developed in the 1990s, thereby identifying another channel of fiscal constraint on monetary policy's pursuit of price stability. Open economy extensions, particularly after the formation of European Monetary Union (EMU), and the need to address the financial stability objective, brought in more explicitly during the post-2008 global financial crisis, have also favoured the co-ordination of fiscal and monetary policies in recent years.

1.6 The experience of select advanced economies in the context of fiscal-monetary co-ordination shows that following the high inflation of the 1970s, the issue of central bank independence in the conduct of monetary policy gained importance during the next two decades. During the 1990s, many countries adopted inflation targeting, while fiscal policy increasingly became rule-based. These developments were reflected in commensurate changes in monetary policy operating procedures, while government borrowings reduced as fiscal rules came into play. The policy co-ordination mechanism between the central banks and the governments improved further during the 1990s amidst an emphasis on price stability in the UK and some other advanced countries[3]. By the early 1990s, many OECD countries had set up committees for consultation and co-ordination between fiscal authorities and central banks on public debt policy. At the same time, the operational responsibility for managing government debt was largely assigned to independent debt management offices with their own clear-cut objectives. This realignment of the operational framework often went together with the independence of central banks with explicit inflation mandates. Nonetheless, it is difficult to conclude whether the degree of fiscal dominance actually diminished significantly with central banks becoming more independent since the 1990s. As far as EMDEs are concerned, fiscal policy dominance was often the outcome of the importance assigned to socio-economic objectives that they had set for their respective economies. However, major economies like South Africa, India, Brazil and Russia eventually recognised that fiscal consolidation was essential to pursue and achieve the monetary policy objectives. An analytical assessment for the period up to the crisis shows that with the improving co-ordination mechanism between fiscal and monetary authorities, advanced as well as EMDEs have used both fiscal and monetary policies to deal with cyclical fluctuations.

1.7 Favourable economic and financial conditions during the pre-crisis period masked debt build-up in certain advanced economies, which got accentuated during the crisis. The recent financial crisis reinforced some of the traditional questions about the co-ordination between monetary policy and fiscal/debt management policies. A build-up of fiscal imbalances and sovereign debt during the crisis was observed as both advanced economies as well as EMDEs had to respond in terms of tax cuts and higher public spending. This situation has continued in the post-crisis period, particularly in the advanced economies. During the crisis, major central banks used their balance sheets to pursue accommodative monetary policies. The post-crisis debate that has emerged in respect of fiscal-monetary co-ordination is whether fiscal dominance or monetary dominance will prevail. It

3 More recently, the US in January 2012, and Japan in January 2013, have introduced indicative inflation goal of 2 per cent.

is quite likely that if fiscal dominance prevails, near-term interest rates would need to be kept lower than under monetary dominance. However, fiscal policy can be accommodated by monetary policy only till inflation expectations remain contained. Therefore, it is necessary that countries, particularly the advanced economies, work out credible medium-term fiscal consolidation plans, which could ensure a balance between short-run needs for supporting recovery in growth with medium-term fiscal sustainability. Central banks' interaction with fiscal authorities is likely to be critical not only from the viewpoint of the smooth conduct of monetary policy to anchor inflation expectations but also from the perspective of sovereign debt sustainability and financial stability. The chapter also highlights current concerns relating to the sovereign debt crisis in the euro area and the efforts being made to strengthen the economic pillar of the EMU by adopting a set of rules envisaged to foster budgetary discipline through a 'fiscal compact', strengthen the co-ordination of economic policies and improve the governance in the euro area.

Has fiscal dominance of monetary policy in India reduced post-FRBM? Did the legislation cease monetisation of deficits? Have the large fiscal deficits in India been inflationary? Is government spending pro-cyclical or counter-cyclical? Do debt-deficit dynamics impact monetary policy?

1.8 Chapter 3, 'Fiscal-Monetary Co-ordination: An Assessment in India', which makes an assessment of the fiscal-monetary co-ordination through shifts in institutional arrangements for monetary and fiscal policies in India, addresses these questions. The regime shifts that first curbed automatic monetisation by phasing out *ad hoc* treasury bills and later prohibited the Reserve Bank from subscribing to the primary issuances by the Government under the Fiscal Responsibility and Budget Management (FRBM) Act has reduced, but not eliminated, the fiscal dominance of monetary policy. Newer forms of dominance have emerged, particularly due to suppressed inflation, deficits and inflation feeding on one another. The debt-deficit dynamics of large fiscal deficits can potentially cause monetisation in a broad sense. This is because open market operations (OMOs) create reserve money in case of net purchase of government securities by the Reserve Bank. Whether such monetisation reduces the efficacy of monetary policy depends on whether OMOs conflict with monetary policy objectives. In practice, it is not always easy to determine what part of OMOs affects liquidity or monetary conditions and what part of OMOs facilitates debt auctions. The size of government market borrowings has increased nearly ten-fold in the past eight years (2004-05 to 2012-13). The Reserve Bank conducted large OMO purchases during this period. As long as fiscal deficits remain large, fiscal policy dominance is likely to remain. To the degree that OMOs do not affect the monetary expansion targets of the Reserve Bank, fiscal dominance is muted. However, when additional liquidity injected into the system through the OMOs is in excess of the limit that is commensurate with inflation objectives, fiscal dominance becomes detrimental to monetary stability. It can impinge upon monetary policy operations, as it provides a game-theoretic setting for a game of chicken.

1.9 Large fiscal deficits have impacted inflation in India in several ways. First, to the degree that these deficits reflect price rigidities in the economy on account of prices being administratively determined – such as energy prices, *viz.*, price of diesel, electricity, coal or fertilisers – they remain potentially inflationary, although they result in suppressed inflation in the short-run. Such prices often need large sudden revisions when subsidy-induced expenditures lead to an unsustainable fiscal position. These discrete changes not only lead to a surge in inflation, but also impact inflation expectations. Second, large fiscal deficits, when used to finance current rather than capital spending affect investment and delay supply responses that are necessary to curb medium-term inflation. They also lower potential output, making monetary policy easing more difficult. Third, financing of large fiscal

deficit by market borrowings crowds out private investment through its impact on interest rates and availability of credit in the economy. This further slows necessary supply responses. Fourth, the liquidity position at time tightens in response to large fiscal deficits with a build-up of government's cash balances with the Reserve Bank. If this is accompanied by OMO purchases, there is a monetary impact that can be inflationary. Empirical work presented in this chapter, using a Vector Error Correction Model (VECM), shows that the long-term impact of inflation is much larger on government expenditure than on government revenues. High inflation can lead to higher government expenditure, which, in turn, could lead to higher inflation, leading to a self-perpetuating cycle.

1.10 Fiscal policy has an important counter-cyclical role that has been envisioned and practised ever since Keynes recommended the same in the face of the Great Depression. However, government spending is often found to be pro-cyclical in the case of EMDEs. Pro-cyclical fiscal policy implies that fiscal policy is expansionary in times of boom and contractionary in times of recession. Fiscal policy should ideally aim to borrow more during cyclical slowdown when revenues shrink and 'social' spending rises, and reduce debt in upswings. Fiscal policy should try to dampen business cycle fluctuations, especially when shocks to the tax base or spending are transitory and not permanent. This often does not happen. All this raises macroeconomic volatility, depresses investments, reduces growth, redistributes income and wealth away from the poor and reduces the general level of welfare in the economy. It also produces a large deficit bias and poses the risk of debt unsustainability and defaults. Empirical evidence presented in this chapter for a long period (1950-51 to 2011-12) suggests that fiscal spending in India is pro-cyclical, both in the long-run and the short-run. Given that government final consumption has been largely expansionary, it has a limitation in addressing cyclical fluctuations in aggregate demand. This exerts added pressure on the monetary policy. However, counter-cyclical fiscal expansion was undertaken during 2008-09 amidst global financial crisis.

1.11 The debt-deficit dynamics interacts with monetary policy in several ways. The government can finance its spending either through tax or non-tax revenues or by running deficits that are financed through debt. The way the debt is raised also has a bearing on the monetary policy. Further, debt financing may also impact future fiscal and monetary policies. Its impact may depend on whether or not the Barro-Ricardo equivalence, that requires debt to be financed by future tax and non-tax revenues, holds. If debt does not add sufficiently to the future revenue stream, it may be difficult to meet future obligations. Empirically analysing the dynamics of the relationship between deficit, debt and money, using an auto-regressive distributed lag (ARDL) model, the chapter finds a long-run co-integrating relationship between the combined government debt of the centre and states and the change in reserve money.

How has fiscal dominance impacted the Reserve Bank's balance sheet over the years? Have phasing out of direct fiscal constraints and the increased external openness of the Indian economy influenced the Reserve Bank's autonomy in balance sheet management? What was the impact of policy response to the crisis on the Reserve Bank's balance sheet?

1.12 Chapter 4, 'Fiscal Operations and the Reserve Bank's Balance sheet', addresses these issues by seeking to detect inflexion points in the balance sheet of the Reserve Bank in the context of changing fiscal-monetary dynamics. Historically, fiscal dominance was evident in India during the period of social control (1968–1990). As a banker to the government, a crucial development goal for the Reserve Bank during the pre-reforms era was to bridge the resource gap of the government in the Plan process. The size of the Reserve Bank's balance sheet increased significantly during this phase, reflecting its growing accommodation to the government and its use of monetary policy instruments to curb attendant inflation. Fiscal conditions deteriorated significantly during the 1980s, leading to monetisation of fiscal deficit,

which eventuated in a balance of payments crisis in 1990-91.

1.13 The size of the Reserve Bank's balance sheet continued to expand during the first half of the 1990s due to an increase in the reserve requirements of the banks to neutralise the monetary impact of foreign exchange reserve accretion following the opening up of the economy. The post-reforms period has been characterised by a gradual move towards dilution of fiscal dominance, resulting in greater flexibility for the Reserve Bank in the conduct of monetary policy as manifested through a shift towards more market-oriented monetary policy operating procedures. The discontinuation of automatic monetisation of government deficit through the phasing out of *ad hoc* treasury bills by April 1997 and the simultaneous development of the government securities market allowed the Reserve Bank to progressively bring down the cash reseve ratio (CRR), which, in turn, resulted in contraction of the balance sheet size during the second half of the 1990s.

1.14 The emergence of a market-based government borrowing programme, the cessation of the Reserve Bank's involvement in primary government securities issuances as well as the substantial reduction in its contribution to various long-term funds ushered in a new era in the interface between the central bank's balance sheet and fiscal policies. The size of the Reserve Bank's balance sheet increased between 2001 and 2007, reflecting the Reserve Bank's efforts to contain the destabilising effects of large capital flows on the domestic economy through interventions in the foreign exchange market. Surges in capital inflows added a new dimension to the balance sheet of the Reserve Bank, as net foreign assets were accumulated alongside a reduction in net domestic assets on the Reserve Bank's balance sheet. The introduction of the market stabilisation scheme (MSS) under which government securities were issued for sterilisation purposes was an important milestone in the interface between the fiscal and monetary authorities, with the fisc also sharing the cost of sterilisation. The situation changed after the onset of the global financial crisis in 2008, which led to a reversal of capital flows. It is important to note that in contrast to the expansion of the balance sheets of several central banks as a result of their unconventional monetary policies and quantitative easing measures during the global financial crisis, the balance sheet of the Reserve Bank contracted in 2008-09 despite extensive use of both conventional and unconventional measures. On the asset side, the expansion of domestic assets through OMOs and liquidity accommodation was more than offset by the reduction in foreign assets to stabilise the exchange rates. On the liability side, the decline in bank reserves and government balances due to CRR reductions and unwinding of MSS balances, respectively, led to the contraction of the balance sheet. The Reserve Bank's balance sheet has expanded significantly since then reflecting its liquidity management operations, aimed at strengthening the recovery process while supporting the government market borrowing programme and simultaneously containing inflation.

How do we visualise the outlook of fiscal-monetary-debt management co-ordination in India given the global uncertainties, the imperative of attaining the growth target envisaged in the Twelfth Five-Year Plan document, the fiscal roadmap laid out by the Government of India in October 2012 and the proposed change in institutional arrangements in the conduct of cash and debt management?

1.15 The central government would need to return to the path of rule-based fiscal consolidation as its fiscal deficit-GDP ratio has been generally ruling high since 2008-09. The Twelfth Plan (2012-13 to 2016-17) document has set an average targeted rate of growth of 8.0 per cent and has, *inter-alia*, estimated the public sector savings rate to improve by around 3.5 percentage points by 2016-17 over that in 2011-12. Beginning mid-September 2012, the Government of India has announced a series of measures to restrain the fiscal deficit and improve the investment climate. In late October 2012, the

Finance Minister announced the government's decision to adopt a fiscal consolidation plan during the Twelfth Five Year Plan that would progressively bring down the fiscal deficit from 5.3 per cent of GDP in 2012-13 to 3.0 per cent of GDP in 2016-17. Further, with the government's move towards setting up a Debt Management Office under its ambit, there could be an institutional change in cash and public debt management in India, which used to come under the purview of the Reserve Bank. Accordingly, Chapter 5, 'Fiscal-Monetary Policy Co-ordination and Institutional Arrangements for Government Debt and Cash Management – A Medium-Term Outlook' assesses the relationship between fiscal and monetary policies in the post-reforms period. In this context, the empirical exercise estimates a linear function with the call rate – which is the operating target of monetary policy and can be generally used as a proxy for the monetary policy rate – as the dependent variable and the inflation gap (*i.e.,* the difference between the WPI inflation rate and its trend component), output gap (*i.e.,* the de-trended or cyclical component of GDP), the ratio of the centre's fiscal deficit to GDP (with a one-period lag) and the one-period lagged call rate as explanatory variables. The estimated equation provides broad guidance on the implications of the evolving path of fiscal deficit, output gap and inflation gap for monetary policy over the medium-term.

1.16 The chapter also summarises the debate, or rather the rethink, on the institutional arrangements for debt management that has been triggered by the global financial crisis. In India, a Middle Office has already been set up in the Ministry of Finance, Government of India and a proposal to introduce a Bill on the Public Debt Management Agency of India has been in the offing to complete the transit of the debt and cash management function from the Reserve Bank to the Government of India. Even so, keeping in view the international experience gained from the recent financial crisis that would impinge on debt management, monetary management and maintenance of financial stability, as well as the specific circumstances in India, this chapter highlights some issues that may call for a nuanced approach in this regard.

2 FISCAL-MONETARY CO-ORDINATION : THEORY AND INTERNATIONAL EXPERIENCE

Cross-country experience shows the subservience of monetary policy to fiscal policy until the early 1980s, with central banks' financing of government deficits often introducing an inflationary bias. With increasing independence for monetary policy in the advanced economies in the 1980s, the move towards rule-based fiscal policies and the adoption of inflation targeting by central banks across many countries including emerging markets, the fiscal-monetary mix progressively became better, thereby enabling countries to switch towards market-based monetary and debt management practices. Some central banks like the European Central Bank (ECB) avoided any form of ex ante co-ordination between monetary and fiscal policies, recognising that it could undermine its independence and its mandate for price stability. Fiscal-monetary co-ordination entered a new phase when the global financial and euro area sovereign debt crises led central banks to adopt unconventional measures and expand their balance sheets through purchases of long-dated securities and unimpaired loans, thereby blurring the distinction between fiscal and monetary policies, while governments undertook bailouts and nationalisation of several financial institutions, leading to a blurring of fiscal-financial policies. With adverse feedback loops between the sovereign and banking sectors threatening global recovery and financial stability, scheduling a timely exit from unconventional monetary policies is the foremost challenge as sovereign debt levels are soaring and growth concerns loom large in advanced countries. With governments' inability to stabilise debt levels or even finance deficits at reasonable interest rates, monetary policy is confronting a new phase of fiscal dominance. A need, therefore, has arisen for credible fiscal consolidation plans and co-ordination strategies to ensure an optimum fiscal-monetary mix that is consistent with growth, inflation and financial stability.

I. Introduction

2.1 Interaction between fiscal and monetary policies to facilitate the attainment of macroeconomic objectives has been a central as also one of the more complex relationships in theory and practice across various countries. There have been significant developments beginning with the early debate of the 1960s about the relative effectiveness of monetary and fiscal policies in stabilising demand pressures, culminating in a broad consensus supporting co-ordinated effort on the part of fiscal and monetary policy authorities to deal with huge deficits and high inflation.

2.2 During the 1960s and 1970s, the Phillips curve paradigm dominated monetary economics. The basic premise was that there existed not only a short-run but even a long-run trade-off between inflation and output. This led to a viewpoint that central banks could achieve higher growth on a sustainable basis, if they permitted inflation to be a little higher. The shortcomings of this reasoning were, however, brought out by the stagflation of the 1970s. These developments brought about a renewed focus on price stability as a key objective of monetary policy. In the subsequent decades, emerging market and developing economies (EMDEs) also showed an improvement in terms of achieving the objective of price stability, as had been the case in advanced countries. A consensus seemed to have been emerging that fiscal-monetary co-ordination needs to work towards ensuring low and stable inflation, which is conducive to growth and stability. However, with the occurrence of several episodes of crisis including the recent global financial crisis, it has become clear that monetary policy could not afford to treat asset prices and credit cycles as exogenous when they, in fact, are significantly influenced by the policy stance. Therefore, there is a lot of academic interest to understand how macroeconomic, fiscal and monetary policies put together can help to mitigate the build-up of financial imbalances.

2.3 The objective of this chapter is to trace the developments in macroeconomic theory in respect of fiscal-monetary co-ordination and examine the experience of advanced and EMDEs in this area for pursuing broad macroeconomic objectives of economic growth and inflation. The chapter also brings forth the issues of increasing importance of financial stability that have a bearing on fiscal-monetary co-ordination, particularly during the post-crisis period. This chapter is organised into four sections. Section I describes the traditional targets and instruments approach of Tinbergen and Theil and draws attention to the challenges of fiscal-monetary co-ordination, particularly in situations of multiplicity of objectives, associated trade-offs, changing relative policy efficacies and effective shortage of independent instruments to pursue the objectives. Section II covers international experiences in fiscal-monetary co-ordination to highlight both the commonality and differences in challenges experienced across the advanced economies, including the euro area and EMDEs. Section III focuses on issues emerging in the context of fiscal-monetary co-ordination after the recent global financial crisis. In particular, this section highlights the issue of contagion and negative feedback between the vulnerability of public finances and the financial sector that has been evident in advanced countries, particularly the euro area. It also sets out a way forward for possible arrangements for co-ordination between fiscal and monetary authorities spanning both face-to-face and arm's length co-ordination. Section IV concludes the chapter by analysing both theoretical developments and cross-country experiences that are relevant to the Indian perspective, as discussed in the remaining chapters of the report.

II. Macroeconomic Theory

Traditional Orthodoxy: Macroeconomic management through fiscal policy in the lead, backed by an accommodative monetary policy

2.4 Historically, the need to have macroeconomic policy intervention for resolving deficiency of aggregate demand emerged in the context of the Great Depression of the 1930s. Since governments could regulate aggregate economic activity through fiscal policy instruments of taxes and expenditure, while central banks could potentially do so indirectly through influencing interest rates, by providing additional liquidity, thereby driving investment demand, a need arose to co-ordinate the two arms of policy-making to optimise macroeconomic outcomes. The traditional Keynesian policy prescription called for a lead role for fiscal policy to address economic slackness under the Great Depression and meet post-World War II reconstruction needs. Monetary policy played a secondary role by either accommodating fiscal policy through funding of government deficits or assisting it through direct financing of developmental expenditures. Accordingly, the intermediate target of central banks like the US Federal Reserve Board (Fed) during this period was to keep interest rates at a low level over the long-run with the primary objective of "maintaining the value of government bonds". Originally, an active fiscal-passive monetary interface was premised upon two factors. First, monetary policy effectiveness was perceived to be low in situations of high unemployment rates co-existing with a liquidity trap, when interest rates could not be lowered through monetary measures. Second, central bankers also accepted a secondary role for monetary policy as spending decisions of consumers and firms were considered to be influenced more by expectations than the rates of returns on assets.

2.5 By the 1960s, with cheap money fuelling inflation, monetary policy started regaining some importance. Pigou (1943) set out a channel, *viz*., wealth channel, whereby changes in the real quantity of money can influence aggregate demand even if interest rates remain unaltered. Further, the "practical and political feasibility" of fiscal policy in fine-tuning demand management began to be viewed with scepticism on the back of sluggish adjustment of government expenditures to economic activity and political inertia in tax adjustments, as experienced in

the US. Nonetheless, the policy lever remained tilted in favour of fiscal policy on two counts. First, the price stability objective of monetary policy continued to hold a low key in comparison with the fiscal policy objective of promoting full employment. Second, with limited efficacy in controlling real magnitudes (real interest rates, unemployment rates and growth rate of real national income) through nominal quantities, monetary policy was found to be most suitable for pursuing the price stability objective by keeping money supply growth moderate and bereft of large swings (Friedman, 1968). It was held that monetary policy could reduce interest rates only temporarily by increasing the money supply growth along a negatively sloped liquidity preference curve. Interest rates would not only revert to higher levels after a time lag as rising income levels increased demand for liquidity, but also rise further, reflecting the declining real quantity of money supply on account of the increasing price level. Eventually, expansionary monetary policy by building expectations of rising prices would lead to rising nominal interest rates over the long-run. Friedman argued that higher monetary growth could only temporarily reduce unemployment below its 'natural' rate as unanticipated increase in demand would lead to a faster rise in selling prices than that warranted by the cost of factors of production, including wages. With nominal wages adjusting to rising prices, real wages increase to their initial levels, with unemployment returning to its natural rate. Thus, monetary policy could reduce unemployment rate below its natural rate only temporarily at the expense of higher inflation, while the trade-off withered off in the long-run.

2.6 With a breakdown of the fixed exchange rate system and OPEC oil price shocks simultaneously generating acceleration of inflation and high unemployment in the US and other economies in the 1970s, it was recognised that the Phillips curve trade-off between these two variables does not hold in the long-run. Against the backdrop of these developments, monetary policy was assigned the task of controlling inflation through monetary targeting.

Imperatives for Fiscal-Monetary Co-ordination under Upper Limits to Bond Financing of Fiscal Deficits, Paucity of Policy Instruments and Rule-based Policy-making

2.7 By the early 1980s, Sargent and Wallace's 'some unpleasant monetary arithmetic theory' brought a new perspective of fiscal-monetary co-ordination in the context of financing of fiscal deficits through the creation of base money and issuance of bonds (Sargent and Wallace, 1981). Arguably, if the government independently set its inter-temporal path of fiscal deficits to be financed through a combination of base money creation and issuance of bonds, any rise in fiscal deficit would necessitate a corresponding rise in real stock of bonds held by the public in order to restrict growth in base money. If interest rate on bonds were higher than the growth rate of the economy, eventually an upper limit of real stock of bonds relative to the economy would be reached, as the real stock of bonds would increase faster than the growth rate of the economy. Given that any further increase in fiscal deficit would have to be financed through increases in base money, the ability of monetary policy to control inflation would be negated in the long-run even under a monetary targeting regime. Further, bond financing of deficits during the current period could raise interest burden, deficits and interest rates in future, fuelling further monetisation of deficit.

2.8 Extending Tinbergen and Theil's traditional target-instrument approach, Blinder (1983) argued in favour of fiscal-monetary co-ordination as, in reality, targets outnumber the independent policy instruments available to achieve them and fiscal and monetary authorities may have different objectives, operating models and forecasts of the economy. Typically, an economy's objectives (levels of output, inflation, share of investment in output, distributional/ allocative efficiency objectives and so on) were found to multiply faster than the number of independent policy instruments (taxes, government expenditure and money supply) needed to achieve them. Game theoretical studies showed that if the government (aiming at reduction in unemployment) and the central bank (aiming at reduction in inflation) pursued

different objectives and reacted to macroeconomic conditions independently without taking into account the other authority's response, a Nash equilibrium would yield both fiscal deficit and interest rates higher than those considered desirable by either authority (Blinder, 1983; Nordhaus *et al.*, 1994). Due to lack of agreement and the existence of uncertainty about the 'correct' policy-mix in practice, Blinder was in favour of the central bank being vested with greater discretionary power to ensure a check against the government's short-run considerations. To avoid the sub-optimal Nash equilibrium, Blinder favoured the independent setting up of fiscal rules based on allocative considerations. The central bank would have to accommodate expansionary fiscal deficits during recessionary phases, but reverse monetary expansions once the economy returned to its full employment norm and the government balanced its budget to avoid the inflationary consequences of money creation.

2.9 Against the backdrop of co-existence of high fiscal deficits and high real interest rates in the US ('tax cuts' of 1962-65, 'new economic policy' of 1971, the 'Carter stimulus plan' of 1977 and 'Reagan's supply-side policies') and in other countries such as Germany (after its unification), and its implications for private investment and long-term growth of potential output. Against this backdrop, Nordhaus favoured having a transparent and rule-based monetary policy that would provide a frontier within which fiscal policy could maximise its utility. It was shown that the resultant lower fiscal deficit and real interest rates improved utility for both the policy authorities and led to higher investment than the Nash solution, though not necessarily affecting inflation or unemployment. Further, as central banks started to interact with private sector wage and price setters through the announcement of firm and credible rules, a low-inflation equilibrium could be established. Under a dynamic situation, the fiscal-monetary policy mix was shown to improve if government reduced fiscal deficits in anticipation that the consequent contractionary impulse would be offset by a monetary expansion in the short-run. However, the central bank can delay its monetary policy response till it becomes confident of the irreversibility of a modified fiscal stance. Alternatively, under a 'result-oriented' policy framework, fiscal deficit reduction would generate a monetary response through the lowering of interest rates in the next period (rather than the same period) to offset the economic slowdown occurring in response to fiscal contraction in the previous period.

New Channels of Fiscal Constraints on Monetary Policy

2.10 Emerging as an alternative view during the 1990s, the fiscal theory of price level (FTPL) postulated that the price level is primarily determined by government debt and fiscal policy, with monetary policy playing an indirect role (Leeper, 1991; Sims, 1994; Woodford,1994). This theory clashed with the monetarist view that considered money supply as the primary determinant of price level and inflation. In terms of FTPL, even in the absence of the imposition of seigniorage targets set by the government, fiscal policy could constrain central bank in controlling the price level. With the government's inter-temporal budget constraint as an equilibrium condition, the price level would have to adjust endogenously for equating the real value of nominal stock of bonds to the present value of the given sequence of future primary balances of the government. Buiter (2000) argued that the FTPL's contention of general price level serving the role of a public debt revaluation factor leads to contradictions and anomalies. Subsequently, the FTPL proponents clarified that the theory regarded inter-temporal budget constraint as an important factor and not necessarily the only factor determining price level. For instance, Woodford (2003) indicated that under an interest rate peg, money and prices do move together. Others emphasised that in the 'conventional' FTPL theory, fiscal policy specification matters for the behaviour of both money and price level and move together in equilibrium (Gordon and Leeper, 2005). Empirical studies, however, showed mixed results with Cochrane (1998) finding FTPL theory to hold for the US since 1960, while Canzoneri *et al.*

(2001), based on post-war US data, pointed out that monetary policy rather than fiscal policy determined the price level. Nonetheless, the recognition of the impact of fiscal policy on price level under the FTPL supported the need for greater fiscal-monetary co-ordination to tackle inflation, which was hitherto regarded as a monetary problem.

2.11 Other channels of fiscal policy constraining the conduct of monetary policy include the impact of fiscal deficits on interest rates and interest spreads, particularly, for emerging markets. While the conventional theory argued that higher fiscal deficits raise intermediate and long-term interest rates, empirical studies revealed mixed results. Some studies established the impact of fiscal variables on country premiums, while other showed that the fiscal policy could constrain monetary policy through its impact on exchange rates. Under a high capital mobility and flexible exchange rate situation, deterioration in the fiscal situation could lead to a temporary appreciation of the exchange rate. In contrast, under low capital mobility, the exchange rate may depreciate, following higher imports and widening of the current account deficit on account of fiscal expansion (Zoli, 2005).

Open Economy Extensions

2.12 Extended to open economy levels, the literature on fiscal-monetary co-ordination delved into the welfare implications (in terms of aggregate utility) of the operation of policy instruments, which also provided the micro-foundations of fiscal-monetary interactions in a monetary union. The role of fiscal policy began to be re-examined after the formation of the European Monetary Union (EMU), particularly when it was felt that monetary policy could lose its flexibility as currencies of constituent member countries merged. The emphasis, therefore, shifted to assessment of the role of fiscal policy as a stabilisation tool, welfare gains from international fiscal co-operation and the interaction of such gains with the monetary policy regime. Assuming that fiscal policy operates through government expenditure and that international elasticity of substitution between goods differs from unity, studies found that as activist fiscal policy would lead to potential welfare gains from fiscal policy co-operation across countries, provided monetary policy was set co-operatively as under a single monetary regime (Lombardo and Sutherland, 2004).

Extensions of Policy Mandate from Price Stability to Financial Stability

2.13 The lessons learnt from the spike in inflation in the 1970s brought a renewed focus on price stability as a key objective of monetary policy. With the empirical analysis showing the absence of any long-run trade-off between inflation and unemployment, the policy focus shifted to the use of monetary policy for addressing inflationary concerns. Low and stable inflation was viewed to be consistent with the objective of stabilising output around its potential level, as monetary policy affected inflation indirectly *via* its impact on aggregate demand. Accordingly, while many central banks in practice continued to attempt to stabilise output, they found it useful for their public mandate to be restricted to price stability alone, since this reduced their vulnerability to political pressures for expansionary monetary policy. Thus, monetary policy gained in importance, leading to institutional changes in some countries including the creation of independent central banks. While price stability remained a key objective of monetary policy, central banks in EMDEs have generally tended to follow multiple objectives, especially as they are usually assigned a key role in promoting economic development. Besides, exchange rates often emerge as a key policy issue in EMDEs that are relatively more open. Empirical evidence suggests that central bank interest rates in EMDEs often react more strongly to changes in the exchange rates rather than changes in the inflation rate or the output gap (Mohanty and Klau, 2004).

2.14 The usefulness of inflation targeting (IT) frameworks in both advanced and emerging economies continues to be a matter of debate. While it is true that many IT economies were able to control inflation during the 1990s, countries that did not adopt IT have also not performed badly on this front. Paradoxically, the 1990s – a decade

of price stability – witnessed several episodes of financial instability, suggesting that price stability by itself is not sufficient. Globalisation and financial integration of economies with the rest of the world have posed new challenges for monetary policy. Large movements in capital flows and exchange rates affect the conduct of monetary policy on a daily basis. Large and sudden changes in exchange rates also have implications for financial stability. Under these circumstances, the scope of monetary policy goes beyond the traditional trade-off between inflation and growth, with financial stability issues presenting a new challenge to the monetary authority. These developments have also given rise to a debate about how monetary policy could contribute to financial stability. While price stability is considered necessary for financial stability, there is no consensus on whether price stability, *per se*, would be sufficient to guarantee financial stability (Cukierman, 1992; Gameir *et al*, 2011; Issing, 2003; Mishkin, 1996; Schwartz, 1995). One view is that the central banks should focus exclusively on price stability, as it is difficult to identify potential sources of financial instability. It is held that asset price misalignments are difficult to identify *ex ante,* and even if they can be identified, it is debatable whether monetary policy could prick these bubbles (Bean, 2003; Bernanke, 2003; Bernanke and Gertler, 2001; Filardo, 2004). An alternative view supports pro-active tightening of monetary policy and monitoring of various indicators such as credit and monetary aggregates by the central banks to identify incipient financial imbalances (Borio and Lowe, 2002; Cecchetti *et al*., 2000; Crockett, 2001). More generally, given the limitations of monetary policy, effective regulation and supervision of financial institutions have assumed more importance in the context of financial stability.

III. Fiscal-Monetary Co-ordination: International Experiences

2.15 Evolving macroeconomic theory has brought forth several dilemmas inherent in the fiscal-monetary interface spanning a continuum from absolute fiscal dominance to monetary dominance, which, to an extent, was evident across countries up to the 1990s. Progressively in recent years, however, policy regimes have ceased to reflect either extremes of fiscal dominance or full monetary independence. As corroborated by policy responses to the economic slowdown in 2001 and the recent global financial crisis, fiscal-monetary co-ordination is considered critical when uncertainty surrounds the impact of either of the policies or when limits to conventional policy-making are reached. While the choice of policy regimes across countries reflects specific institutional histories, the effectiveness of any regime depends upon the degree of fiscal-monetary co-ordination. The extent to which fiscal and monetary policies respond to inflation and unemployment, and the degree to which the policymakers co-ordinate their policies, have important implications for the effectiveness of these policies. In the absence of co-ordination, the independent decisions of monetary and fiscal authorities may either result in duplication of efforts or, when they are setting their instruments in opposite directions, negative externalities could emerge. Thus, it is expected that fiscal-monetary co-ordination in general would improve welfare as reflected in the phase of Great Moderation since the 1990s. The co-ordination between policymakers takes place through various modes, *viz*., (i) exchange of information, (ii) mutual acknowledgement of the existence of the probable behaviour of the other policymaker; (iii) joint decision-making between policymakers (full co-operation, *i.e*., collusion); (iv) agreement on a sequence of moves between the two authorities identifying one of the two policymakers as the leader, and the other as the follower. This section traces fiscal-monetary co-ordination across select advanced economies and EMDEs over the years.

Policy Co-ordination in Advanced Economies

2.16 In advanced economies, fiscal policy dominated as a tool for macroeconomic stabilisation, while the monetary policy role was largely supportive during the immediate post-World War II period. With the emergence of increasing inflationary pressures during the 1970s, the monetary policy began to assume prominence in the advanced economies. The limitations of fiscal policy to

undertake macroeconomic stabilisation in the short-run through discretionary measures also came to the fore, as inherent inertia in legislative processes did not provide for the discretionary component of fiscal policy to adjust in line with monetary policy actions strategically at business cycle frequencies. *De facto* counter-cyclicality was, therefore, noted to be 'accidental Keynesianism', such as tax cuts in the US in 1982. With greater likelihood of interaction of automatic stabilisers with macroeconomic shocks at business cycle frequencies, the co-ordination of monetary policy with this component of fiscal policy was considered critical. Accordingly, fiscal-monetary co-ordination called for strategic setting of legislations in respect of tax rates, unemployment benefits and other entitlements in tune with monetary policy. For the US, the case for aggressive monetary policy got arguably strengthened as automatic stabilisers were found to be weak.

United States

2.17 Economic policymaking in the US since the Great Depression of the 1930s has involved a continuing effort by the government and the Fed to find a mix of fiscal and monetary policies that would sustain economic growth and stabilise prices. During the early post-war period, the emphasis was on growth and employment, which continued up to the 1970s. However, the US government began paying more attention to inflation, with monetary policy assuming the responsibility for inflation control from the late 1970s.

Greater Monetary Independence during 1979-87 (Volcker Period)

2.18 The Fed reasserted its independence in 1979 amidst stagflation against the backdrop of greater willingness to accept higher unemployment and the use of aggressive monetary policy measures to reduce inflation. With the Fed's successful disinflation policy during this period, a view emerged that well-timed tightening by an independent central bank can enhance its credibility for reducing inflation permanently without supportive fiscal policy at a far lower cost in terms of loss in output and employment. Accordingly, the monetary policy became more strongly disinflationary in the US than elsewhere, with the federal funds rate rising to 19 per cent by 1980. Notwithstanding some initial fiscal restraints, fiscal policy shifted to a stimulus mode under the Economic Recovery Tax Act, 1981.

2.19 During the 1980s, the Fed also announced a switchover from the system of having the federal funds rate as the operating target to a monetary targeting framework. The Fed's limited flexibility in determining policy rates often led these rates to rule at levels lower than those warranted for anchoring inflationary expectations, with money supply growth turning out to be higher than required. Under the monetary targeting framework, borrowed reserves were targeted directly so as to ensure better anchoring of money growth, and to make monetary policy more effective.[1] During the 1980s, monetary policy decisions were increasingly guided by a broader set of information on economic activity, inflation, foreign exchange developments and financial market conditions, although the monetary policy continued to be anti-inflationary and countercyclical in nature.

Monetary and Fiscal Policy since 1987

2.20 During the Greenspan period (1987-2006), the Fed sought to re-enforce its standalone role for low inflation, as it was held that monetary policy could sustain both low inflation and unemployment along with infrequent/mild recessions. With an expansionary fiscal policy and rising debt servicing costs amidst high interest rates, fiscal deficits surged by the mid-1980s. As a result, it was decided to impose fiscal rules under the Balanced Budget and Emergency Deficit Control Act of 1985 and the Balanced Budget and Emergency Deficit Reaffirmation Act of 1987, which led to a positive primary structural balance in 1988. The enactment of the Omnibus Budget Reconciliation Act of 1993

1 Therefore, the FOMC began to target reserve measures based on required growth in M_1 and M_2. However, in the absence of a stable relationship between money and economic activity, the FOMC had to modify the procedures for guiding reserve positions in 1983.

strengthened the fiscal consolidation process and enabled the overall budgetary balance to turn positive in 1994.

2.21 The Fed continued with its tight monetary policy stance till the onset of a brief recessionary phase during 1991-92. Accordingly, the monetary policy was relaxed by reducing the intended federal funds rate to 3 per cent by the end of 1992, and with inflation running at the same level, the implied real federal funds rate neared zero. However, the real policy rate turned positive when the federal funds rate was steadily raised to 6 per cent in early 1995, while inflation ranged between 2 and 2.5 per cent. This stance of monetary policy was largely maintained till 2000, *albeit* with modest adjustments. As budget deficits switched to a surplus mode, the government announced income tax concessions to stimulate aggregate demand in the wake of the slowdown in information technology sector and a brief recession in the US economy in 2001. The expansionary fiscal initiative was also supported by a significant reduction in the federal funds rate. An important change in the monetary policy operating procedure occurred during this phase. With financial innovations, as the link between non-borrowed reserves and monetary policy objective weakened, the Fed switched to targeting the federal funds rate indirectly through borrowed reserves. Further, as the relationship between borrowed reserves and the federal funds rate became unstable, the Fed moved towards targeting the federal funds rate directly.

2.22 During the first half of the 2000s, both monetary and fiscal policies remained expansionary. Despite concerns about fiscal unsustainability, macroeconomic conditions remained conducive without necessitating any reversals of accommodative policy stance until the inception of the crisis in August 2007. The onset of recession from December 2007, with contraction becoming pronounced after the Lehman Brothers collapse in September 2008, necessitated the use of both conventional (the federal funds target rate was brought down to zero per cent by late-2008) and non-conventional (significant purchases of longer-term Treasury securities during 2009 and early 2010, followed by a second quantitative easing and modification of the Fed's reinvestment policy to avoid shrinking of its balance sheet as mortgage-backed securities matured/redeemed) monetary easing measures in the wake of unemployment rate doubling to 10 per cent before settling to around 9 per cent (much above the non-accelerating inflation rate of unemployment *i.e.,* NAIRU of 5.75 per cent) and falling inflation rates. Complementing the actual monetary measures, the Fed's communication policy was designed to shape investor perceptions appropriately. Such asset purchases were directed to expand aggregate demand by lowering the cost of credit, to raise household wealth with the rising prices of securities and to increase export demand through depreciation of the dollar (Yellen, 2011). In consonance with the monetary easing, the US activated fiscal stimulus measures from early 2008. To an extent, quicker and more sustained fiscal activism was facilitated by relaxing budget rules that made countercyclical fiscal interventions easier (Auerbach *et al.*, 2010).

2.23 As alluded to earlier, the US government undertook an expansionary fiscal policy in the first half of the 2000s. By the time the global financial crisis struck, fiscal deficit had already reached elevated levels on account of large tax cuts, a new entitlement programme for healthcare and heavy spending on security-related areas. Therefore, the deterioration in the fiscal deficit position reflected not only the policy response to a financial sector-driven deep recession but also the cumulative impact of expansionary fiscal measures undertaken in the pre-crisis period. The fiscal policy stimulus provided by the US government during the crisis is considered to be the largest across the major economies and was aimed at boosting aggregate demand through infrastructure investment, tax concessions and unemployment benefits. Fiscal measures contributed about 2 percentage points to GDP growth in 2009, and one percentage point in 2010 (Lipsky, 2011). In addition, with the failure of Lehman Brothers, it was realised that the liquidity provision by the Fed would not be sufficient to support the financial system and, therefore,

support from the US Treasury would be required. In particular, the lack of liquid funding, concerns about the value of the underlying loans, and the integrity of the securitisation process hampered the functioning of securitisation markets. To revive these markets, the Fed worked with the Treasury to establish the Term Asset-Backed Securities Loan Facility. Under the facility, the Fed supplied the liquid funding, while the US Treasury assumed the credit risk. Therefore, the global financial and economic crisis saw fiscal and monetary policies working in tandem to address liquidity and financial stability concerns, with the Fed assuming risks of loss on its balance sheet by lending to stabilise systemically important firms and the Treasury providing explicit support and acknowledgement of those risks. The US government has continued to maintain a supportive fiscal policy stance since 2010 recognising the limitations of near-zero policy interest rates and uncertainty about the effectiveness of monetary policy. The fiscal programme sought to 'combine' pro-growth policies in the near term with firm steps undertaken to reduce budget deficits over the long-term, which was regarded as 'a valuable complement' to monetary policy (Yellen, 2011). In September 2012, the Fed announced its plan to purchase mortgage-backed securities amounting to US$40 billion per month guaranteed by the government-sponsored enterprises. Along with purchases under previous programs involving Treasury securities, the Fed announced to purchase US$ 85 billion of longer-term securities per month. The objective has been to put further downward pressure on longer-term interest rates, including mortgage rates so as to foster economic recovery. Even though the Fed recognises the fiscal challenges that the US economy is facing, according to Bernanke (2012), achieving these fiscal goals would be even more difficult if monetary policy were not helping support the economic recovery.

2.24 The sharp deterioration in US fiscal position in recent years attributed partially to the the bailouts under the Troubled Asset Relief Programme (TARP), and partially to the fiscal stimulus packages of 2009 and 2010, as also to the US recession, led to the situation referred to as the US fiscal cliff. The fiscal cliff refers to a large predicted reduction in the budget deficit and consequent slowdown of the US economy if specific laws are allowed to automatically expire or go into effect at the beginning of 2013. These laws include tax increases due to the expiration of the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010 and the spending reductions ("sequestrations") under the Budget Control Act of 2011. The US fiscal cliff was averted by signing of a deal on tax hikes on January 1, 2013, though significant policy uncertainty remains on spending cuts, known as the sequester, which have been postponed for two months. The adoption of a credible medium-term fiscal consolidation plan remains a priority in the US.

United Kingdom

2.25 The Bank of England (BoE), originally incorporated as a limited liability entity, was founded as the government's banker and debt manager. The government's recourse to monetary financing of its borrowings dated back to the pre-nationalisation phase of the BoE. With the nationalisation of the BoE in 1946, the government became its owner and assumed the power to issue directions to the Bank. Nonetheless, in practice, there was no major difference in terms of its functions and the Bank continued to remain as the Treasury's banker, advisor, agent and debt manager.

Active Fiscal Policy during the post-War Period

2.26 During the post-World War II period, an abiding objective of the government was to maintain a high level of aggregate demand with a countercyclical role played by fiscal policy through discretionary stimulus or the operation of automatic stabilisers. With the use of an active fiscal strategy to prevent large negative output gaps, demand pressures started emerging, eventually leading to positive output gaps and sharp rise in inflation in the late 1960s and early 1970s (MacFarlane and Mortimer-Lee, 1994). Notwithstanding the emergence of strong inflationary pressures,

monetary policy was assigned only a marginal role in aggregate demand management in the UK till the collapse of Bretton Woods in the early 1970s. It was incomes policy rather than monetary policy that was the preferred tool to manage demand pressures spilling over to high inflation and deteriorating balance of payments. Since the incomes policy could not address inflationary pressures in 1974, monetary policy was accorded greater importance in managing aggregate demand. Against the backdrop of high inflation in the 1970s and early 1980s, monetary targeting was introduced which became an integral part of macroeconomic strategy in 1979. Nonetheless, direct controls (prices, wages and credit) and fiscal policy continued to be major policy tools to contain inflationary pressures.

Emphasis on reduction in borrowing requirement to contain money growth under MTFS (1980)

2.27 The practice of announcing annual targets for M_3 growth and public sector borrowings under its Medium-Term Financial Strategy (MTFS) plan was started in 1980 with a view to restore policy credibility. A gradual reduction in borrowing requirements was perceived as a major factor in containing money growth. The monetary targeting framework helped restrain government spending plans, as it implied a limit on public sector money creation. Thus, monetary targeting became a means of co-ordinating fiscal and monetary policies. The tightening of monetary policy in 1980-81 helped reduce the inflation rate from 22 per cent in early 1980 to below 4 per cent in mid-1983, even though M_3 targets could not be achieved (Bernanke *et al.*, 2001). The target for M_3 was gradually de-emphasised, while growth in narrower monetary aggregate (M_0) began to be considered as an appropriate indicator of the monetary policy stance, which was announced in the UK Budget for 1986.

2.28 Notwithstanding the decline in public sector imbalances during the first half of the 1980s, the fiscal policy remained by and large expansionary till the mid-1980s. During the second half of the 1980s, the government was able to tighten fiscal policy significantly. In spite of aggressive tightening of monetary policy from 1988-Q3 to 1990-Q3, the inflation rate reached a peak level of 10.9 per cent by September 1990, while the UK economy faced a deep recession. Monetary targets, found to be inadequate for preventing the bubble-bust cycle, were then abandoned. In fact, monetary policy targets were de-emphasised in 1987, when the UK government attempted to keep the pound sterling in a narrow band at 3.0 Deutsche Mark (DM) per pound. After the formal suspension of the M_3 target, the monetary policy in the UK was increasingly conducted towards stabilising exchange rate movements. The UK joined the European exchange rate mechanism (ERM) in 1990, which was supposed to provide greater stability and predictability to monetary policy.

Inflation Targeting and Reforms in the Macroeconomic Framework during the 1990s

2.29 With the increasing pressure for the unification of Germany, interest rates in Europe moved up in the early 1990s. Since the pound sterling was pegged to the DM under the ERM arrangement, it had become difficult for the UK to pursue a tight monetary policy due to domestic growth concerns. Therefore, the UK government left ERM membership in September 1992 and decided to adopt inflation targeting (IT). While the IT framework implied increasing accountability of monetary policy, it did not withdraw its flexibility, even in principle, to deal with uncertain macroeconomic events. Until 1997, both the monetary and fiscal policies were determined by the Chancellor of the Exchequer in consultation with HM Treasury and the Bank of England. Under the IT regime, the UK economy was able to broadly achieve stable inflation between 1992 and 1997, but inflation expectations remained high as the possibility of fiscal policy operations conflicting with the objective of price stability continued to exist.

2.30 Under the new macroeconomic framework announced in 1998, the Chancellor was assigned the ultimate responsibility for both monetary and fiscal policies, while operational control was

divided between an independent Monetary Policy Committee (MPC), with the sole responsibility for monetary policy, and the Treasury, which retained responsibility for fiscal policy. The enactment of Bank of England Act aimed at transferring full operational responsibility for monetary policy to the BoE, while the government retained operational control of monetary policy only in 'extreme economic circumstances' under the reserve powers of the Treasury (Section 19, BoE Act, 1998). The operational objective of monetary policy, *i.e.*, the inflation target, however, continued to remain under the purview of the government, and not the BoE. The policy rate decisions began to be determined by the BoE rather than the Chancellor of the Exchequer, as had been the practice before May 1997.

2.31 Subject to the primary objective of price stability, the BoE was also required to support the government's other economic policy objectives of growth and employment. This implied that price stability was not considered to be an end in itself, but was instead regarded as necessary to meet the government's other economic objectives. In 1998, the government also announced fiscal rules to facilitate high and stable levels of growth and employment. These fiscal rules were to be followed under the guidelines of the 'Code for Fiscal Stability'. Debt management on behalf of the government was transferred to HM Treasury, while the regulatory functions were entrusted to the Financial Services Authority. Recognising the limitations of fiscal policy as a short-term instrument, the focus shifted to the medium and long-term objectives. A clear distinction was also made between the roles of the government and the MPC. The essence of such an arrangement was to ensure that monetary policy decisions were not affected by short-term political considerations and were, therefore, perceived to be more credible.

2.32 One potential concern about the new framework was its efficacy in ensuring effective co-ordination between fiscal and monetary policies (Buiter and Sibert, 2001). The potential co-ordination problems were, however, addressed in three main ways. First, co-ordination was achieved because the government was to set the objectives for both the monetary and fiscal policies. The MPC based its decisions on the government's fiscal projections, while the Chancellor could determine the policy mix, as long as the MPC's reaction function was known (Bank of England, 2010). Second, the objectives of both arms of policy were made more explicit and subject to more transparent procedures. Third, co-ordination between monetary and fiscal policies was also to be aided by the presence of a representative from HM Treasury at MPC meetings, who provided information on fiscal policy (including the Budget). One consequence of assigning the responsibility for price stability to an independent MPC was effectively to rule out the use of activist fiscal policy.

Bursting of the Dot-Com Bubble in 2000: Expansionary Monetary and Fiscal Policies

2.33 With the adoption of IT, the inflation rate broadly remained under control during the 1990s and growth remained above trend, averaging around 3 per cent during the IT phase of the 1990s. In general, inflationary expectations remained much more stable in the UK, reflecting public confidence in monetary policy. Under the IT framework, fiscal policy is not supposed, in principle, to be used for short-term objectives. While there was no major shift in the stance of monetary policy (except expansionary in the late 1990s), fiscal policy was significantly tightened. However, in 2001, both monetary and fiscal policies had to be relaxed to address growth concerns that emanated when the dot-com bubble bursted. Until the mid-2000s, both fiscal and monetary policies remained expansionary and there has been no evidence on monetary policy attempting to offset the impact of the expansionary fiscal stance (Committee on Economic Affairs, House of Lords, 2004). The expansionary fiscal policy pursued during this period reflected not only cyclical factors but also planned increases in spending to improve public infrastructure and other services.

Fiscal tightening from 2005-06 to 2007-08, but reversal during crisis

2.34 To underpin the credibility of the IT regime, the government reiterated its commitment in 2003 to maintain net public debt below 40 per cent of GDP, while the sustainable investment rule appropriately constrained fiscal discretion within the limits set by long-term considerations, such as demographics and debt sustainability. Recognising the inflationary impact of rising commodity prices, the government budgets presented during 2005-06 to 2007-08 reflected firm commitment to fiscal tightening. However, during the recent global crisis, the overall fiscal stance has been to support monetary policy in the short-run and to allow the automatic stabilisers to help smooth the path of the economy.

2.35 The BoE, on its part, provided unprecedented monetary stimulus to counter disinflationary pressures and boost economic recovery. The policy rate was kept near zero, while its asset purchase of £200 billion (mostly of longer-term government bonds) also helped to reduce bond yields and boost asset prices, thereby supporting market confidence, household net wealth, and corporate credit supply. Most of the operations of the BoE, *viz*., credit lines to financial institutions, purchase of asset-backed securities and commercial paper, and asset swaps were undertaken with treasury support (IMF, 2009a). Further, complementing the asset purchase programme, the Bank of England and HM Treasury launched the Funding for Lending Scheme (FLS) in July 2012. While the impact of quantitative easing (QE) was mainly indirect through demand and incomes, the FLS aimed to reduce borrowing costs by going directly through the banking sector, and boosting lending to households and corporate sector.

2.36 To sum up, the macroeconomic policy framework in the UK has changed significantly over the years. While fiscal policy was the principal instrument of economic policy during the 1960s and 1970s with its focus almost exclusively on demand management, monetary policy (subject to a lower bound) and the provision of public services were essentially accommodating factors as the financing of persistent current account deficits continued to operate as a constraining factor. In the 1980s, the emphasis shifted to reducing the size of the government spending to contain inflationary pressures. The role of fiscal policy in demand management was phased out, while that of monetary policy was enhanced in inflation control and monetary management, *albeit* with limited success in the earlier phases of monetary and exchange rate targeting. The role of monetary policy was formalised with the adoption of the IT regime with an independent BoE and MPC. Since then, monetary policy actively pursued low inflation and stable growth.

2.37 During the 1990s, fiscal policy was designed strictly in combination with an active monetary policy based on IT. With the new macroeconomic framework put in place in 1998, fiscal policy became more oriented towards the medium-term objectives while monetary policy remained as an instrument of choice to respond to cyclical price pressures. However, during the global financial crisis, the UK government had to temporarily provide fiscal stimulus in 2008-09, which was also supported by the use of automatic stabilisers, and unprecedented monetary easing. Importantly, while the monetary policy stance has remained accommodative to support private and external sector-led growth, the government started phasing out fiscal accommodation in 2010, recognising the need to create fiscal space for countercyclical fiscal policies and to moderate inflationary expectations. Notwithstanding the fact that a prudent approach has been adopted to achieve a more sustainable fiscal position under the self-imposed fiscal mandates, the FLS programme undertaken by the Treasury and the BoE has continued to provide monetary stimulus with a view to help counteract the sluggish economy.

Euro Area

Co-ordination framework in a Monetary Union

2.38 Fiscal-monetary co-ordination in the euro area represents a special case of centralised monetary making by a unified monetary authority,

viz., the European Central Bank (ECB), and decentralisation of fiscal policies with individual member states of the European Monetary Union (EMU). The ECB's Governing Council decides monetary policy actions, which are implemented by the national central banks of the euro area**.** The ECB pursues price stability as its primary objective, while support for the economic policies of the member states of the euro area serves as a secondary objective, as enunciated in the Maastricht Treaty. Being committed to the price stability objective, monetary policy controls aggregate output at the euro area level, while national fiscal policies determine the distribution of aggregate demand across member countries.

2.39 While individual country developments matter for the monetary policy of the EMU as they have a bearing on price stability in the euro area, individual fiscal authorities may not be commensurately sensitive to the impact of their own policies on other countries. Since the beginning of EMU, there has been apprehension that if such externalities, in terms of inflation and interest rates, turn out to be negative, the consolidated euro area's fiscal deficit may tend to be higher than the optimal level required to achieve consistency with the objective of price stability. Therefore, such a framework necessitates fiscal co-ordination at the monetary union level (Dixit and Lambertini, 2000). Studies point out that under such an institutional arrangement, national governments may engage in a purely distributional game that may result in inefficient outcomes unless policies are co-ordinated (Hagen and Mundeschenk, 2002). It is, therefore, held that the benefits of such a policy framework can be derived only if economic policies (including fiscal policy) and the economic structures of member economies are sufficiently flexible and adaptable to the unified monetary policy (Weber, 2011).

2.40 With an independent central bank and its price stability-oriented strategy, the euro area has a highly predictable monetary policy (Issing, 2005). This sets aside any ambiguity in monetary response towards economic, including fiscal, developments having a bearing on price stability. While the monetary authority reacts to aggregate economic fluctuations in the euro area as a whole, fiscal authorities focus on country-specific needs. Nonetheless, studies indicate that if national fiscal authorities are able to accurately perceive the behaviour of the single monetary policy, they will take actions that would lead to implicitly 'co-ordinated' policy outcomes *ex post* (Issing, 2005). Notwithstanding its inherent national character, the conduct of fiscal policy for euro area members has been subject to several constraints linked to procedural guidelines stipulated under the Excessive Deficit Procedure, the Mutual Surveillance Procedures and the Stability and Growth Pact (SGP). The Maastricht Treaty and the subsequent Stability and Growth Pact (SGP) stipulated that each country's fiscal deficit in a year should not exceed 3 per cent of its GDP, unless the country is in a recession. SGP filled the void of an EU-wide fiscal authority and provided a framework for fiscal policy discipline that supported stability, growth and cohesion in the euro area.

2.41 In the absence of an exchange rate instrument in the EMU, the role of automatic stabilisers at the national level assumed significance for enabling adjustments to asymmetric shocks, thereby ensuring support from the national fiscal policies towards stability-oriented monetary policy. Notwithstanding the emphasis of various procedures on the importance of fiscal discipline for the conduct of monetary policy, they were termed 'soft enforcement', *i.e.*, persuade member countries to follow proper behaviour through monitoring, dialogue, information exchange, peer pressure and warnings. Although through the 'dissuasive element' in SGP sanctions could be imposed on member states that breached the fiscal deficit limit of 3 per cent of GDP, experience showed that no penalisation took place when this limit was breached by major EMU states (Germany and France) in the early 2000s due to lack of the required qualified majority in the voting process undertaken in November 2003.

2.42 These developments indicated lack of an adequate institutional framework for fiscal policy co-ordination in the EMU because it ignored the aggregate fiscal policy stance for the euro area as a whole (Blanchard and Giavazzi, 2004 and Wyplosz, 1999). Although the desired level of fiscal balances may be consistent with long-run macroeconomic stability, short-run stability imperatives may warrant different constellations of monetary and fiscal policies at different stages of business cycles (Hagen and Mundschenk, 2002). Further, in the absence of credible enforcement mechanisms, *ex ante* co-ordination between monetary and fiscal policies may not necessarily be a successful *ex post* outcome. It was argued that *ex ante* co-ordination tended to blur fundamental responsibilities for the respective economic actors, thereby increasing uncertainty about the general policy framework.

2.43 In the euro area, the channels for the exchange of information between the fiscal and monetary authorities are well developed. The Governing Council undertakes a constructive and open exchange of information on the economic situation and structural reforms with other bodies and institutions. Further, the outlook for fiscal policy plays a key role in the ECB's assessment of risks to price stability. However, even with these elements of co-ordination between monetary and fiscal policies, there is no pre-commitment to a particular course of monetary policy action as this may undermine the ECB's independence.

Monetary and fiscal policies since inception of the ECB

2.44 In the euro area, the ECB aims at inflation rates of below, but close to, 2 per cent over the medium-term and conducts monetary policy through the setting up of short-term interest rates, thereby seeking to influence the economy and work towards attaining the price stability objective. Although no rigid rules are set out in the monetary policy operating procedure, ECB has kept flexible checks over monetary aggregates with a clear priority accorded to price stability over full employment without exclusively focusing on the former goal.

2.45 Since its inception, the ECB has followed a two-pillar approach to determine the nature and the extent of risks to price stability in the euro area. Under this approach, while economic analysis is undertaken to assess the short to medium-term determinants of price developments, the monetary analysis focuses on a longer-term horizon. The economic analysis focuses on real activity and financial conditions in the economy, while assessing the interplay of supply and demand in the goods, services and factor markets in determination of price developments over the short to medium-term. The monetary analysis examines the long-run link between money and prices and serves as a cross-check over the longer-term of the short- to medium-term indications emerging from the economic analysis. An analysis of the ECB's monetary policy decisions since its inception does show that notwithstanding price stability remaining a major objective, the growth implications of decisions were also not overlooked.

2.46 In the early years of its inception, the ECB explicitly emphasised that the fiscal consolidation process should continue in member countries in line with the SGP and the commitment made in the context of the stability programme *albeit* the growth outlook had weakened due to geopolitical concerns in 2001. The avoidance of inflationary concerns on a permanent basis required that national governments necessarily implement structural measures in a more decisive manner. This reflected fiscal concerns emanating from some member economies, *viz*., Germany, Italy, the Netherlands, Greece and Portugal, which undertook expansionary fiscal policy in the initial years of the ECB's inception and continued the stance till 2003. The ECB's monetary policy remained expansionary until the second quarter of 2003 due to growth concerns arising from external developments and euro appreciation. The policy rates were, however, kept unchanged from July 2003 to December 2005 as the medium-term outlook for price stability remained favourable. Most member countries, however, continued to adopt an expansionary fiscal policy, because growth remained less than anticipated. While announcing

the monetary policy stance, the ECB persistently emphasised the need to maintain the credibility of fiscal policy in member countries. In contrast, as the budget deficit breached the SGP target of 3 per cent in major member economies, the SGP was revised in March 2005, allowing for flexibility in rules across a range of areas. It was decided that no excessive deficit procedure would be launched against a member state experiencing negative growth or a prolonged period of low growth. Previously, the exception was made only for countries in a recession (negative growth of 2 per cent), which was rather unusual among EU member countries. The policy move by the government authorities was somewhat preposterous in the context of the single monetary framework of the ECB.

2.47 The ECB tightened monetary policy from December 2005 as risks to price stability began to emerge due to uncertainties arising from oil market developments, the pass-through of previous oil price increases to consumers *via* domestic production chains, the possibility of second-round effects in wage and price-setting behaviour, as well as further increases in administered prices and indirect taxes. Further, fiscal policies remained expansionary in most countries in the wake of some downside risks to growth, concerns about global imbalances and weak consumer confidence. Monetary policy tightening continued till the end of the third quarter of 2008. The government deficits in some of the member economies, *viz*., Greece, Ireland and Spain, expanded sharply by the end of 2008, which were frequently highlighted by the ECB in its post-policy introductory Statements.

Fiscal-Monetary Co-ordination during Crisis

2.48 During the global financial crisis, a number of co-ordinated monetary and fiscal policy measures were implemented in the euro area to provide stimulus to the economy. The ECB's response to the crisis was through standard and non-standard policy measures. With the intensification and broadening of the financial market turmoil and taking into account the slack in global and euro area demand for a protracted period of time, the ECB undertook a policy rate cut on October 8, 2008. By this period, the strong fall in commodity prices had moderated the likely pressures on prices, cost and wages. Keeping in view the deteriorating macroeconomic outlook, the ECB continued to reduce policy rates until May 2009. On a cumulative basis, the interest rate on the main refinancing operations of the Euro system was reduced by 325 basis points between October 8, 2008 and May 13, 2009.

2.49 Perceiving the gravity of the crisis, the ECB undertook various unconventional measures to facilitate declining money market term rates, to encourage banks to maintain and expand their lending to clients, to improve market liquidity in important segments of the private debt security market, and to ease funding conditions for banks and enterprises. Notwithstanding the use of various monetary easing measures to improve financial market conditions, including outright purchases of covered bonds, the ECB deliberately refrained from buying government bonds to safeguard its independence from the political authorities of different countries (Stark, 2009). For the same reason, the ECB implemented its measures without any form of government guarantees.

2.50 Fiscal policies of member countries also played an important role in containing the adverse impact of the financial and economic crisis in the euro area. The support of national governments for the banking sector was aimed at stabilising the entire financial system and preventing a further detrimental impact on the real economy. The national governments provided various types of financial assistance, including government guarantees for interbank lending, recapitalisation of financial institutions, increased coverage of retail deposit insurance and asset relief schemes. The fiscal impact was, thus, evident in terms of higher government deficit and debt-to-GDP ratios. The ECB, however, continued to emphasise the need for fiscal discipline. It was also recognised that the fiscal policies of national governments in the euro area needed to be transparent enough to

provide a clear and credible medium-term timetable for exit strategies to help maintain a predictable environment, both for economic agents and for the conduct of monetary policy (Stark, 2009).

2.51 In the post-crisis period, the ECB showed commitment to its mandate by reiterating that the level of key interest rates would be adjusted in response to changes in the outlook for price stability. Although the ECB initially refrained from monetary financing of debt during the global financial crisis unlike the central banks in the US and the UK, it had to participate in government debt-buying programmes, as many fiscally-stressed member countries subsequently faced the risk of insolvency and were unable to sell their bonds in the market. Under the programme, the purchase of government bonds was to be offset – or sterilised – by removing equal amounts of cash from the banking system, thereby avoiding the risks to price stability. Further, considering the economic and financial adjustment programme of the Greek government (negotiated with the European Commission in conjunction with the ECB and the International Monetary Fund) to be appropriate, it repeatedly adjusted its collateral requirements to ensure that Greek public debt remained eligible.

2.52 The ECB's bond-buying programme, *albeit* perceived to be temporary, continues as the debt crisis is yet to be fully resolved. In addition, as part of the new Treaty on Stability, Coordination and Governance in the EMU, Fiscal Compact was signed by most EU members in March 2012. Fostering the economic policy coordination, the Fiscal Compact was expected to strengthen EU fiscal governance framework required for effective implementation of price stability-oriented monetary policy of the ECB. The Fiscal Compact *inter alia* constitutes the mandatory introduction of a balanced budget rule at the national level as well as a strengthening of the automaticity of the excessive deficit procedure in case of breaches. According to the ECB (2012), successful implementation of reforms towards fiscal discipline would relieve the monetary policy from having to address negative externalities from other policy areas when striving to maintain price stability. As a necessary adjunct to monetary policy and support sovereign bond market in the euro area, the ECB announced the Outright Monetary Transactions programme in September 2012 under which it was prepared to buy unlimited government bonds with a maturity of one to three years in the secondary market to lower borrowing costs for national governments, provided the respective country follows a euro-zone-approved bailout plan. The program helped reduced the bond yields in Italy and Spain having hefty public and private debt.

2.53 As stated above, the ECB's monetary policy is independently determined under the mandate of price stability. Even though there is no formal mechanism of fiscal and monetary co-ordination in the euro area, the emphasis on fiscal discipline for overall macroeconomic stability was explicitly spelt out in the SGP pact. While the ECB frequently cautioned about expansionary fiscal policy in its member countries, deficit levels continued to rise in some EMU countries, which subsequently surfaced in terms of financial crisis in countries, such as, Greece. With the worsening of confidence in the bond markets of fiscally-stressed member countries, the ECB had to co-ordinate with national governments by subscribing to their debt. The co-ordinated monetary and fiscal policy measures undertaken during the financial crisis might have been effective in alleviating the funding concerns of banks and providing stimulus to the economy, but sustaining such policy measures may lead to risks in the long-run.

2.54 To sum up, several issues have been raised regarding fiscal-monetary co-ordination in the euro area. First, there is a need for vertical co-ordination between the common monetary authority and the national fiscal authorities (the governments of different countries) taken as a group. Typically, concerns in the conduct of the European monetary policy can emanate from instability in the external value of the Euro or could reflect asymmetric effects of a common monetary policy across member countries due to different transmission mechanisms or lack of

a common business cycle. The implicit co-ordination of fiscal policies of members, which eventuates as an optimal fiscal policy stance across the euro area and is consistent with common monetary policy, has remained an important challenge since the inception of the Euro. Since 1999, one of the most problematic issues in the EMU has been the growing interactions between sovereign countries' fiscal policy and the ECB's monetary policy. The implementation of the SGP in 1997, one of the mainstays of the European fiscal framework, introduced additional conflicts.

2.55 Second, a common monetary policy, strictly speaking, is considered to be sub-optimal as it aims to reduce the deviation of the average EU inflation rate from the target and not the average of the individual deviations. It, therefore, does not take into account the variability or distribution of the deviations across countries. In an inflationary period, those with below-average inflation are penalised and forced to tighten as much as those with above-average inflation. Similarly, in a recession, countries with above-average inflation must loosen just as much as those below-average. This raises the question whether policy objectives would be better served if the differences in national circumstances (country circumstances) were also to enter into the policy calculations. A possible solution could be to allow fiscal policymakers to adjust their fiscal stance to compensate for national differences, allowing them to pursue expansionary fiscal policy when inflation is below average and *vice versa*. Nevertheless, this again requires close co-ordination between fiscal and monetary policies.

2.56 Third, the conduct of fiscal-monetary co-ordination in the euro area has remained different from the US, reflecting contrasting economic and financial structures in these two economies. Unlike in the US, small and medium-sized enterprises play a dominant role in the European economy, and are major players in the ownership structure of certain banks. Overall, the economy in the euro area is less flexible than in the US. Wages and prices are slower to adjust. While limited flexibility in the euro area might hamper the reaping of benefits from positive supply-side shocks like technical innovations, during a crisis this sluggishness offers some protection against an overshooting of negative expectations leading to a deflationary spiral. In shaping its policy response to address the crisis, the ECB had taken into account the structural characteristics of the euro area economy. As part of non-standard measures, the ECB provided liquidity to banks at the longer term and funded the same through the standing deposit facility offered to banks. This led to absorption of liquidity mismatches of the banking system onto the balance sheet of the central bank.

2.57 Further, the Eurosystem of central banks accepted illiquid collaterals, increased the number of counterparties eligible for bidding for central bank liquidity and protected the anonymity of its counterparties. The crisis-driven extraordinary measures led the Eurosystem of central banks to supply liquidity requirements on a gross basis instead of fulfilling the net liquidity requirements of the banking system during the normal period. Consequently, the central bank balance sheets in the Eurosystem expanded substantially, off-setting the fall in money multiplier due to the freezing of money markets, and supporting the money supply and financial intermediation process. In the process, the traditional 'lender-of-last resort' function of the central bank evolved into 'intermediation-of-last resort' during the crisis, which prevented banks from undertaking the "fire-sale of marketable assets and premature liquidation of loans" (Giannone, *et al.* 2010). In the US, by contrast, the Fed bought assets outright on capital markets, given the reliance of US companies on capital markets rather than on bank loans.

Fiscal-Monetary Co-ordination in Emerging Market and Developing Economies

2.58 Fiscal-monetary policy co-ordination is essential for any economy irrespective of its level of development. However, the form and nature of co-ordination varies across countries depending on country-specific characteristics, depth of financial markets, exchange rate regimes and the prevailing

institutional framework. Despite their rising economic importance, many EMDEs still have relatively underdeveloped financial markets and weak institutional framework, their per capita incomes lag far behind those of the advanced economies, and a significant fraction of their population still lives in poverty. This puts a number of constraints on the effective formulation and implementation of macroeconomic policies. For instance, the developmental needs in EMDEs may necessitate the adoption of expansionary fiscal policy, which could pose a challenge for monetary policy. Therefore, the need for fiscal-monetary co-ordination assumes significance in the EMDEs in the context of ensuring appropriate policy responses to absorb shocks emanating from within or outside these economies. In fact, there have been instances in the past when growing public sector liabilities affected both monetary policy conduct and outcomes in EMDEs (*e.g.,* Brazil in 2002).

Constraints on monetary policy in EMDEs

2.59 Central banks in EMDEs face a unique set of challenges. These are both institutional and technical, and act as severe constraints on monetary policy implementation. The key institutional constraint is the lack of central bank independence when the central bank is statutorily under the purview of the finance ministry. In countries where the central bank is 'in principle' independent, there is still the reality that it can be buffeted by various political forces (Dragutinovic, 2009). Hence, central banks have to maintain a balance between their credibility and independence, particularly during a period of macroeconomic disruptions. Further, irrespective of the degree of statutory independence, operational independence may be constrained due to the exchange rate objective thrust upon most central banks in EMDEs. Goodfriend (2004) argued that maintaining the exchange rate at a particular level or within a specific range can often limit the central bank's flexibility in terms of using policy instruments such as the interest rate to pursue an independent domestic monetary policy aimed at managing domestic activity and inflation. A number of studies have attempted to identify such differences across advanced countries and EMDEs.

2.60 Fiscal dominance is another key problem facing central banks in EMDEs. The literature suggests that many EMDEs lack long-term fiscal discipline and their monetary policy is often subservient to fiscal policy, particularly since the latter is seen as having important redistributive functions. An unsustainable fiscal policy, reflected in high levels of government budget deficits and public debt, poses an additional constraint on monetary policy operations. In such situations, the responsibility to facilitate the government borrowing programme often comes in conflict with the price stability objective, as managing inflation expectations becomes difficult when borrowing requirements are substantially large.

2.61 Of late, there has been an evolving consensus about the relative roles of monetary and fiscal policies. While fiscal policy is expected to focus on longer-term sustainability (and be constrained by some form of fiscal rule or confined to automatic stabilisers), there is a broad agreement that monetary policy should focus on price stability, but it could play a stabilisation role within that constraint. Cecchetti (2002) argues that "the proper role for fiscal policy is to focus on building solid foundations for long term growth…Stabilization policies should be left to the central bankers." Against this backdrop, the following discussion highlights the diverse experiences of select EMDEs in the area of fiscal-monetary co-ordination.

Brazil

2.62 Unlike other economies, the history of fiscal-monetary co-ordination in Brazil has been different. With the establishment of its central bank, the currency issuing function was shifted from the Treasury, but the central bank had to act according to the needs of the Bank of Brazil, which was a banker to the government and controlled foreign trade operations on behalf of public sector enterprises. Besides, the responsibility for managing public debt was also assigned to the central bank.

This institutional arrangement continued until 1988 when the functions of the monetary authority were progressively transferred from the Bank of Brazil to the central bank and the administration of the federal public debt was transferred to the National Treasury. As highlighted by Ornellas and Portugal (2011), the conflict persisted due to the distinct obligations of each of these organisations, which had implications for the overall interest rate environment. The central bank of Brazil has the objective of price control in the economy, for which it uses the short-term interest rate as an instrument. In contrast, the National Treasury, by managing domestic and foreign debt, has to ensure that government deficit is financed through best debt deals of longer maturity.

2.63 The Brazilian economy faced hyperinflation during the mid-1980s to early 1990s. The high bouts of inflation during the second half of the 1990s were accompanied by high budgets deficits. The 'Real Plan' was implemented in 1994 as a programme for economic stabilisation, which successfully contained inflation to a single digit in less than three years, while the size of the public sector was substantially reduced through privatisation of state companies. However, the stabilisation policies were largely based on some form of exchange rate anchor when external liberalisation also took place. Although the stabilisation plan was successful in controlling inflation, currency appreciation was witnessed, leading to balance of payments problems. The stabilisation process proved to be gradual and, therefore, many structural issues pertaining to fiscal policy remained unresolved, increasing the vulnerability of the Brazilian economy to a confidence crisis. This, in fact, became a reality when the international financial turmoil culminated in the Russian moratorium on external debt in August 1998.

2.64 Brazilian policymakers responded to the 1998 crisis by introducing a new macroeconomic framework based on a flexible exchange rate, inflation targeting and fiscal responsibility. While the central bank raised short-term interest rates, the government announced a strong tightening of the fiscal regime. Recognising the implications of fiscal policy from the point of view of inflation expectations and investment decisions in future, IT was formally integrated with the monetary policy framework in July 1999, under which the inflation targets as well as the tolerance intervals were set by the National Monetary Council based on a proposal by the Finance Minister. By this time, Brazil had also adopted a floating exchange rate policy and the central bank was of the view that sustained fiscal austerity together with a compatible monetary policy would support price stability. In fact, fiscal austerity was envisaged by enacting the Fiscal Responsibility Law in 2000, which provided an encompassing framework, applicable to the federal, state and local governments. It, *inter alia*, introduced sharp constraints on the financing of the public sector, including state-controlled financial institutions.

2.65 Importantly, fiscal dominance was sought to be reduced to relieve the pressure on monetary policy and strengthen its ability to deliver the inflation targets. However, Blanchard (2004) found evidence that fiscal dominance continued during the crisis period of 2002-03 and the monetary policy remained counter-productive to tackle inflation. The Brazilian economy also had high levels of indebtedness, with a large share of the public debt denominated in foreign currency. Therefore, the perceived risk of interest rate hikes increased the likelihood of default, thereby causing depreciation of the domestic currency and leading to new inflationary pressures that restrained the use of monetary policy. In fact, it was the fiscal policy that could have controlled high inflation.

2.66 During the recent global crisis, a co-ordinated response by the central bank and the government helped faster recovery in business sentiments. Unlike in the past, the central bank was better positioned to respond to circumstances without wavering in its commitment to the floating exchange rate, while the government had fiscal room to initiate expansionary fiscal policy without adversely impacting the markets. The central bank also reinforced its vast international reserves with

contingent lines with the US Fed (US$ 30 billion) and the IMF, which, however, were never used. Levy (2010) categorised policy response to the global slowdown into measures undertaken for (i) protection of financial markets and support to credit; (ii) full use of automatic stabilisers; and (iii) outright fiscal stimulus. The central bank in Brazil had implemented measures in the first category, while policies in category (ii) were already in place. In addition, discretionary stimulus measures including a combination *o*f tax breaks and public-sector wage increases, and a pro-active stance by public sector banks were also initiated to counter the impact of the global financial crisis.

2.67 The central bank also facilitated liquidity injection by reducing cash reserve requirements by 40 per cent, which helped small banks to meet the credit requirements of their mid-sized corporate borrowers and to support personal credit. Even though the central bank did not play a direct role in supporting aggregate demand, its policy measures towards this end were evident when interest rates fell to a 15-year low level. In addition, a better social transfer system boosted the operation and effectiveness of the automatic stabiliser mechanism and had a countercyclical impact on growth. The co-ordinated policy response by both the government and central bank helped the Brazilian economy recover faster from the crisis.

South Africa

2.68 Prior to South Africa's transition to a democratic rule in 1994, its macroeconomic policy was dominated by the fiscal policy. The South African Reserve Bank (SARB) primarily acted as an agency responsible for market-making of government bonds**.** However, with the adoption of the Growth, Employment and Redistribution (GEAR) policy in 1996, fiscal discipline was introduced in South Africa. Emphasising fiscal-monetary co-ordination, the GEAR policy envisaged that fiscal policy would be conducted and financed in a non-inflationary way, while monetary policy would focus on achieving and maintaining low levels of inflation. The government aimed to reduce the conventional budget deficit-GDP ratio to below 3 per cent per year. A medium-term expenditure framework was also introduced in terms of which a Medium Term Budget Policy Statement is published in the second half of every fiscal year.

2.69 Under the new Constitution of South Africa, operational independence was guaranteed to the SARB. The objectives and framework of monetary policy also changed significantly during the 1990s. It started with monetary targeting, while IT was put in place later.

2.70 Fiscal consolidation measures initiated during the 1990s also ensured increasing monetary policy independence. The National Treasury was set up in 1999 to manage the debt of the government. As debt management became more active, the government started maintaining a transparent relationship with the market. The structural, legal and infrastructure constraints were also addressed to develop a government bond market in close co-ordination with the SARB and other agencies.

2.71 The adoption of an IT framework in February 2000 necessitated further co-ordination between the fiscal and monetary authorities. Under this framework, monetary policy operations are conducted by the legally independent SARB to achieve the inflation target set by the government in consultation with it.

2.72 Since 1994, the focus of fiscal policy has been on consolidation and, therefore, has generally been countercyclical in intent. The government's fiscal discipline during the period of cyclical upturn helped it achieve marginal surpluses in 2006 and 2007. With a better fiscal-monetary policy mix, output and price level variability also declined. Even though there has been no *ex ante* co-ordination of policies, it has been observed that the monetary policy reacts to fiscal policy, but rarely has fiscal policy been a problem for monetary policy. There is some arrangement for co-ordination in the form of a memorandum of understanding between the Treasury and the central bank, under which there is a provision for three standing committees. Regular

bilateral meetings are held between the Governor and the Minister of Finance, where the focus of discussion is generally on overall strategic and technical issues rather than explicit fiscal-monetary policy mix.

2.73 During the post-global financial crisis, the fiscal authorities responded with a strong countercyclical policy. This entailed a large fiscal stimulus complemented by appropriate monetary policy in line with the reduced inflationary pressures. The SARB reduced policy rates sharply between December 2008 and November 2010. Subsequently in July 2012, the SARB again reduced policy rate as growth concerns emerged due to external factors *viz*., fiscal austerity measures and bank deleveraging in the euro area. The objective has been to deal with domestic growth concerns and ensure well contained inflation expectations. Similarly, fiscal policy in recent years has aimed at striking a good balance between the needs of growth and maintaining fiscal sustainability. To sum up, the SARB has been conducting monetary policy within a flexible IT framework, which, in addition to inflation, considers the implications of monetary policy actions on growth, employment and financial stability.

Russia

2.74 The framework for fiscal-monetary policy co-ordination changed significantly in Russia with the disintegration of the Union Soviet Socialist Republic (USSR). In 1991, the State Bank of the USSR was disbanded and renamed the Bank of Russia (BoR). With the setting up of a single centralised federal treasury system in 1992, the Bank of Russia was no longer required to provide cash services for the federal budget. In July 1993, the problems of the ruble area led Russia to introduce the Russian ruble and demonetise the pre-1993 ruble. The Law "On the Central Bank of the Russian Federation (Bank of Russia)" (Article 22) provided for independent functioning of the BoR from the federal, regional and local government structures. However, the BoR is accountable to the State Duma of the Federal Assembly of the Russian Federation. While the principal function of the BoR is to protect the Russian ruble and ensure its stability, the single-state monetary policy is formulated and implemented in collaboration with the federal government.

2.75 As an agent of the Ministry of Finance, the BoR developed the government securities market. During the initial period, the size and volatility of the government's fiscal deficit undermined monetary control. Measures to deal with major structural constraints at times were found to be in conflict with the requirement of tight demand management policies. Higher expenditures and lower tax revenues in the second half of 1993 increased the deficit, leading to higher central bank credit to the government. The larger deficit in 1994 also required central bank financing equivalent to about two times the stock of base money as at the end of 1993. The central bank tried to control directed credits, but its net domestic assets more than quadrupled during 1994. Recognising fiscal concerns, investors began to shift from ruble-denominated assets and, consequently, a foreign exchange crisis took place in October 1994.

2.76 The crisis led to tighter fiscal and credit policies, and central bank purchases of foreign exchange became the main source of monetary growth in 1995. In 1995, the BoR stopped extending loans to finance the federal budget deficit, and discontinued centralised loans to individual sectors of the economy. These policies facilitated the adoption of an exchange rate-based monetary policy. By this time, the government securities market was reasonably well developed. With reduced monetary financing of the fiscal deficit and discontinuance of the practice of directed credits, the BoR shifted to the use of indirect instruments and, in particular, those which were market-based, in its monetary policy operations. Although direct monetisation was discontinued in 1995, the impact on base money growth of rising capital outflows and financing of government deficit was largely offset by the sale of foreign exchange reserves by the BoR. The exchange rate policy was used to minimise the

inflationary impact of persistent fiscal deficit until mid-1998. Referring to policy choices during the period, Gaider (1999) pointed out:

> *Between the autumn of 1997 and August 1998, the Russian government faced a choice between two possible strategies. The first was to demonstrate that it had the political will to tighten the budget by reforming its relationship with large enterprises, such as those in the oil and gas sectors, through the imposition of hard budget constraints. The second was to give up, abandoning the attempt to promote anti-inflation policies. Unfortunately, the attempt to tighten budgetary policy received insufficient political support. The result was inevitable: the continuation of soft budget constraints, soft budget policy, and soft monetary policy.*

2.77 Notwithstanding the use of policy measures towards monetary stabilisation during 1995-97, inflation had eroded cash balances and made the financing of budget deficits more difficult in 1998. In addition to negative market sentiments prevailing towards EMDEs, the government's ability to borrow in the domestic Russian market to finance its deficit was significantly constrained due to lack of cash balances in the economy. The government had to unilaterally undertake restructuring of ruble-denominated debt, while the imposition of a 90-day moratorium on external debt payments further eroded market confidence. During the crisis, the BoR intervened heavily in the foreign exchange market but could not limit the depreciation of the ruble. Since the large-scale support by the BoR to both banks and the government intensified pressure on the ruble, the BoR abolished the exchange rate band and adopted a floating exchange rate system in 1999.

2.78 Significant depreciation of the ruble during the crisis was followed by export-led recovery; the rise in international oil prices also contributed to higher exports. Monetary policy was significantly tightened through a reduction in ruble credit to the government and banks, and servicing of external debt payments through drawdown of foreign exchange reserves of BoR. In 2000 and 2001, there was some evidence of fiscal consolidation supported by robust tax collections, the contribution of oil sector and expenditure restraint exercised by the Russian government. The fiscal consolidation not only eased the pressure on the monetary policy, but also led to a lower inflation rate. Recognising the implication of surplus balance of payments on the value of the ruble, the BoR made large-scale purchases in the foreign exchange market, which were only partially sterilised to avoid excessive monetary tightening. In 2002, the fiscal situation again deteriorated, as expenditures increased sharply, particularly at the regional level. The BoR's intervention policy, which aimed at gradual depreciation in the ruble against the dollar, helped to avoid a large deviation from the 2002 inflation target, *albeit* with money growth remaining above the target.

2.79 In subsequent years, the BoR continued to pursue the dual target policy of seeking to reduce inflation and containing ruble appreciation, while the fiscal policy was becoming a challenge as the government decided to finance various pending reforms by partly using oil revenues. The contradictions in the fiscal-monetary policy mix were thus clearly evident. Monetary policy remained broadly accommodative in 2004 and 2005, while fiscal policy was relaxed in 2004. Recognising the impact of an increase in base money growth as the government began to spend more of its oil revenues and with inflation remaining higher than the target range, the BoR modified its intervention policy and began to allow some limited ruble appreciation. The expansionary fiscal stance continued in 2007-2008, though it was recognised that pro-cyclical fiscal relaxation at a time when demand pressures were already strong could increase pressures on prices and the ruble.

2.80 The fiscal situation deteriorated further during the global financial crisis, following the relaxation in fiscal policy and contraction in oil revenues. The sharp drop in oil prices and the

pressure on the ruble led to a massive drive to hedge exposures in expectations of ruble depreciation. The BoR initially facilitated this outflow by providing sizeable liquidity injections at low interest rates, while large international reserves were also drawn down to prevent the sharp depreciation of the ruble and avoid abrupt loss in confidence in the Russian banking system. However, as the policy of drawdown of reserves became increasingly unsustainable, the BoR was forced to tighten monetary policy in January 2009 through hikes in policy rates, alongside steep ruble devaluation. In the post-crisis period, the Russian government planned fiscal consolidation by undertaking a modest retrenchment as announced in the Budget 2011-13. While the BoR also started a tightening cycle, excess liquidity available with banks continued to render key BoR policy rates non-binding. However, as highlighted by the IMF (2011), the BoR still lacks decisive monetary tightening to rein in inflation. In short, the dominance of fiscal policy is observed in Russia, which poses significant challenges for achieving the dual objective of the central bank to contain inflation and to ensure a stable exchange rate. Going forward, Russia has targeted to achieve a balanced budget by 2015 which will facilitate effective implementation of monetary policy.

China

2.81 The fiscal-monetary co-ordination framework in China is more inter-twined than in most other EMDEs. The People's Bank of China (PBC) started functioning as a central bank in 1983, but the State Council confirmed its legal status in 1995. The PBC is entrusted with the implementation of monetary policy; it carries out business operations independently according to law and is free from intervention by local governments, government departments at various levels, public organisations or any individuals. However, the PBC has to seek the concurrence of the State Council in respect of its decisions concerning the annual money supply, interest rates, exchange rates and other important issues assigned to it. As part of the monetary policy function, the PBC is required to maintain the stability of the value of the currency and thereby promote economic growth.

2.82 The PBC has frequently adjusted interest rates in response to inflation since 1985, but these adjustments were insufficient as other functions of PBC, especially borrowing by financially constrained State-owned enterprises (SOEs) acted as constraints to monetary policy. Interest rates were largely administered by the PBC in consonance with the State Council. Before the new law was enacted, a major portion of the PBC's loans to state banks was influenced by local governments. However, with the passage of the Central Bank Law in 1995, the role of local governments in influencing the process of monetary policy and credit allocation declined. At the same time, hard budget constraints were prescribed for SOEs to make them fiscally responsible and commercial viable, without State support.

2.83 The PBC also acts as a fiscal agent of the government and has been a major source of the government's financing requirements. Therefore, monetary and fiscal policy co-ordination becomes important, as the government bond market is one of the most important channels for the central bank to adjust the money supply. While the traditional approach of the PBC has been to use monetary base as the operational target and money supply as the intermediate target, more recently the growth rates of both money and bank lending have been used as explicit intermediate targets (Goodfriend and Prasad, 2005).

2.84 Assessing the implications of government debt on money growth, World Bank (1990) highlighted that the planning process involving the PBC, Ministry of Finance and State Planning Commission had not resulted in the past in a credit control programme capable of keeping monetary growth within the economy's potential for real growth. Therefore, the credit plan, based on the demands of the enterprises and regions, imparted an expansionary bias to monetary policy. Whenever financing outside the banking system fell short of the requirement to cover growing budget deficits, the

resultant unplanned recourse of the MoF to central bank credit led to excessive monetary expansion and inflation. The overly expansionary monetary policy often reflected the failure to control and offset the rising financing needs of the government. For instance, following the rapid expansion of credit in 1984-85 and the peaking of broad money growth at an annual rate of 50 per cent in the first quarter of 1985, the PBC adopted a restrictive monetary policy stance in response to emerging inflationary and balance of payments pressures. However, the restrictive monetary policy stance had to be reversed due to concerns pertaining to slowdown in economic growth raised by the government in mid-1986. Consequently, the higher growth rate was accompanied by inflationary pressures and the economy began to overheat. Subsequently, both authorities co-ordinated to address the overheating tendencies. While the government adopted fiscal austerity measures, the PBC was allowed to follow a tight monetary policy. As a result, both growth and inflation were stabilised by 1990. Nonetheless, monetary policy subordination continued even after the enactment of the Central Bank Law in 1995.

2.85 In 2002, the new government adopted a much stronger pro-growth strategy than pursued earlier and focused on promoting job growth through local infrastructure projects to be financed through banks. Despite the reservations of the PBC, monetary policy became substantially more expansionary in the first quarter of 2003. Further, concerns with regard to the output impact of Severe Acute Respiratory Syndrome (SARS) led the PBC to raise targets for broad money growth and credit expansion to 18 per cent and RMB 2.0 trillion, respectively. During this period, the PBC was prepared to take the risk of higher inflation, which was approved by the National People's Congress, China's legislative body. In mid-2003, the PBC and the newly created China Bank Regulatory Commission shared concerns of expansionary monetary policy. Accordingly, the PBC proposed policy guidelines in June 2003 to contain lending to the property sector, which had shown signs of overheating. However, more specific regulations announced by the State Council in August 2003 were less restrictive than those proposed by the PBC.

2.86 In recent years, the PBC has tried to balance low inflation with continued strong growth through its monetary policy, using monetary aggregates as intermediate targets, but administrative controls and exchange rate policy have continued to impact the efficacy of monetary policy. Fiscal policy has been more proactive since the Asian crisis as special bonds were issued for on-lending to local governments to be spent on capital projects. In the 2005 budget, however, the fiscal policy stance was shifted from "proactive" to "neutral." Fiscal policy was largely guided by the government's medium-term focus on fiscal consolidation aimed at making room for likely future expenditures on contingent liabilities, such as the banking sector's large non-performing loans and a need for higher social spending as the population ages.

2.87 Even though there has been emphasis on fiscal prudence in China, an issue that has implications for the independent conduct of monetary policy pertains to financing of state-owned enterprises (SOEs) through the banking system in China, which impedes the development of banking, fiscal, and monetary policies. Therefore, operational independence is often emphasised for the PBC so that it has the authority to move its policy instruments aggressively on short notice without permission from other government agencies. In this context, Goodfriend and Prasad (2006) suggested two key prerequisites for effective instrument independence. First, the PBC must be given full control of aggregate bank reserves, and second, the Chinese banking system must be made financially robust against interest rate fluctuations, which can be achieved by the separation of fiscal policy support for SOEs from the banking sector.

2.88 Although these structural issues with regard to fiscal-monetary co-ordination continue to exist, expansionary fiscal and monetary policies were undertaken during the crisis to minimise the impact of global factors on export demand and falling private investment. IMF (2009b) highlighted that a long track

record of fiscal discipline drove down public debt, affording China the space needed to significantly expand fiscal support. The PBC's moderately relaxed monetary policy during this period also served to support growth and mobilise the resources needed to finance a surge in investment. Further, allowing exchange rate to move with greater band since April 2012 is also likely to increase the central bank's flexibility to alter monetary conditions in the economy. In short, the fiscal policy in China continues to play a more direct and active role in promoting and stimulating the domestic economy, while monetary policy is assigned the role of timely and effective actions to face the situation of cyclical swings in the economy and maintain financial stability.

IV. Global Financial Crisis and Fiscal-Monetary Co-ordination

The Great Moderation, Global Imbalances and Loss of Governance feed into the genesis of the Global Financial Crisis

2.89 It is widely believed that the genesis of the global financial crisis lay in the build-up of global imbalances, which, in turn, resulted from excessively loose monetary policy in the advanced economies since the early 2000s. Monetary policy in the US was eased after the dot-com bubble burst, with policy rates reduced to one per cent in June 2003 and kept at that level up to June 2004, with only a gradual withdrawal from monetary accommodation thereafter. The low interest rates not only boosted demand in excess of domestic output in the US directly, but also did so indirectly through the wealth effect in the wake of rising asset prices. The excess domestic demand spilt over into the growing current account deficits of the US. This was appropriately matched by substantial current account surpluses in Asia, particularly China, and the oil-exporting countries in the Middle East and Russia, which catered to the demand in the US by supplying goods and services at cheaper rates.

2.90 The conducive macroeconomic environment in terms of stable economic growth and low inflation encouraged the search for better yields, relaxation of lending standards and under-pricing of risks (Mohan, 2009). Bereft of any formal mandate for maintaining financial stability, public policy tended to ignore the expanding global imbalances and undue financial leveraging as long as economic growth remained steady and inflation low, as characterised by the Great Moderation which lasted over almost a decade and a half. Central banks focused excessively on inflation at the expense of financial vulnerability. By accommodating lax credit conditions and rising debt, monetary policymakers in a way increased the risks of a bust. Besides, many central banks were persuaded to be very transparent and provided forward guidance to the financial markets on their policy stance, especially on the future course of monetary policy. Such forward guidance provided excessive comfort to the financial markets and aided the under-pricing of risks.

2.91 Empirical evidence found US monetary policy to be much looser during 2002-2006 than warranted by the conventional Taylor rule, supported in many cases by government programmes during the period leading up to the housing boom (Taylor, 2009). Taylor also argues that the softening of policy rates by the ECB reflected, to an extent, the influence of US monetary policy decisions, though the monetary easing in the euro area did not venture that far while the current account position remained generally in surplus. Corroborative evidence of monetary excesses was also found in other countries in a study by the OECD, which showed that the greater the degree of monetary excess in a country, the larger was the housing boom. Sharp booms and busts in the housing markets were shown to impact the financial markets, as falling house prices led to delinquencies and foreclosures. These effects were amplified by several complicating factors including the use of sub-prime mortgages, especially adjustable rate housing loans, which led to excessive risk-taking.

2.92 In the US, this was encouraged by government programmes designed to promote home ownership. Government-sponsored agencies, *viz*., Fannie Mae and Freddie Mac, were

encouraged to expand and buy mortgage-backed securities, including those formed with risky sub-prime mortgages. While legislation *viz*., Federal Housing Enterprise Regulatory Reform Act of 2005 was proposed to control these excesses, it was not passed into law. The crisis worsened when the US government (more specifically the Treasury and the Federal Reserve) decided not to intervene to prevent the bankruptcy of Lehman Brothers around mid-September 2008. According to one stream of thought, the recent financial crisis reflects a collapse of the market as well as the State, since governance in both the private and public sectors failed (Reddy, 2009).

Policy response entailed higher degree of co-ordination across countries

2.93 As the effects of the crisis extended from the financial to the real sector, a wide range of monetary and fiscal policy measures were undertaken in a manner that marked a distinct departure from the pre-crisis macroeconomic orthodoxy and reflected valuable lessons gained from the Great Depression. Initially, as confidence in the financial system plummeted to historic lows and liquidity in the overnight money market dried up, the central banks acted first, and some co-ordinated measures at the international level were also undertaken particularly under the Group of Twenty (G 20) to restore market confidence.

Orthodox monetary policy, constrained by near-zero interest rates, gave way to unconventional monetary policy measures

2.94 Contrary to previous experience, central banks in the US, euro area, Japan and other economies continued to run expansionary monetary policy even after cutting their nominal policy rates to very low levels to counteract downside risks to price stability and, in some cases, to avoid outright deflation. The need for sustaining the efficacy of monetary policy even when policy rates neared the liquidity trap or zero lower bound (ZLB) levels in major advanced economies prompted central banks to activate non-standard or unconventional monetary policy response options by using communication policies to shape public expectations about the future course of interest rates, expanding their balance sheets (quantitative easing) and changing the composition of their balance sheets through targeted purchases of long-term bonds. By deciding to buy long-term debt, the dividing line between fiscal and monetary policy gets blurred. Thus, unlike the Great Depression phase of the 1930s, the global financial crisis of 2007-09 entailed a close co-ordination of fiscal policies with, particularly, non-conventional instruments of monetary policy. The balance sheet effect of unconventional monetary policy measures is discussed in detail in Chapter 4.

2.95 Several solutions to the ZLB have been explored in the literature, focusing on alternative ways of conducting monetary policies, such as price-level targeting instead of inflation targeting (Svensson, 2003) or exchange rate targeting (McCallum, 2000). Other strands in the literature address the ZLB with a focus on the financial environment. Examples include analysis of the balance sheet of the central bank (Auerbach and Obstfeld, 2005), fighting the ZLB through purchasing illiquid assets (Goodfriend, 2000) and countering negative short-term market interest rates by imposing a tax on cash holdings and deposits [Buiter and Panigirtzoglou (1999) and Goodfriend (2000)]. In respect of fiscal policy also, several studies examined the use of instruments as a way to overcome a ZLB situation, such as analysis of fiscal multipliers (Christiano, Eichenbaum and Rebelo, 2009; Cogan, Cwik, Taylor, and Wieland, 2009; Romer and Bernstein, 2009).

Huge fiscal stimulus programme tantamounts to Keynesian resurrection with a difference

2.96 Notwithstanding monetary policy becoming the first line of defence and central banks turning lenders of first resort, the credit markets were slow to respond. Accordingly, fiscal measures were deployed to avoid any erosion of the gains from the actions taken by central banks. With monetary policy rates nearing zero in most advanced economies in

the post-crisis period, and considering the scale and sweep of the global financial crisis, there was a resurrection of the Keynesian strategy of activating fiscal stimulus measures. Governments intervened with huge fiscal packages to stimulate domestic demand and to recapitalise banks. The onset of the 'great recession' from December 2007 saw fiscal policy activism in the US (temporary tax rebates in February 2008, first homebuyers tax credit in July 2008, American Recovery and Reinvestment Tax Act, which combined tax cuts, transfers to individuals and states, government purchases in February 2009 and temporary 'cash for clunkers' programme in the summer of 2009[2]), the UK (temporary consumption tax rebates) and China (large public works projects). Notably, the fiscal activist responses across countries were co-ordinated in an unprecedented fashion, delivering a joint fiscal stimulus of 1.7 per cent of global GDP in 2009 (Khatiwada, 2009). This reflected not only the severity of the recession but also some optimism about the potential effectiveness of activist fiscal policy.

2.97 This contrasted with modern economic views prevailing during the decades prior to the crisis that doubted the efficacy of discretionary fiscal policy in stimulating the economy from a downturn, reflecting a belief in the Ricardian equivalence perspective, recognition of fiscal policy implementation lags and apprehensions about political influences. The non-discretionary fiscal policy in terms of automatic stabilisers was considered to be more effective than discretionary stimulus in responding to changes in business cycles. It was held that the impact of automatic stabilisers rose with an increase in the size of the government. Further, a need was felt to reduce and stabilise high debt levels, which had paved the way for the introduction of fiscal rules and independent councils in economic policy-making. As a result, by early 2009, 80 countries had put in place national or supranational fiscal rules (Cottarelli, 2009).

2.98 Huge fiscal stimulus programmes, operated in tandem in the US, the UK, and many other countries, gave rise to a debate about their effectiveness, with studies indicating their effectiveness to 'stimulate' if and only if they do not generate expectations of future taxes to pay off the increased debt (Cochrane, 2011). Apprehensions also emerged about the feasibility of undertaking large fiscal expenditures rapidly. As fiscal deficits became massive, credit guarantees surged and central banks purchased risky private assets, the traditional fiscal dominance issue has re-emerged during the post-crisis phase. Thus, fiscal constraints have begun to take hold over monetary policy-making. Nonetheless, fiscal activism during the great recession phase drew empirical validity from several studies that found fiscal policy stimulus measures to be effective in reducing the duration of a ZLB episode. They also showed that fiscal multipliers were enhanced during the ZLB period, due to the inability of monetary policy to react.

2.99 Not only were the two kinds of policies co-ordinated across the globe in pursuit of common objectives, but also the scale of monetary and fiscal expansions remained unprecedented, which paradoxically rekindled familiar conflicts (Subbarao, 2009). Huge fiscal stimulus packages and climbing fiscal deficits entailed high government borrowing programmes with concomitant implications for monetary transmission and liquidity management by the central banks. The central bank's liquidity management, and especially its unconventional measures, had both fiscal and distributional consequences. For example, the United Kingdom's quantitative easing has had massive fiscal consequences. It was felt that the central bank's choice of market for its operations should not be based so much on its fiscal implications, but rather on the extent to which such intervention might distort relative prices and have a distributional effect, benefitting one set of borrowers rather than another (Goodhart, 2010).

2 This was a federal scrappage programme intended to provide economic incentives to US residents to purchase new fuel-efficient vehicles. The programme was promoted as a stimulus to the US economy.

Fiscal-financial linkages show up in Sovereign debt crisis in peripheral Europe

2.100 The global financial crisis – in its fifth year in 2011 – manifested itself in an altogether different phase, moving from private debt into the sovereign space. The dynamics of the crisis and the policy options available changed markedly during 2009. As discussed earlier, in view of the prevailing low interest rates, central banks did not have much freedom to reduce the interest rates and had to resort to unorthodox balance sheet policies. Public expenditures to provide stability and stimulus featured prominently in the policy response by different countries. This has left very little policy space for any future crisis management. In the transformation of the global financial crisis into the sovereign debt crisis, the rescue of Bear Stearns in March 2008 clearly marked the turning point. It generally raised expectations about policymakers providing sufficient financial support to banks to enable the bailout of the banks' creditors. As the constraints on fiscal commitments became clearer with the nationalisation of the Anglo Irish Bank in January 2009, the separation between the sovereign and the financial sector got blurred.

2.101 The fiscal-financial linkages are exemplified by the fact that during 2008-09, in the euro region, each sovereign's spreads evolved largely in response to the stress experienced by its domestic financial sector. Fiscal problems, in turn, began to exert adverse feedback effects on the financial sector and growth. Higher sovereign spreads increased the borrowing costs of domestic banks and generated capital losses on the holdings of public debt, contributing to lower growth.

Interplay of Sovereign Risk with the Banking Sector manifested particularly in the deepening of the European Crisis

2.102 The interplay of sovereign risk with the banking sector progressively worsened in the euro area since the second half of 2011, and financial stability concerns increased considerably. The movements in credit default swap (CDS) spreads on the sovereigns and banks showed high correlation in some of the euro area countries (Spain, Italy and France), reflecting a close connection between sovereign credit risk and banking sector weakness. Links between sovereign debt problems and the banking sector became evident through an increase in credit risks *vis-à-vis* governments, liquidity squeeze and reduced creditability of government guarantees. As highlighted in the Committee on the Global Financial System (CGFS) 'Panetta' Report (2011), a deterioration in sovereign creditworthiness can hurt the financial sector through one of three channels: (i) increased counterparty risks, increased cost of funding *via* new bond issues and reduced access to credit from repo and derivatives market due to the reduced value of government collateral; (ii) loss of value of implicit or explicit government guarantee of banks and their borrowers; and (iii) the induced fiscal consolidation might undermine credit demand and weigh on the quality of private sector debt in the short-term. Further, when the sovereign debt moves from being a 'risk free' to a 'credit risk' instrument, it might have adverse macroeconomic and financial ramifications (Caruana, 2011). In view of this, it is critical for sovereigns to gain back credibility of the instruments issued by them, *i.e.*, their gilt-edged or risk-free status as sovereign solvency is a pre-requisite for the success of central bank operations dealing with threats to monetary and financial stability.

2.103 Another issue is the availability of sufficient fiscal capacity to provide sizeable financial support to their banks. In view of the heightened risks and uncertainties, some banks, especially those heavily reliant on wholesale funding and exposed to riskier public debt, may also need more capital. For the sovereign to act as the backstop for the financial system, it is important that fiscal buffers be built during good times. Traditionally, central banks are held responsible for addressing liquidity problems of banks, while solvency problems or bank failures have to be addressed by the government. If liquidation of a failing bank cannot be allowed and the market is not prepared to provide more capital, then the only recourse is taxpayer funding.

2.104 In the case of taxpayer funding, or (partial) nationalisation of failing banks, the relevant political representative of the government would have to be entrusted with the responsibility of the resolution exercise. While leaders of the G20 discussed a range of options available on this issue, they could not reach a consensus. While some countries have adopted banking levies, others are considering how to make the financial sector responsible for sharing fairly and substantially any burden associated with government interventions to repair the banking system. The European Commission (EC) put forward a proposal for financial transaction tax (FTT) for 27 EU members on September 28, 2011. For the 11 member states[3] which agreed to adopt the FTT, the EC on February 14, 2013 adopted a proposal setting out the details of the tax which is expected to generate revenues worth 30-35 billion a year.

2.105 To break the link between banks and sovereigns, Herman Van Rompuy, President of the European Council suggested three actions as necessary: (i) completion and thorough implementation of a stronger framework for fiscal governance; (ii) establishment of an effective single supervisory mechanism (SSM) for the banking sector and the entry into force of the Capital Requirements Regulation and Directive; and (iii) setting up of the operational framework for direct bank recapitalisation through the European Stability Mechanism (ESM). Substantial progress has been made in this direction.

Risks of fiscal-monetary co-ordination ending up in fiscal dominance of monetary policy

2.106 While the 1990s saw an increasing trend towards central bank autonomy, a view was also emerging that central bank independence and a lack of co-ordination of monetary and fiscal policies could pose a problem in addressing the conditions of a liquidity trap (Krugman, 1998). This view has gathered support in the light of the fiscal-monetary co-ordination undertaken to address the global financial crisis, thereby further rekindling debate between the need for monetary policy to act in tandem with the fiscal policy as well as the issue of central bank autonomy. Notwithstanding the imperatives of fiscal-monetary co-ordination, care has to be taken that interactions with the government do not undermine the effectiveness of policymaking to the detriment of the public. In that context, the arrangements to ensure effective dialogue and consultation between the central bank and the executive and legislative branches, and setting limits on central bank advice to the government, in private and in public, on issues outside its mandate, become important. Further, the institutional arrangements that are being evolved after the crisis for overseeing financial stability have an inherent tendency to infringe on the mandate of the central banks.

2.107 A related issue that has been highlighted in the post-crisis period is that of the fiscal dominance of monetary policy. Before the crisis, fiscal dominance had continued to wane as fiscal discipline was taking centre-stage in most countries. However, the extraordinary fiscal expansion by the advanced economies to combat the crisis, which has been actually mutating into structural fiscal deficits, has given rise to the apprehension that monetary policy will have no choice but to accommodate continued elevated government borrowing into the medium-term. For example, the ECB has had to show unusual accommodation in resolving the sovereign debt crisis in some European countries.

2.108 Such concerns are not confined to the euro area. It is widely perceived that this is just the beginning of a trend whereby fiscal policies will once again start dictating monetary stances, particularly in advanced economies. Fiscal deficits ballooned to levels never seen in peacetime in the US, the UK and the euro area. Though the fiscal cliff deal of January 2, 2013 could avert the immediate risks of a sharp fiscal contraction in the US, concerns about long-term debt sustainability remain. Going by the current fiscal developments in various economies,

3 Belgium, Germany, Estonia, Greece, Spain, France, Italy, Austria, Portugal, Slovenia and Slovakia

former US President Nixon's view of the return of Keynesian orthodoxy appears to be applicable, which could lead the conduct of monetary policy to be progressively driven by fiscal compulsions in the years ahead (Box II.1).

2.109 At present, the situation is under control, as financing these fiscal deficits has not been a problem so far. The extreme risk aversion in the wake of the crisis triggered a 'flight to safety' and a 'flight to liquidity', which, in turn, ensured that there was enough appetite for treasuries. Even so, yields on treasuries have started firming up in the recent period, suggesting the return of some risk appetite. As central banks are showing extraordinary monetary accommodation by pumping in huge amounts of liquidity to support banks and financial institutions, the surplus liquidity conditions have helped governments to raise borrowings.

2.110 In fiscal-monetary co-ordination, 'arm's length' co-ordination has become the main co-ordination mechanism in recent times, overshadowing face-to-face discussion. If fiscal authorities have a sufficient understanding of the monetary policy reaction function, and the monetary

Box II.1
Fiscal Concerns and Challenges for Monetary Policy

The recent global financial crisis had significant fiscal implications across advanced as well as emerging market economies. Although fiscal deterioration was a common feature in some of the advanced economies even before the crisis due to unfavourable demographic profiles and other domestic obligations, it was exacerbated during the crisis. The build-up of fiscal imbalances and debt during the crisis were largely due to automatic tax and spending policy responses to slow growth and countercyclical discretionary fiscal measures. As a result, fiscal imbalances and debt levels have surged sharply since 2008, particularly in advanced economies. For instance, in the US, the general government deficit as a ratio to potential GDP rose from 2.2 per cent in 2007 to 7.0 per cent in 2010, while government debt as a ratio to GDP increased from 43.9 per cent in 2007 to 94.4 per cent in 2010. According to the IMF, the government debt-GDP ratio is likely to remain higher than 100 per cent for the US in the medium-term. The case is similar for most other advanced economies. Based on a study of 18 OECD countries, Cecchetti *et al.* (2011) found that government debt beyond the threshold of around 85 per cent of GDP is not sustainable and may act as a drag on growth. Accordingly, the current level of fiscal imbalances and debt appear to be highly unsustainable compared to the pre-crisis situation. During the pre-crisis period, fiscal and debt sustainability was not much of an issue, as prevailing interest rates were lower than growth rates. However, this is unlikely to be the case in the period ahead as interest rates might rise while growth prospects remain subdued, particularly in advanced economies. Further, negative feedback of lower growth on fiscal consolidation is likely to aggravate fiscal imbalances.

In a highly unsustainable fiscal scenario in the post-crisis period, central banks face two types of challenges that can have implications for the conduct of their monetary policy. First, the balance sheets of central banks with government debt, particularly in the advanced economies, raises not only the issue of the credibility of monetary policy but also shows that they are exposed to market risks, *viz.*, interest rate risk and credit risk. These aspects can come into conflict with monetary policy going forward. Second, the fiscal and debt sustainability issues, particularly in the advanced economies, have critical implications for monetary policy, and the credibility of central banks is likely to be largely determined by nature of their co-ordination with fiscal authorities.

Although the expansion of central bank balance sheets proved more effective than conventional measures during the crisis, it should not be encouraged for a long time due to concerns relating to market risks, the moral hazard of further future support and possible crowding out of funding markets. In fact, balance sheet expansion to support a particular asset class is considered a fiscal measure undertaken by central banks. According to Plosser (2011), "once a central bank ventures into conducting fiscal policy, it may find itself under increasing pressure from the private sector, financial markets, or the government to use its balance sheet to substitute for other fiscal decisions. This pressure can threaten the central bank's independence in conducting monetary policy and thereby undermine monetary policy's effectiveness in achieving price stability". BIS (2011) also highlighted the risk that operations undertaken during a crisis could be perceived as intended

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to fund fiscal policy initiatives, thereby undermining central bank independence. Mohanty and Turner (2011), Gagnon and Hinterschweiger (2011) and Plosser (2011) highlight the possibility of monetisation of government debt as a policy of creating higher inflation to solve fiscal failures. In the post-crisis period, it would be appropriate that central banks should calibrate exit by withdrawing unconventional measures. In fact, the US Federal Reserve and the European Central Bank had indicated their intent to undertake exit strategies in late 2009 and early 2010. However, due to the deepening debt crisis in the euro area and the slowdown in economic conditions in the US, such strategies were put on hold. Given the current economic and financial conditions, the phasing out of central banks' balance sheet measures seems to be difficult. Further, central bank balance sheet policies by their nature are targeted at specific markets and there is a risk of distortion. Consequently, central banks can face difficult trade-offs between the costs of these distortions against attainment of their policy objectives. Holding of government bonds may not augur well for central banks in advanced economies as it can complicate their future relations with fiscal authorities and debt managers (Mohanty and Turner, 2011).

In addition to the expanded balance sheets posing a challenge for central banks through various risks, the lack of a credible long-term fiscal consolidation plan may put further pressure on the conduct of monetary policy. In the absence of credible fiscal plans, public debt may continue to rise due to ageing problems in advanced economies. As a result, there is a risk of increase in the interest rate. At the same time, ageing may reduce future growth, further undermining fiscal and debt sustainability. It calls for major policy changes in terms of spending and revenue levels in many advanced economies, in case they have to avoid an increase in their debt to unsustainable levels. While there may not be much scope for reduction in spending and tax increases due to subdued economic conditions, a credible plan for fiscal consolidation in the medium-term is necessary. Monetary policy can remain accommodative so long as inflation expectations are contained. Once the process of inflation expectation builds up, the central bank's policy focus may shift to tightening the monetary policy and, there could be a conflict of interest between the central bank and government.

Quantitative easing undertaken in recent years and expected high levels of market borrowing in advanced countries pose upside risks to inflation, which may call for higher policy rates. This, in turn, may lead to a high interest rate environment that may not bode well for advanced economies, which are already facing high debts and subdued growth conditions. Thus, fiscal policy and debt management decisions will play an increasingly important role in formulating and implementing monetary policy. In this context, Cecchetti (2011) argues "*central bank operating procedures of the future will be more complicated, with more tools and more options. In addition, the interaction of monetary policy and sovereign debt management will be a major challenge for those operating procedures in the coming years. Central banks in economies with high debt burdens and those affected by the actions taken in economies with high debt burdens will therefore need to keep abreast of the activities of debt managers when implementing monetary policy.*" To address the challenges posed by debt overhangs and fiscal concerns, particularly of the public sector, for the credibility of central banks, the Committee on International Economic Policy and Reform (2011) has emphasised that a communication strategy needs to evolve that deals with concerns about the central bank's independence from the fiscal authorities.

Going forward, advanced economies should work out credible medium-term fiscal consolidation plans that ensure a balance between short-run growth fragility with fiscal sustainability, while monetary policy can support fiscal adjustment and remain accommodative till medium-term inflation expectations are well anchored. Central banks' interaction with fiscal authorities is likely to be critical not only from the perspective of smooth conduct of monetary policy to anchor inflation expectations but also from the perspective of financial stability. In the process of co-ordination with fiscal authorities, central bank autonomy should not be compromised and, therefore, it may require a well-specified framework. In short, the future credibility of monetary policy in advanced countries is contingent upon (i) how concerns with regard to already purchased government debt during a crisis are addressed and (ii) how future fiscal plans in advanced countries are chalked out, which should specify timeframes to reduce gross debt-to-GDP ratios to sustainable levels and fiscal policy measures adding to the medium-term growth potentials. For both these aspects, central banks, fiscal and debt authorities would need to follow a close co-ordination approach.

Select References

Cecchetti, Stephen G., M. S. Mohanty and Fabrizio Zampolli (2011), "The real effects of debt", *BIS Working Paper No. 352*.

Plosser, Charles I. (2011), "Some Observations on Fiscal Imbalances and Monetary Policy", The Philadelphia Fed Policy Forum on "Budgets on the Brink: Perspectives on Debt and Monetary Policy", Federal Reserve Bank of Philadelphia, December 2.

[For other references, see the complete list for Chapter 2 at the end of the report]

authorities of fiscal policy rules, then there is a scope for tacit negotiations without face-to-face engagements. Under extreme circumstances (as might be characterised by Sargent's "unpleasant monetarist arithmetic"), a switch to joint decision-making could prove necessary. The co-ordination of fiscal and monetary policies during the global financial crisis across the advanced economies reflected the criticality of joint actions for both these policies to stimulate aggregate demand. The consensus emerging from a long line of research is that separating monetary policy and fiscal policy overlooks policy interactions that are important for determining equilibrium (Davig and Leeper, 2009).

Financial stability emerging as an important objective of public policy

2.111 In the post-crisis period, financial stability has come to occupy centre stage in the hierarchy of economic policy objectives, particularly since a major lesson from the crisis is that financial stability can be jeopardised even in an environment of price stability and macroeconomic stability. The genesis of the global financial and economic crisis showed that extended periods of price stability and macroeconomic stability could blind policymakers to financial instability brewing in the underbelly. It has become evident that apart from co-ordinating on monetary and fiscal policies, the government and the central bank need to co-ordinate on financial sector issues as well. On the contrary, in the pre-crisis period, policymakers – the monetary authority and the government – did not always respond effectively in a co-ordinated manner to events unfolding in the financial sector, because financial stability was taken more or less as a subject in the domain of the central banks.

2.112 The lessons from the crisis have triggered a vigorous debate on whether financial stability should be made an explicit mandate of central banks. Prior to August 2007, most central banks had formally or informally included financial stability in their mandate along with the explicit mandate of setting the monetary policy. In the post-World War II period, there was a debate about whether the central bank would be in charge of systemic financial stability, and, if not, how its relationship with the systemic regulator can be defined. An argument in favour of central banks being entrusted with this responsibility was that they were best suited to handle the financial stability objective since in many economies they were the banking sector regulators and played the role of lender-of-the-last-resort (LOLR). The crisis exposed some clear deficiencies and inconsistencies in regulatory systems across countries and clear conflicts of interests in financial regulation and supervision.

2.113 It is now increasingly recognised that regardless of the regulatory architecture, preserving financial stability requires coordination among regulators, and between regulators and governments. Across most jurisdictions, the post-crisis focus has been on shifting responsibilities and mandates among regulators. The Financial Stability Oversight Council that has been created in the US brings together various elements of the regulatory and supervisory framework of the Fed, the Banking Insurance Oversight, the Securities and Exchange Commissions, *etc*. Such a Systemic Risk Board has also been created in the euro area. In India, a Financial Stability and Development Council (FSDC) was set up in December 2010 with a view to establishing a body that would institutionalise and strengthen the mechanism for maintaining financial stability, financial sector development and inter-regulatory co-ordination. Such councils could handle the unique combination of responsibilities for macroprudential regulation and microprudential supervision, and make recommendations for heightened prudential standards for the safety of the financial system (Box II.2).

2.114 The creation of systemic risk boards also amounts to creating institutional arrangements for the task of macroprudential surveillance, so that central banks can focus on monetary policy-making. EMDEs, including India, have experimented with the deployment of macroprudential tools to supplement the interest rate policy and to preserve financial

Box II.2
Financial Stability Arrangements in the Post-Crisis Period

A growing trend post-crisis across various countries has been towards carrying out major reforms in the governance arrangements for financial stability. In the US, the Dodd-Frank Wall Street Reform and Consumer Protection Act was implemented in July 2010. In the European Union (EU), the European Parliament adopted legislation in September 2010 with respect to new governance arrangements in both the micro- and macro-prudential spheres. France and Ireland also re-engineered their supervision arrangements in March and October 2010, respectively, and Mexico introduced a new inter-agency framework in July 2010.

In the US, the Dodd-Frank Act created the Financial Stability Oversight Council (FSOC) to be headed by the Treasury Secretary and comprises the heads of the central bank and all the regulatory agencies. The FSOC does not have rule-writing or enforcement authority, but has the powers to recommend, and in some cases require, action by member agencies. The Act entrusts the Fed with powers of supervision of not only all banks but also non-banks if they pose a threat to financial stability and to oversee the payment, clearing and settlement system.

In the EU, the new legislation seeks to strengthen the co-ordination for microprudential supervision, while retaining its national base. It also creates a centralised structure for macroprudential policy. With respect to microprudential policy, three new European Supervisory Authorities (ESAs) replaced the existing advisory committees, and a joint committee was created to promote co-operation among them. With respect to macroprudential supervision, the European Systemic Risk Board (ESRB) was created in May 2012 to contribute to the prevention or mitigation of systemic risks to stability that may arise from developments within the financial system and the macroeconomic framework more generally. The ESRB does not have direct authority over any policy instruments, but instead has the power to issue recommendations and risk warnings concerning systemic risks to the authorities that wield the relevant instruments. Such recommendations, which carry an "act or explain" obligation, could be made public under certain circumstances. The ESRB is chaired by the President of the ECB, membership comprises of central bank governors of the 27 member states, chairpersons of the three ESAs, and a representative from the European Commission (EC). The chairperson of the Economic and Financial Committee (EFC) representing the finance ministry participates as an observer.

With a view to safeguard EU financial stability, the Europeon Financial Stability Facility (EFSF) was created on June 7, 2010 for providing financial assistance to member states. The European stability mechanism (ESM) was launched on October 8, 2012 as permanent firewall for the euro zone with a maximum lending capacity of 500 billion.

Europe took its first big step towards banking union on December 13, 2012, with the EU finance ministers agreeing to make the ECB their common bank supervisor. The ECB is expected to begin direct supervision of up to 200 euro area lenders from early 2014.

In the UK, a paradigm shift is underway in terms of the institutional arrangements for microprudential as well as macroprudential regulations. The government announced plans, which should be in place in 2012, to: (i) shift the responsibility for prudential oversight from the Financial Services Authority (FSA) to a new Prudential Regulation Authority (PRA) under the Bank of England; and (ii) set up a Financial Policy Committee (FPC) within the Bank of England to "monitor macro issues that may threaten economic and financial stability". The Committee would comprise a representative of the Treasury, other regulators and external members appointed by the Treasury. The Treasury would, however, lead the co-ordination of actions in a crisis.

Among countries like France and Australia, the co-ordination of financial supervision has been entrusted with the Governor of the central bank. In India, the new Financial Stability and Development Council (FSDC) is headed by the Finance Minister.

At this stage, there is no clear vote for any particular model, but different institutional structures are being evolved for system-level supervision depending on country-specific circumstances. Nonetheless, a common stance emerging is that while financial sector regulators and the sovereign have a joint role in maintaining financial stability, from an effectiveness and accountability perspective and for preventing and managing a crisis, the executive responsibility for financial stability would have to fall upon a single entity. The central bank is best positioned to be that single entity with responsibilities for both systemic oversight and prudential regulation. Further, there would be institutionalisation of collegial arrangements involving the central bank, other regulators and the government, which would jointly have the primary responsibility for identifying threats to financial stability.

The possibility of institutionalising a global equivalent of systemic risk boards is being examined at international forum, but uncertainty remains about how to organise it. Quite clearly, this would require careful consideration of issues, that may exert conflicting pulls. In particular, there is the issue of balancing the interests of global stability and national sovereignty, particularly on practical considerations that require flexibility in the context of country-specific adaptations.

stability over the business cycle. In the pre-crisis phase, the exercise of macroprudential regulation was vested with the central bank. Considerable efforts are underway following the crisis on developing a macroprudential policy framework – its objective and scope, its sets of power and instruments, and their governance.

Difficult policy trade-offs in meeting the short- to medium-run challenges of fiscal consolidation, financial restructuring and reviving growth

2.115 The recent financial crisis has revived the debate on the relative effectiveness of monetary and fiscal policies. With interest rates approaching zero and constraining traditional monetary policy, fiscal policy was found to be potentially more effective in boosting economic activity than it usually would be. While the crisis saw the application of non-conventional instruments of monetary policy, the unprecedented ways of easing financial conditions have transformed central bank balance sheets, whereby risks on the financial system have been absorbed by central banks with potentially greater-than-usual fiscal ramifications.

2.116 Monetary policy faced a challenge even before the crisis, with interest rates ruling at low levels, but now when sovereign spreads are high, the ability of monetary policy to lower the rates paid by businesses and households is getting further limited. To the extent that high public debt increases uncertainty about future interest rates, fiscal-monetary feedbacks are likely to be stronger when public debt/GDP ratios rise. In such a situation, unconventional monetary policies appear to be a more feasible option. The success of such a strategy, nevertheless, would depend on how well the monetary policy and debt management policy are co-ordinated in practice (Mohanty and Turner, 2011).

2.117 The interaction between fiscal and monetary policies became evident during the sovereign debt crisis in Europe, marked by developments in Ireland, Portugal and Greece. Despite the considerable policy efforts undertaken at the national and EU level, the crisis threatens not only global recovery, but also the very existence of the euro. Major policy packages have been announced through a series of rounds (May 2010, February 2011, July 21, 2011, October 26, 2011, December 9, 2011 and June 28-29, 2012). The crisis highlighted the importance of institutional arrangements for the conduct of monetary and fiscal policies. In monetary unions like the euro system, member countries pursue independent fiscal policies but do not have recourse to exchange rate or monetary policy levers to make the necessary adjustments. This underscores the importance of sound and credible fiscal policies by member countries to ensure the independence and credibility of their collective monetary policy.

2.118 In the absence of fiscal discipline across member countries, there is the threat of monetary policy becoming hostage to the fiscal excesses of individual members. The European Council meeting of December 9, 2011 paved the way for a fiscal stability union with a new fiscal rule at its heart. The Treaty on Stability, Coordination and Governance in the Economic and Monetary Union – better known as the "fiscal compact" – that was signed on March 2, 2012 by the leaders of 25 EU member states, entered into force on January 1, 2013. Government budgets shall in future be balanced or in surplus, and they must also be in line with the country-specific medium-term budgetary objective, as defined in the EU's SGP and this requirement will also be transposed into national legislation by January 1, 2014. In the event of deviation from the balanced budget rule, an automatic correction mechanism will be triggered. Further, in future all major economic policy reforms planned by euro area members will be jointly discussed and co-ordinated for convergence and competitive issues so as to establish benchmarks for best practice in the new euro area summits, that are planned twice a year prolonging European Council meetings. It is also proposed that surveillance should be strengthened over countries that receive financial assistance *via* the EFSF and ESM and of those at serious risk of

financial instability. The role of EFSF/ESM, along with ongoing work on a single supervisory mechanism, progress with the ratification of the Fiscal Compact, and further structural reforms in euro area member states, holds the key to the future of the euro area.

V. Concluding Observations

2.119 The evolution of macroeconomic theory and progress of fiscal-monetary co-ordination across countries as analysed above suggests that the former, to a great extent, influenced the latter in practice. The evolution of macroeconomic theory underscored the need for co-ordination between both arms of economic policy to achieve macroeconomic objectives. However, the nature of the fiscal-monetary interface has evolved since the Great Depression through various phases, switching between extremes of fiscal dominance and monetary dominance. Regardless of the policy dominance regime, the literature points towards the need for co-ordination between the fiscal and monetary authorities. Illustratively, under fiscal dominance, monetary policy loses instrument independence to tackle inflationary pressures that may emerge from fiscal profligacy. On the other hand, even when central banks are not bound to monetise government deficits, the theoretical possibility of conflict of interest between the central bank and the government cannot be ruled out if deficit levels are set autonomously. The literature provides ample evidence that macroeconomic outcomes turned out to be better when both fiscal and monetary policies are co-ordinated.

2.120 The theoretical evolution of fiscal-monetary co-ordination provided valuable guidance for both advanced and emerging market economies to develop institutional arrangements between their central banks and governments in consonance with historical imperatives and country circumstances. The policy co-ordination mechanism improved during the 1990s amid an emphasis on price stability either explicitly in the UK, Japan and some other advanced countries or implicitly like in the US. However, the policy framework remained flexible to address short-term output loss considerations. The formation of the EMU in 1999 brought forth new challenges in the form of co-ordinating a common monetary policy with decentralised fiscal policies pursued by national authorities. Even though fiscal-monetary co-ordination was emphasised statutorily under the SGP, experience shows that procedural mandates provided flexibility to member countries to pursue fiscal policies without strictly adhering to prescribed limits. The repercussions of fiscal profligacy during the pre-crisis period got magnified during the global financial crisis and led to unsustainable debt levels in some member countries of the euro area.

2.121 The experience of EMDEs shows that fiscal policies tend to be dominant, reflecting development concerns, while central banks lack autonomy compared with advanced economies. Country experiences have been divergent across EMDEs. The overall experience shows that the trend since the mid-1990s has been for a growing number of countries to adopt fiscal rules that place limits on deficits and/or debt and also prohibit primary financing of debt by the central banks. One of the broad outcomes of this effort has been that central banks found themselves relatively free to conduct independent monetary policy, not only free of fiscal compulsions but also in a predictable fiscal framework. The environment of price stability coupled with steady growth that characterised the Great Moderation came to be seen as a vindication of the merits of freeing monetary policy from fiscal dominance.

2.122 In the aftermath of the crisis, apprehensions about the fiscal dominance of monetary policy resurfaced. There are widely shared concerns about the extraordinary fiscal expansion necessitated by the crisis, and when and how long it will take to reverse that. But, by far the larger concern is not about the crisis-related cyclical deficits but about the structural fiscal deficits looming large in most advanced economies. Present estimates show that rich countries will see a rapid increase in their social security payment obligations because of ageing populations and shrinking workforces, and

that they will need to raise a significant amount of debt year-on-year to finance these commitments. In such a case, monetary independence would remain circumscribed by fiscal compulsions into the medium-term. There is wide consensus that public debt levels would have to be reduced to sustainable limits to facilitate the smooth conduct of monetary policy, particularly in advanced economies, *albeit* EMDEs also need to further enhance the resilience of their public debt portfolios in the wake of increasing global uncertainties.

2.123 In major advanced economies, monetary policy is constrained by the zero interest rate bound. The room for fiscal policy action has been largely exhausted. In view of the high output gap, high unemployment levels, weak sovereign balance sheets and still-moribund real estate markets in advanced economies, especially in certain euro area economies, fiscal positions need to be placed on sustainable medium-term paths by adopting fiscal consolidation plans and entitlement reforms supported by stronger fiscal rules and institutions. The sovereign debt crisis and growth also feed on each other adversely raising the *growth versus austerity* debate. Policy action must involve both short-term as well as medium-term reforms to secure growth and debt sustainability. On the one hand, the worsening outlook for the economy is making the debt situation worse. Annual GDP in 2012 is forecast to contract by 0.4 per cent in the euro area, and continue to contract in 2013 by 0.2 per cent, while growth differences continue to persist. On the other hand, fiscal consolidation pressures are expected to lower short-term growth prospects. With pressure to consolidate, new sources of growth will need to be identified with a focus on structural reforms.

3 FISCAL-MONETARY CO-ORDINATION IN INDIA: AN ASSESSMENT

Regime shifts, first from the automatic monetisation of fiscal deficits to limited monetisation and then to Fiscal Responsibility and Budget Management Act-led further curbing of monetisation, have considerably enhanced the degree of freedom for monetary policy setting in India. However, newer challenges have emerged for fiscal-monetary co-ordination under the new regime that requires attention on (i) the inflationary potential of large fiscal deficits even without conventional monetisation, (ii) pro-cyclicality of fiscal spending exerting demand management pressures on monetary policy and (iii) debt dynamics causing crowding out of private investment and impacting monetary management. Against this backdrop, there is a need for new fiscal rules and for reassessing the welfare costs of fiscal dominance of monetary policy.

I. Introduction

3.1 This chapter provides an assessment of fiscal-monetary co-ordination in India, covering institutional developments and empirical trends and analysis. The evidence in the chapter suggests that while several institutional changes have helped bring about improved fiscal-monetary co-ordination and moderated the fiscal dominance of monetary policy, new challenges have surfaced that impinge on monetary policy efficacy.

3.2 Section II discusses how large fiscal deficits and consequent large market borrowings pose risks of monetisation of deficits in newer forms and may lead to a game-theoretic environment of sharing the burden of adjustment amongst fiscal and monetary authorities. Section III covers the evolution of fiscal-monetary co-ordination in different phases of institutional frameworks. Section IV focuses on fiscal and monetary policy co-ordination in inflation management. Section V analyses cyclicality in government expenditure and its implications for aggregate demand management. Section VI provides the empirical analysis on debt-deficit dynamics in India. Section VII summarises the policy implications of the analysis undertaken in the chapter, making a case for tighter but cyclically adjusted fiscal rules to further reduce fiscal dominance of the monetary policy in India.

II. Fiscal Imperatives on Monetary Policy

Fiscal dominance of monetary policy moderates but has not waned

3.3 Fiscal dominance of monetary policy has moderated in India as a result of a series of fiscal and monetary policy reforms undertaken over the past two decades. The most notable of these were (i) moving to a market-determined interest rate system by introducing auctions of government debt, (ii) phasing out of the automatic monetisation of fiscal deficits through the two Supplemental Agreements between the Government of India and the Reserve Bank of India, and (iii) curbing the monetisation of debt by enacting the Fiscal Responsibility and Budget Management (FRBM) Act, 2003 that prevented the Reserve Bank from subscribing to primary issuances of government securities from April 1, 2006. These landmark steps have considerably reduced the fiscal dominance of monetary policy.

3.4 During the same period, the Reserve Bank undertook far-reaching monetary reforms, moving from direct instruments to indirect instruments of monetary policy by developing market-based public debt markets. This, in turn, helped the economy step out of a regime of financial repression based on administered interest rates to vibrant money and debt markets that allowed interest rates to be largely determined by the market.

The reforms pursued by the fiscal and monetary authorities in tandem helped improve the efficacy of macroeconomic management. However, newer challenges emerged. Large subsidies, especially for fuel, apart from adding to fiscal deficits limited the demand adjustments and spilled over to the current account. Large capital inflows financed the current account gap but the capital flow volatility added to interest rate and exchange rate pressures. At the same time, open market operations (OMO), though essentially a monetary tool, had to factor in the large market borrowing at times to maintain orderly financial conditions. In periods when inflation was high, this, in turn, added to pressures on monetary management. These require revisiting the issues relating to fiscal-monetary co-ordination with a view to explore further changes in the broad framework provided by the institutional and legal arrangements, as well as instruments and practices. The changes should help improve the efficacy of monetary and fiscal policies by bringing about independence, accountability and greater co-ordination.

3.5 On the one hand, there has been a regime shift from the days of financial repression. The automatic monetisation of debt has been phased out. On the other, fiscal dominance of monetary policy remains through high fiscal deficits and administered price mechanisms or price rigidities in the pricing of utilities despite big steps taken towards reducing it. The conceptual debate on what constitute monetisation of debt is discussed in Box III.1.

Box III.1
Monetisation of Debt: Conceptual Debate

Monetisation of debt is a difficult concept to comprehend, as it is not clearly defined. It can occur through several practices that may be transparent, translucent, opaque or hidden. For long, monetisation of debt was understood as "converting government debt to money" or "the central bank's purchase of government bonds when they are issued". Either definition has its problems. Typically, the government can finance its deficits by printing money or issuing debt. The former directly attenuates monetary control. In the modern world, with central banks in charge of controlling the aggregate money supply, governments typically finance their deficits by issuing government bonds. They can either be purchased by the public from the existing supply of money or by central banks by increasing the monetary base, and hence the money supply. The key question is whether any purchase of government securities by the central bank would tantamount to monetisation of debt.

Central banks, conducting monetary policy through open market operations, purchase (or sell) securities to infuse (or absorb) liquidity. They do so to adjust the monetary base and/or the interest rates in line with their targets. These operations are often conducted on a day-to-day basis, sometimes more than once a day. So, if mere purchase of government securities by the central bank is seen as monetisation, almost all central banks do it almost all the time. So, does monetisation reflect the central bank's purchase of government securities in primary but not secondary markets? This distinction would only work as long as central banks do not indulge in open market purchases to support the government's debt financing. If the central banks go on infusing liquidity to support the banking sector's purchases of government bonds even while not subscribing to its primary issuances, the net result would be the monetisation of debt. Central bank purchases of government securities expand the monetary base, but the finer distinction for monetisation is whether such purchases are in support of government debt operations.

In practice, it is still hard to make a black-and-white distinction between what portion of the central bank's purchases of government securities is for the purpose of the conduct of monetary policy and what proportion is in support of government's borrowings. The key to this judgment lies in central bank's purchases of government bonds being in alignment with its target of base money and money supply expansion. These targets should be set independently of debt management considerations. In practice, many central banks today do not target monetary aggregates. They instead rely on interest rate targeting and operate on the short-term policy rate – typically, the overnight rate or a 14-day repo rate. They exercise control over bank reserves and interest rates through open market operations that are conducted both through repo operations and outright sales/ purchases at the longer end of maturity. This is particularly true in the case of quantitative easing. Consequently, monetisation of some form can occur by impacting the yield curve.

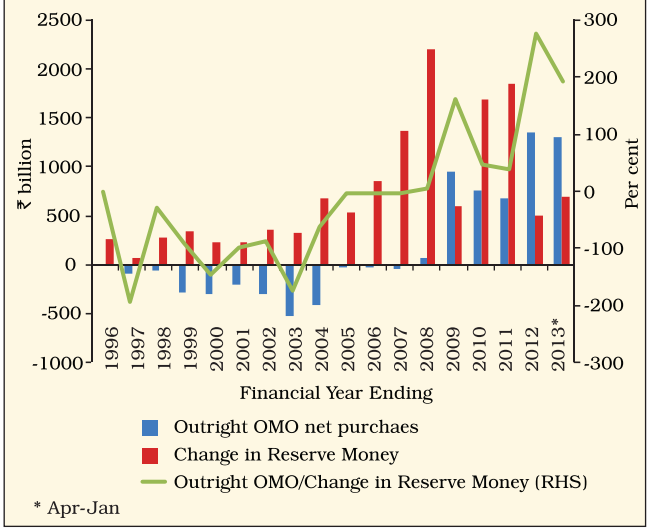
Reference

Thornton, Daniel S. (2010), "Monetising the Debt", *Economic Synopses* No.14, Federal Reserve Bank of St. Louis.

3.6 Although the enactment of the FRBM Act, 2003 has prohibited the Reserve Bank from participating in primary issuances of government securities, it is evident that large fiscal deficits can potentially lead to some form of monetisation of debt. This is more important if large borrowings crowd out private credit and compel monetary authorities to provide greater liquidity through open market purchase of government bonds. This attenuates monetary policy efficacy (Chart III.I).

3.7 India has made rapid strides towards phasing out the monetisation of debt. For long, government deficits were automatically monetised through the issuance of *ad hoc* treasury bills. These bills of 91-day maturity were non-marketable instruments that were automatically issued to the Reserve Bank to replenish the central government's cash balances with it to meet the government deficit. This problem of automatic monetisation was in addition to the financial repression caused by issuances of 91-day treasury bills "on tap" (at a fixed discount of 4.6 per cent per annum), which were taken up mainly by banks for short-term investment or to comply with the requirements of maintaining the Statutory Liquidity Ratio (SLR). Financing government expenditure by issuing *ad hoc* treasury bills to the Reserve Bank caused an increase in the reserve money. In addition, the Reserve Bank also rediscounted the tap treasury bills subscribed to by the banks, thus adding to the monetisation. Recent measures to reduce monetisation of debt in India are discussed in Box III.2.

Chart III.1: High fiscal deficits and large open market purchases amidst elevated inflation at times adding to monetary pressures



* Apr-Jan

3.8 Fiscal dominance of monetary policy goes beyond the monetisation issue. It occurs in several forms. Large fiscal deficits have inflationary consequences even when they are not financed by the central bank. For instance, suppressed inflation remains a significant drag on inflation management even after the government has taken some steps to deregulate administered prices in the energy sector. At the first stage, suppressed inflation feeds into inflation as the subsidies necessitated by the price

Box III.2
Monetisation of Debt in India

Since the late 1980s, several steps were taken to reduce the fiscal dominance of monetary policy. First, the Reserve Bank and the government moved to establishing a market-based public debt market. Auctions of 182-day treasury bills was introduced from November 1986, 364-day treasury bills from April 1992, and 91-day treasury bills from January 1993. As auction-based yields were higher, an increasing part of the government borrowings came to be financed through market sources, enabling a better control of reserve money by the Reserve Bank.

Second, two Supplemental Agreements were signed between the Reserve Bank and the Government of India. The first, signed on September 9, 1994, limited the creation of *ad hoc* treasury bills during the three-year period ending 1996-97. The net issue of *ad hoc* treasury bills was capped on an end-year basis. Also, it was agreed that if it exceeded the stipulated limit for 10 consecutive working days during the year, the Reserve Bank would automatically reduce the excess by auctioning the treasury bills or dated securities.

(Contd...)

(...Concld)

The Second Supplemental Agreement signed on March 6, 1997 completely phased out funding through *ad hoc* treasury bills and the outstanding amount of treasury bills as at end-March 1997 was converted into special undated securities at a yield of 4.6 per cent.

A system of Ways and Means Advances (WMA) was put in place from April 1, 1997. Under the WMA system, the Reserve Bank has been extending short-term advances up to the pre-announced half-yearly limits, fully payable within three months. The Government of India has also been allowed to incur an overdraft but at an interest rate higher than that of the WMA. Effective April 1, 1999, the overdraft has been restricted to a maximum period of 10 working days. Further, it was agreed that the Reserve Bank would trigger fresh floatation of government securities whenever 75 per cent of the WMA limit was reached. It was also agreed that the government's surplus cash balances with the Reserve Bank, beyond an agreed level would be invested in governments own securities.

Even after a cessation of automatic monetisation of debt through termination of the *ad hoc* treasury bills, monetisation continued in another form. The Reserve Bank continued to subscribe to the primary issuances of public debt as a result of devolvement of auctions on the Reserve Bank as the underwriting capacity of the primary dealers (PDs) was limited. As such, the third major step towards phasing out the monetisation of debt was taken with the enactment of the FRBM Act, 2003 that barred the Reserve Bank from subscribing to the primary issuances of the government from April 1, 2006.

Has the monetisation been completely phased out in India now that the Reserve Bank no longer subscribes to the primary issuances in government auctions? *De-facto* monetisation has been considerably phased out, but not completely. As long as fiscal deficits remain large, the size of market borrowings would also remain large and impinge upon the conduct of monetary policy, no matter how the debt management is conducted. The size of the government's net market borrowing programme (dated securities) increased nearly 9.7 times in eight years to ₹4.9 trillion in 2012-13. In addition, the government resorted to an additional funding of ₹1.16 trillion through 364-day treasury bills. During this period, the Reserve Bank conducted large net open market purchases that included ₹945 billion in 2008-09, ₹755 billion in 2009-10, ₹672 billion in 2010-11 and ₹1.3 trillion each in 2011-12 and 2012-13 (untill January). While in principle the Reserve Bank uses open market operations to impact liquidity and monetary conditions, in practice it is not easy to decipher what part of the open market operations were undertaken purely on these very considerations and what part might have been influenced by the consideration that large government borrowing may not be market disruptive. During 2008-09, OMOs were in sync with monetary policy easing undertaken in that year on the back of the global financial crisis. However, between March 2010 and October 2011 monetary policy was clearly in a tightening mode. Whether OMO purchases in this period attenuated monetary policy efficacy could be a matter of debate and research. On balance, OMO purchases undertaken since 2009-10 have not resulted in monetary expansion beyond what was envisaged under the monetary policy. OMO purchases during this period, by and large served both monetary policy and debt management objectives. For instance, during 2011-12 the government did aditional market borrowings of nearly ₹2 trillion (including treasury bills) over the budgeted amount, while the central bank needed to create reserve money to ease the tight liquidity situation. OMOs also helped to reduce the liquidity tightness arising out of foreign exchange market intervention by the Reserve Bank. During 2012-13, however, with the interest rate cycle reversing, high government borrowing, through its impact on yield, may have weakened the transmission of lower policy rates to other segments of the financial markets. Therefore, the sheer amount of borrowings could still put pressures on monetary policy.

Further, during 2008-09 when monetary and fiscal policies acted in tandem to meet the extraordinary challenge posed by the global financial crisis, monetisation of debt also occurred through Special Market Operations (SMOs) conducted by the Reserve Bank. The SMOs, introduced in June 2008, enabled public sector oil marketing companies to sell oil bonds to the Reserve Bank to raise foreign exchange. These SMOs, *de facto*, weakened the FRBM Act regime as it indirectly monetised government deficits in two steps. First, the government by issuing oil bonds understated the true fiscal deficit. Second, if the government was to fund it through its own dated securities, the Reserve Bank could not have subscribed to it in primary issuances. However, as oil bonds lacked liquidity, the Reserve Bank stepped in to provide the same, while also resolving the dollar funding requirements of the oil companies. This innovative instrument helped minimise the pressure on interest rates as well as exchange rates. While SMOs were small in size, they helped serve the crisis management objectives. Large government borrowing and large open market purchases, however, at times pose a macroeconomic challenge to the extent that they could lead to monetisation of debt.

References

Rangarajan, C. (2007), "*Indian Banking System: Challenges Ahead*", First R.K. Talwar Memorial Lecture, Indian Institute of Banking and Finance, July 31, 2007.

rigidity widen the fiscal deficit. At the second stage, as subsidies become unsustainable, they sooner or later necessitate large discrete price adjustment that feeds into inflation expectations. At the current juncture, if prices are adjusted in one go to remove total under-recovery of the oil marketing companies and prices of coal and electricity are adjusted upwards by a moderate 10 per cent each, the direct impact would increase wholesale price index (WPI) by 4 per cent. This suggests the persistence of fiscal dominance of monetary policy. In terms of the Fiscal Theory of Price Level (FTPL), fiscal dominance occurs in a weak or a strong form. In the weak form, fiscal dominance occurs when money growth rises to accommodate fiscal deficit and so exerts upward pressure on inflation. In the strong form, even if the level of money supply does not change in response to the fiscal gap, the latter independently raises the level of inflation because of its impact through aggregate demand. The weak form suggests that a central bank cannot target inflation because it cannot control money supply under the fiscal dominance. The strong form implies that inflation is not necessarily a monetary phenomenon and fiscal policy instead drives inflation.

III. Interaction between fiscal and monetary policy under different regimes

3.9 Fiscal and monetary policy interactions have evolved over the past three decades in accordance with the frameworks adopted for fiscal and monetary policies. Based on these frameworks, the following five broad phases may be identified.

Phase I: High fiscal dominance from 1980-81 to 1990-91

3.10 The decade of the 1980s saw excessive deficits. The Centre's gross fiscal deficit (GFD)/GDP ratio averaged 6.7 per cent, which was markedly higher than the average of 3.8 per cent for the 1970s. The states' fiscal position also deteriorated with their average GFD/GDP ratio widening to 2.8 per cent from 2.0 per cent during the same period. Other deficit indicators worsened as well. The fiscal slippage was more from the centre's side and mainly originated from its revenue expenditure side. Both tax and non-tax revenues as well as capital receipts showed some improvement, but capital spending remained constrained. The fiscal deterioration placed a large burden on monetary policy, with *ad hoc* treasury bills turning out to be the route for automatic monetisation of fiscal deficits, thus limiting central bank autonomy for achieving monetary policy objectives.

3.11 Net Reserve Bank credit to the government expanded at a rapid pace in the 1980s. This was a direct consequence of the monetary accommodation of high fiscal deficits in the 1980s. Reserve Bank monetised deficits through *ad hoc* treasury bills. This resulted in a sharp accretion in Net Domestic Assets (NDAs). Monetary pressures were felt as a consequence despite a sharp deceleration in Net Foreign Assets (NFAs). Currency with the public continued to see a secular decline, but the expansion in NDAs came increasingly out of the net Reserve Bank credit to the government. After two oil price shocks, inflation did moderate until 1985-86, but returned later on the back of large fiscal expansion that could not be countered by monetary contraction.

3.12 During the period, a regime shift in monetary policy occurred with the decision to move from credit budgeting to monetary targeting. Following the Report of the Committee to Review the Working of the Monetary System (Chairman: Prof. Sukhamoy Chakravarty, 1985), the Reserve Bank introduced monetary targeting in the mid-1980s. However, the credit budgeting framework of direct allocation of credit prevailed for most of the period. During this period, the Reserve Bank announced its credit policy twice during a fiscal year following periodic credit budget meetings with the commercial banks. The Reserve Bank indicated the broad guidelines for deposit and credit growth, as also credit deployment, to major scheduled commercial banks (SCBs) after assessing macroeconomic aggregates such as growth and inflation.

3.13 Fiscal dominance of monetary policy turned out to be a binding constraint for monetary policy

during this period. The Reserve Bank provided liquidity to smoothen temporary mismatches between sources and uses of funds of the government and repeatedly expressed concern about the link between fiscal deficit and excess liquidity creation. The Chakravarty Committee Report, which prompted the government to widen the definition of 'budget deficit' so as to better reflect the monetisation of the budgetary deficit, also expressed similar concerns. The acceptance of the wider concept of budget deficit was a major step towards greater co-ordination between the fiscal and monetary policies. The Committee, while recommending the adoption of monetary targeting, noted that the interrelationships among output, money and prices are subject to complex lags and that it is difficult to set out the precise operations of these lags. As such, the link between money, output and prices cannot be viewed exclusively within the narrow time-frame of one year.

3.14 The transition to monetary targeting was phased in only during the 1990s. No specific monetary target was set during 1985-90 except for fixing a credit ceiling linked to the average M_3 growth in the previous year(s). As such, credit budgeting continued to be the broad framework for moderating monetary growth, but targets were generally overshot, since the private sector required credit support in the face of the large draft of the government on household savings. Credit policies during the period were largely contractionary, but their efficacy was dampened by the need to maintain orderly conditions in the debt market.

3.15 The Reserve Bank juggled with the Cash Reserve Ratio (CRR) as well as the Statutory Liquidity ratio (SLR) and selective credit controls to serve the conflicting interests of monetary control and to meet large credit requirements. The CRR reached its statutory ceiling of 15 per cent in 1989. The Reserve Bank resorted to additional CRR on incremental net demand and time liabilities (NDTL) on various occasions until 1992. The Reserve Bank also used administered interest rates – deposit and lending rates – to conduct monetary and credit policy.

3.16 A monetary policy framework based on an explicit monetary targeting regime was adopted only in 1991-92, when a real GDP growth of 3 to 3.5 per cent, an inflation rate of not more than 9 per cent, and a significant slowdown in M_3 expansion to about 13 per cent was envisaged. Monetary targets so set were overshot by a wide margin, with M_3 growth turning out to be 19.3 per cent. Monetary targeting for 1992-93 was based on the underlying assumption of reduction of the monetised deficit (net Reserve Bank credit to the central government) which was "consistent with the government's declared objective of reducing the gross fiscal deficit from 6.5 per cent of GDP in 1991-92 to 5.0 per cent in 1992-93".

3.17 Credit budgeting in India was not very successful in the face of large fiscal dominance. It ended up generating financial repression that kept real interest rates low and disincentivised both savings and investments. As a result, the economy witnessed lower growth while inflation shot up.

Phase II: Exit from financial repression from 1991-92 to 2002-03

3.18 The second phase saw financial sector reforms. It was marked by a gradual development of market-based instruments to finance government debt. The blueprint for these reforms was laid by the Report of the Working Group on the Money Market (Chairman: N. Vaghul) in 1987 and the Report of the Narasimham Committee I, 1991. Several steps were taken over a period of time. These included the development of money market instruments, the introduction of auctions of Government of India (GOI) treasury bills, a reduction in statutory pre-emptions through CRR and SLR and partial deregulation of interest rates. Although 182-day T-bill auctions were introduced in November 1986, the price discovery at the short-end could improve only after the introduction of 364-day treasury bills in April 1992 and the extension of the auction system to 91-day treasury bills in January 1993. These policy initiatives together with the two Supplemental Agreements (Box III.2) enabled a sizeable reduction

in monetisation of deficits, which helped to moderate the fiscal dominance of monetary policy.

3.19 During this period, monetary targeting was actively pursued. M_3 growth targets witnessed a secular decline. The financial sector reforms during this period, especially the development of an active secondary market for government securities, laid the foundation for moving from direct to indirect instruments of monetary control in the medium-term. The statutory pre-emptions for banks were reduced from around 63 per cent in early 1992 to 35 per cent in a span of six years. The interest rate structure was rationalised and term deposit rates were deregulated.

3.20 The period was marked by a distinct lowering of fiscal deficits until 1996-97. Around the same time, the credit compression of 1995-96 contributed to economy slowing down beyond what was envisaged. This resulted in both monetary and fiscal policies facing unforeseen difficulties. Monetary policy did ensure a substantial decline in inflation in 1995-96, but with broad money growth decelerating to below trend, there were persistent costs for the real economy. Though fiscal-monetary co-ordination improved during the period, there were spells, especially during the credit crunch of 1995-96, when greater co-ordinated action may have yielded better results.

Phase III: Fiscal and monetary prudence from 2003-04 to 2007-08

3.21 The financial sector reforms enabled the Reserve Bank to shift from direct instruments to indirect instruments of monetary control and the period 2003-04 to 2007-08, as a result, was marked by a regime shift. Simultaneously, fiscal reforms were undertaken at an unprecedented pace with the enactment of the FRBM Act, 2003. These policy initiatives taken together helped to significantly lower the fiscal dominance of monetary policy. At the same time, surge in capital inflows during this period, posed challenges for macroeconomic management. The Reserve Bank resorted to large OMOs to absorb surplus liquidity so as to sterilise capital inflows. In fact, OMOs were in liquidity absorption mode through the second half of the 1990s and into the early 2000s.

3.22 The most critical reform that enabled an improvement in the operating procedures for the conduct of monetary policy related to the introduction of the Liquidity Adjustment Facility (LAF) in phases. In 1998, the Committee on Banking Sector Reforms (Narasimham Committee II) recommended the introduction of LAF, under which the Reserve Bank would conduct auctions periodically, if not necessarily daily. The Committee envisaged that the Reserve Bank could reset its repo and reverse repo rates, which would provide a reasonable corridor for the call money rates. In pursuance of these recommendations, the Reserve Bank introduced an Interim Liquidity Adjustment Facility (ILAF) to conduct repos and reverse repos, which replaced the general refinance facility. The ILAF helped reduce fluctuations in the money market rates. In June 2000, the ILAF was replaced by LAF with variable rate repo auctions. In April 2003, the multiplicity of rates at which liquidity was being absorbed/injected under the back-stop facility was rationalised. These changes enabled the Reserve Bank to use LAF as a principal tool for effecting changes in liquidity at the margin and to conduct monetary policy by using the indirect tool of LAF, *inter alia*, by setting repo/reverse repo rates.

3.23 The FRBM Act, which was enacted on August 26, 2003 and came into force from July 5, 2004, unleashed a regime of fiscal rules to restrain discretionary policies that tend to have an inherent deficit bias. The move was prompted by international experience that showed that several countries facing huge fiscal imbalances had gained through similar legislations and rules such as the Medium-Term Financial Strategy in the UK, the Gramm Rudman Hollings Act of 1985 in the US, and the fiscal responsibility legislations in New Zealand in 1994, Argentina in 1999, Peru in 1999 and Brazil in 2002.

3.24 The Act stipulated that the central government should take appropriate measures to

reduce the fiscal deficit and eliminate the revenue deficit by March 31, 2008 and thereafter build up adequate revenue surplus. The Union Budget for 2004-05, however, deferred the target for eliminating the revenue deficit to 2008-09. The Act also prohibited direct borrowings by the Centre from the Reserve Bank from 2006-07 except through Ways and Means Advances (WMAs) to meet temporary mismatches in receipts and payments or under exceptional circumstances.

3.25 In exercising the powers conferred by the FRBM Act, 2003, the central government framed the 'Fiscal Responsibility and Budget Management Rules, 2004', effective from July 5, 2004. Under these rules, annual targets were set for the phased reduction in key deficit indicators over the period ending March 31, 2008. The rules also imposed annual ceilings on government guarantees and additional liabilities.

3.26 Fiscal-monetary policy co-ordination also received a fillip from the Debt Swap Scheme (DSS), which was recommended by the Finance Commission. It enabled the state governments to substitute their high-cost loans from the centre with fresh market borrowings and a portion of small saving transfers. Under the scheme, the states swapped high-cost loans. During 2002-03 to 2004-05, states swapped ₹1.02 trillion of their debt with the central government. They financed this through additional market borrowings of ₹536 billion or 53 per cent at interest rates below 6.5 per cent and the remainder through the issue of special securities to the National Small Savings Fund (NSSF) with the interest rate fixed at 9.5 per cent. Though the scheme was debt-neutral, it brought about long-term benefits in lowering the cost of servicing debt for the state governments.

3.27 Another example of fiscal-monetary co-ordination in this period came in the form of introduction of the Market Stabilisation Scheme (MSS). The scheme aimed at improving monetary policy that was expected to lose its efficacy in the face of paucity of instruments to sterilise liquidity arising from large capital inflows that required intervention in the foreign exchange markets. The initial burden of sterilisation was borne by the outright transactions involving the sale of dated securities and treasury bills. However, due to the depletion in the stock of government securities, the burden of liquidity adjustment shifted to LAF. The LAF was essentially designed to handle marginal liquidity surpluses/deficits. For absorbing the liquidity of a more enduring nature, the MSS was conceived.

3.28 The Government of India and the Reserve Bank signed a Memorandum of Understanding (MoU) on March 25, 2004 and the MSS scheme was launched on April 1, 2004. Under the MSS, treasury bills and dated securities were issued by the government. The proceeds of the MSS were sequestered by holding them for the government in a separate identifiable cash account maintained and operated by the Reserve Bank. The amounts credited into the MSS account could be appropriated only for the purpose of redemption and/or buy-back of the treasury bills and/or dated securities issued under the MSS. MSS securities were treated as eligible securities for the SLR, repo and LAF.

3.29 A large number of countries, such as Chile, China, Colombia, Indonesia, Korea, Malaysia, Peru, Philippines, Russia, Sri Lanka, Taiwan and Thailand have issued central bank securities. However, the central banks of many of these countries faced deterioration in their balance sheets. As such, the MSS considerably enhanced the degree of freedom for monetary policy. It strengthened the Reserve Bank's ability to conduct exchange rate and monetary management operations. It also enabled the Reserve Bank to use the MSS tool flexibly to both absorb and impart liquidity later when needed.

Phase IV: Co-ordinated and unco-ordinated responses from 2008-09:

3.30 The last phase starting 2008-09 is an interesting one. On the one hand, it witnessed a high degree of co-ordinated fiscal-monetary policy response in the face of the contagion from the global financial crisis and the resultant slowdown of

the global economy. Fiscal and monetary policies provided a co-ordinated stimulus to counter the sudden loss of confidence that could have rapidly caused a downward spiral in the domestic economy. Following the collapse of Lehman Brothers, the Reserve Bank announced a slew of monetary and liquidity easing measures from October 2008 to January 2009. For example, in a co-ordinated move in early December 2008, the fiscal authorities simultaneously announced a package that included an across-the-board 4-percentage points cut in central VAT for non-petroleum products, a support package to Micro, Small and Medium Enterprises (MSMEs), sops to exporters, and permission for India Infrastructure Finance Company Limited (IIFCL) to raise ₹100 billion (about US$2 billion) through tax-free bonds. The Reserve Bank's steps included a 100 basis points cut in its policy rates and an additional refinance package of ₹110 billion.

3.31 The fiscal-monetary co-ordination in the aftermath of the global financial crisis was accompanied by less co-ordination on how the fallout of the stimulus might be handled. As a result, there were some un-co-ordinated responses during the period of exit from the stimulus. An underfunded budget and the fiscal stimulus of 2008-09 left awry the budgeting mathematics during the year. Net market borrowings more than doubled from the initial estimates, providing a setting for a 'game of chicken' to be played between the fiscal and monetary authorities (Box III.3).

Box III.3
Monetary and Fiscal Policy Interactions and the Game of Chicken

Monetary and fiscal policies need co-ordination for macroeconomic management. In practice, this co-ordination sometimes brings about a game-theoretic environment in which fiscal and monetary authorities face a two-person non-co-operative game. Following Buiter (2010)'s description of 'Game of Chicken' used to analyse the interaction of the central bank and the Treasury in the euro area, there has been a recognition that central banks and fiscal authorities often test each other to see who blinks first and makes the required adjustment to accommodate the other.

In the game of chicken, also known as the hawk-dove or snowdrift game, each player prefers not to yield to the other and the worst possible outcome occurs when both players do not yield. An easy real life situation to understand this game is when two car drivers are headed on a collision course. One of the drivers must swerve to avoid a crash that could kill both, but if one driver swerves he is called "chicken" or a coward. In terms of payoffs, the loss from swerving (or being called "chicken") is trivial compared to the huge loss to both in the case of a crash. A typical pay-off example is:

	Swerve	Go head-on
Swerve	(0,0)	(-1,+1)
Go head-on	(+1,-1)	(-10, -10)

The pure strategy equilibriums are ones in which one player swerves and the other does not. But in the absence of co-ordination, neither can know if the other one will swerve and a reasonable strategy, therefore, would be to swerve before a fatal crash. But if one believes one's opponent is reasonable, one may decide not to swerve at all, ending up in the worst Nash-type outcome.

An oft-cited example of the game of chicken has been the current strategic interaction between the European Central Bank (ECB) and the several national fiscal authorities in the euro area. The ECB by law is mandated to seek price stability and pursue any other objective, if and only if, it does not conflict with its prime objective of price stability. However, with fiscal authorities, in some of its member countries, facing a sovereign debt crisis, ensuring solvency has become one of its proximate goals, if not an explicit one. The ECB knew that a sovereign default in any of the PIIGS (Portugal, Ireland, Italy, Greece, and Spain) could spark uncontrollable contagion, posing financial stability and growth risks that would be difficult to manage.

The ECB is seen to want price and financial stability, while fiscal governments are perceived to want ECB financing to avoid default on government debt. The fiscal authorities may encourage the ECB to undertake quasi-fiscal activities by taking sovereign and private credit risk on its balance sheet. However, the ECB's concern is that any quantitative easing (QE) it undertakes should be non-inflationary. The ECB has a monopoly in supplying base money and so the seigniorage benefits at least initially are appropriated by it.

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However, monetisation of public debt may have occurred in some form as a result of the ECB's 3-year Long-term Repo Operations (LTRO) since December 2011.

Even before the onset of the global financial crisis, Buiter and Sibert (2005) proposed a radical change in the operating procedures of the ECB aimed at restoring market discipline and tackling unsustainable fiscal deficits. The ECB was seen as trying to restore a first-mover advantage in the game of chicken. The 'Fiscal Theory of Price Level (FTPL)' suggests that fiscal deficits may or may not lead to high inflation depending on whether there is fiscal dominance or monetary dominance in this game of chicken. In the case of fiscal dominance, runaway deficit increases, which eventually forces the central bank to blink and to monetise the deficit, *i.e.* to increase seigniorage and use the inflation tax to finance an exogenous fiscal deficit path. If there is monetary dominance, the central bank commits not to monetise the fiscal deficits and then the fiscal authority is forced to blink and adjust its budgetary policy by cutting spending or raising taxes to satisfy its inter-temporal budget constraint. If neither authority blinks, the default risk increases as interest rates go higher and the debt dynamics worsens.

The FTPL offers a resolution of Sargent and Wallace's (1981) unpleasant monetarist mathematics that provides a setting for the game of chicken in macroeconomic management. In a seminal 1981 paper titled, "Some unpleasant monetarist arithmetic", they show that even if inflation in the short-run is a monetary phenomenon, it remains a fiscal phenomenon in the long-run. This follows from the government budget constraints and the limits to public debt that can be held by the private sector. Together, these ensure that in the long-run, the growth of money stock is governed by the fiscal deficit as fiscal authorities act as Stackelberg leaders, while monetary authorities act as Stackelberg followers. The Stackelberg model is a strategic game in economics in which the leader firm moves first while the follower firms move sequentially, and it offers a solution to well-known price determinacy puzzles. More fundamentally, the FTPL suggests that the consolidated government present value budget constraint is an optimality condition, rather than a constraint on government behaviour and it shows how Ricardian and non-Ricardian notions of wealth effects play a role in price determination and household consumption. Strong forms of the FTPL suggest strange cases where this no-blink two-sided game leads to a jump of the initial price level (high inflation) to ensure that the government's inter-temporal budget constraint is satisfied.

In a real world, in the game of chicken, generally fiscal dominance is a rule and monetary dominance turns out to be the exception. India is not unique to this general rule. Large fiscal deficits have at times caused 'game of chicken'-like situations. If the central bank pursues its monetary objectives by not accommodating the debt financing in its strategy calculations, the macroeconomic outcome may be inferior for both the fiscal and monetary authorities, as well as for the economy as a whole. As such, macroeconomic management has to be conducted keeping the compulsion to avoid disastrous consequences.

References

Buiter, Williams and Anne C. Sibert (2005), "How the Eurosystem's Treatment of Collateral in its Open Market Operations Weakens Fiscal discipline in the Eurozone (and What to Do About it)", Conference 'Fiscal Policy and the Road to the Euro', organised by the National Bank of Poland and the Central Bank of Hungary in Warsaw, June 30 - July 1, 2005.

Libich, Jan, Dat Thanh Nguyen and Petr Stehlik (2011), "Monetary Exit Strategy and Fiscal Spillovers", *CAMA Working Paper* 4/2011, Australian National University

Rapoport, A. and A.M. Chammah (1966), "The Game of Chicken", *American Behavioral Scientist,* 10.

Sargent, T. and N. Wallace (1981), "Some Unpleasant Monetarist Arithmetic", *Federal Reserve Bank of Minneapolis, Quarterly Review* 1–17.

3.32 Fiscal dominance has, however, been reduced in India considerably by adopting a co-operative framework with a view to minimise 'game of chicken' situations. The Supplemental Agreements, the FRBM Act, the Finance Commission reports, and the Market Stabilisation Scheme (MSS) are all examples that have contributed to developing co-operative strategies for fiscal-monetary policy interactions. Often both the authorities have formally or informally discussed their plans with one another and/or signalled their intentions convincingly before a 'game of chicken' situation develops. Credible signalling is a useful strategy to further co-ordination. For fiscal authorities, the fiscal rules are the best form of credible signalling for swerving. However, these rules have been reneged upon in events of stress or due to political cycles.

3.33 The year 2008-09 proved to be one example when the Union government ended up with a GFD/GDP of 6.0 per cent against the budgeted deficit of 2.5 per cent and the net market borrowings turned out to be ₹2.34 trillion against the budgeted level of ₹1 trillion. The fiscal slippage was unprecedented. Fiscal authorities did not clearly signal such slippage early on and the sudden large extra market borrowings in the last quarter resulted in 10-year benchmark yield that had fallen to 5.0 per cent at end-December 2008 to rise by 200 basis points to 7.0 per cent by end-March 2009. This was in spite of the Reserve Bank undertaking outright open market purchases of about ₹890 billion in the last quarter of 2008-09 to avert a possible interest rate shock at a time when monetary policy resorted to unprecedented easing.

3.34 During 2009-10, the GFD-GDP ratio turned out to be 6.4 per cent against the budgeted deficit of 6.5 per cent. The net market borrowings were ₹3.98 trillion, in line with the budgeted amount. In contrast, in the year 2010-11, the government had a one-off revenue windfall through spectrum auctions and divestments that helped in temporary fiscal consolidation. As a result, the GFD-GDP ratio fell to 4.6 per cent, which was well below the budgeted level of 5.5 per cent. The year 2011-12 saw again a fiscal slippage of 1.3 percentage points from the budgeted level of 4.6 per cent. At the start of the year, the central bank was credibly committed to maintaining tight monetary policy, but extra market borrowings of around ₹2 trillion (including treasury bills) put some upward pressure. However, liquidity tightened excessively due to several factors, including the RBI's foreign exchange intervention to check volatility in the market since August 2011. OMO purchases were, therefore, to a large extent in sync with the central bank's objective of reduction in excessively tight liquidity conditions. Avoiding a game of chicken could best be pursued with tighter fiscal and monetary policy rules and credible commitment to these rules. These rules should have some in-built flexibility to meet cyclicality – economic as well as political – but could avoid widening of structural deficits.

3.35 The exit from stimulus was far less co-ordinated than the provision of the stimulus. The CENVAT roll-back was deferred, putting added pressures of monetisation of debt on monetary policy. It was not clear who would be the hawk and who would be the dove while withdrawing the stimulus. The durability of quick recovery remained uncertain and price pressures remained unclear for long. The monetary policy again accommodated the larger part of the exit burden. The widening of the fiscal deficit following the global financial crisis that includes a large structural component constrains fiscal-monetary coordination. The revised fiscal roadmap accepted by the government in 2012-13 would in part set the course correction. However, the revised roadmap is more a response to significant macroeconomic deterioration that had already set in since 2011-12. The roadmap does not sufficiently address the issue of quality of fiscal consolidation. There has been over-dependence on non-durable resources of revenue, inadequate pruning of subsidies and undesirable reduction in capital spending as part of this fiscal consolidation strategy.

IV. Fiscal-Monetary Co-ordination in Inflation Management

3.36 Maintaining a low and stable level of inflation is one of the major goals of macroeconomic policy. Since inflation is viewed by the traditional monetarist approach as a monetary phenomenon, monetary policy is recommended as the major tool for inflation management. However, the role of fiscal policy in inflation control is also recognised both in terms of the impact of high fiscal deficit on aggregate demand and inflation as well as short-term inflation management through its policy of taxes and subsidies. Also, given the two-way interaction between fiscal deficit and inflation, optimal co-ordination between monetary and fiscal policies would be critical to achieve the goal of price stability. This section attempts to understand the role of fiscal and monetary policies in inflation management and the implications of the interaction between these policies on inflation.

Inflation and Fiscal versus Monetary Policy

3.37 Conventional economic theory promotes the idea that monetary policy should focus on business cycle stabilisation through counter-cyclical policies when demand-side shocks to output and inflation dominate, while fiscal policy should focus on stabilising the impact of supply-side shocks, keeping in view inter-temporal and inter-generational budget constraints that arise from the debt-deficit dynamics. The basic theoretical premise of such an argument is that sustained high inflation is generally caused by monetary factors. Also high inflation is generally the result of high aggregate demand, and control of aggregate demand could be better achieved through monetary policy.

3.38 There also is a large empirical literature on the link between fiscal policies and inflation in terms of both the short-term and long-term effects (Rother, 2004). The impact of high fiscal deficits on inflation is seen from two different angles. An increase in fiscal deficit would imply enhanced government spending, which could lead to an increase in aggregate demand and this could turn out to be inflationary if the economy is operating at or above potential level of output. Fiscal expansion, however, may not raise inflation in the short-run if the economic growth is below potential. It has been argued that the unprecedented fiscal stimulus that was used in India during the global economic crisis had no immediate impact on inflation as it primarily worked as a tool to partially offset the deceleration in consumption and investment demand (Reserve Bank Annual Report, 2009-10).

3.39 The short-term impact of the fiscal deficit on inflation could also depend on the mix of policies that the government plans to undertake for macroeconomic management. If the fiscal deficit increase is on account of a decrease in indirect taxes, like the reduction in excise duty for most manufactured products in India in the period immediately after the global crisis, this could have a dampening impact on final prices. Similarly, an increase in generic subsidies could keep prices below market clearing prices, thus making inflation suppressed in the short-run. Subsidies in the form of direct cash transfers to final consumers, on the other hand, could be inflationary in the short-run as increased demand may push up prices. The impact of a lower fiscal deficit on short-term inflation could also vary depending on how the reduction in deficit is achieved. If an increase in indirect taxes is used as a tool to reduce the fiscal deficit, final prices could go up in the short-run. Reduction in generic subsidies could raise short-term inflation but would have a favourable impact on inflation in the medium-term.

3.40 Persistent fiscal deficits would sooner or later lead to the creation of money, which would have inflationary consequences. Sargent and Wallace (1981) argue that under conditions of fiscal dominance, inflation could turn out to be more of a fiscal problem. Empirical work exploring the link between fiscal dominance regimes and inflation has shown that governments often resorted to seigniorage (or inflation tax) during times of fiscal stress, which had inflationary consequences.

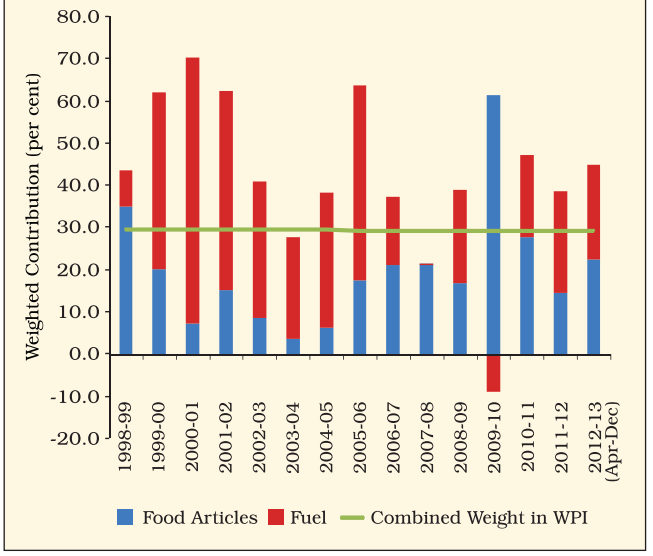
3.41 Studies that look at long-term trends try to establish to what extent large and persistent deficit levels have an impact on inflation. Short-term studies, on the other hand, focus on the impact of changes in fiscal policies, *i.e.*, the impact of fiscal shocks on inflation. More recent theoretical developments based on the 'FTPL' suggest that medium-term price stability not only requires appropriate monetary policy, but also appropriate fiscal policy. This theory considers price level as the crucial adjustment variable to ensure the fulfilment of the government's inter-temporal budget constraint. This constraint equates, in real terms, the government's current liabilities to the net present value of government revenues, *i.e.*, future primary surpluses and revenues from money creation. Under the condition that Ricardian equivalence does not hold and with a strongly committed and independent central bank, imbalances in the inter-temporal budget constraint need to be adjusted through shifts in the price level.

3.42 All these theoretical propositions explore the link between fiscal policy and inflation based on the premise that fiscal policy is a cause for inflation and not a tool to control inflation. However, when inflationary pressures emanate from the supply side, the role of fiscal policy as a tool for inflation control becomes crucial. Supply shocks generally affect relative prices by raising the prices of some commodities more than the general increase in the price level. Thus, the problem of short-term stabilisation can involve fiscal response to all types of shocks, some of which may be distortionary as prices are characterised by nominal rigidities. Fiscal policy can mitigate cost-push shocks through off-setting changes to tax rates/subsidies. Thus fiscal policy can influence cost-push inflation in a more effective manner. However, cost-push shocks cannot be eliminated by fiscal or monetary policy in isolation, because they influence the relationship between the output gap and inflation usually in the opposite direction (Kirsanova *et al*., 2009). Supply shocks impact relative prices initially, but tend to get generalised over time through second-round effects from the wage price spiral. Therefore, monetary policy would have to ward against supply shocks causing generalised inflation by anchoring inflation expectations.

Nature of Inflation in India and role of Fiscal and Monetary Policy

3.43 The repeated occurrence of supply shocks has been a key factor that influences the inflation path in India. Since 1952-53, considering 5-6 months of double-digit inflation as high, nine episodes of high inflation can be identified for India (Mohanty, 2010). Supply-side factors like drought, war, oil and international commodity price shocks have been the major reasons behind most of these observed inflation spikes. An analysis of inflation experience in the recent period suggests that during the past 20 years, the weighted contribution of the 'food' and 'fuel' groups to overall WPI inflation exceeded their combined weight in 16 of the 20 years (Chart III.2). This points to the structural nature of inflation, because if supply shocks are assumed to be transitory, then high inflation in food or fuel is supposed to be followed by low inflation in the same category in the subsequent period, thereby breaking the inflation persistence. Conventional monetary policy tools to deal with inflation might not be effective in a situation of structural inflation, and inflation management would require the fiscal intervention to correct imbalances, notwithstanding the risk of a higher fiscal deficit, which also could be inflationary. Fiscal interventions with higher subsidies could only suppress inflation in the short-run, which will manifest over time. On the other hand, fiscal interventions to augment supply through higher capital expenditure may increase fiscal deficit, but could help contain inflation in the medium-term.

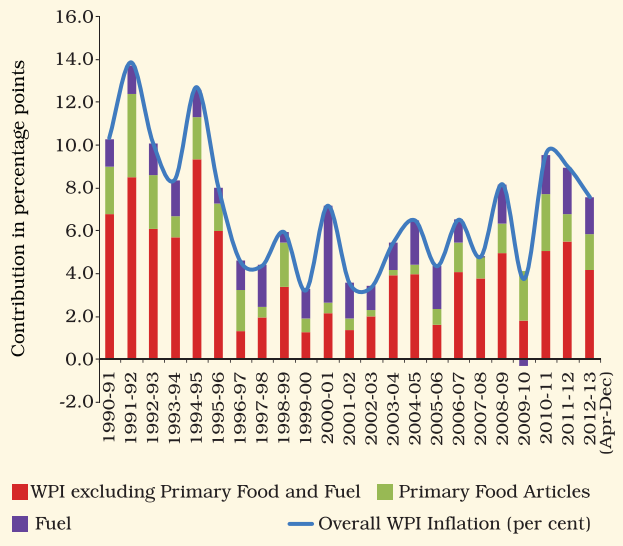
Chart III.2: Weighted Contribution of Food and Fuel to Overall Inflation



3.44 Since the second half of the 1990s the contribution of 'non-food non-fuel' inflation to overall inflation has declined somewhat, whereas the supply shocks have kept inflation highly volatile (Chart III.3).

3.45 The causality of inflation emerging from supply shocks to overall inflation indicates that the inflation in the fuel group gets transmitted to generalised inflation, while such effect is not visible in the case of food inflation (Table 3.1).

Chart III.3 Inflation Volatility and Changing Contributions



The causality test indicates that the fuel inflation does not get transmitted to food inflation, perhaps indicating that the subsidised fuel for agriculture limits the pass-through. Even though food inflation does not directly cause generalised inflation, it could indirectly impact generalised inflation through the wage-price spiral.

3.46 Both domestic and external factors contribute to the occurrence of supply shocks. While domestic factors largely emanate from the highly volatile output from the agricultural sector, external factors include a spurt in international commodity prices, particularly in the case of fuel and fertilisers. Increases in global fuel prices have been quite significant in recent years, and have become a major source of inflationary pressures. Most countries (with the exception of the major OECD countries) have employed either direct or indirect government interventions on petroleum price-setting (Kirit Parikh Expert Group, 2010). The nature and mode of intervention, however, vary from country to country. In India, the Administered Pricing Mechanism (APM) was applied to the entire oil sector to shield the Indian economy from the high and volatile oil prices generated by the first oil price shock in 1973-74.

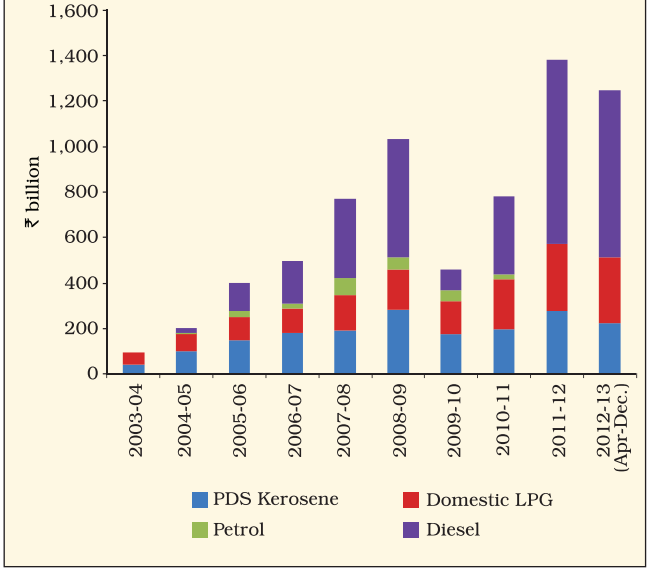
Table 3.1: Pair-wise Granger Causality Tests Between Food, Fuel and Core Inflation

Period: April1996- March 2012.		
Null Hypothesis:	F-Statistic	Prob.
FOOD does not Granger Cause FUEL	0.63	0.64
FUEL does not Granger Cause FOOD	1.65	0.16
CORE does not Granger Cause FUEL	2.37	0.05
FUEL does not Granger Cause CORE	3.89	0.00
CORE does not Granger Cause FOOD	0.24	0.91
FOOD does not Granger Cause CORE	0.41	0.79

Note: Core inflation is represented by non-food manufactured products.

3.47 The APM was completely abandoned in April 2002. Between April 2002 and January 2004 oil marketing companies (OMCs) changed the domestic consumer prices of petroleum products based on market factors. The sharp increases in international crude prices thereafter forced the government to re-impose controls on the prices of petrol, diesel, kerosene and domestic LPG, resulting in significant increases in the under-recoveries of OMCs. With crude prices touching historic peak in 2008, under-recoveries rose to alarming proportions (Chart III.4). With an uptrend in international crude prices from the later part of

Chart III.4: Product-wise Under-recovery in Fuel



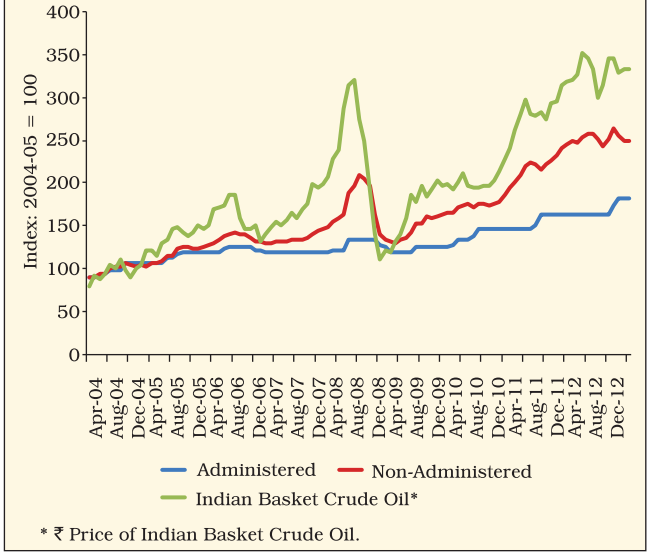
2010, the under-recoveries of OMCs exhibited sharp increases during this period.

3.48 The impact of the government's fiscal intervention in fuel pricing on inflation can be seen from the divergent pattern of inflation in the 'fuel' group among administered and non-administered products. Since the government control on fuel price started to re-emerge from April 2004, a comparative analysis of trends in fuel prices during this period reveals the extent of inflation that the government has absorbed through fiscal intervention (Chart III.5).

3.49 Administered prices have remained significantly below non-administered prices, indicating that the administered price policy helped keep domestic prices significantly low. Products under administered prices include domestic LPG, kerosene and diesel, which together have a weight of 6.3 per cent in the WPI compared with the freely-priced products under the mineral oils group with a combined weight of 3.0 per cent. If one assumes that inflation of non-administered prices is the likely scenario in the absence of fiscal intervention, one could estimate the extent of suppressed inflation as the difference between the inflation of freely-priced products and the inflation of administered prices (Chart III.6). It can be seen that administered prices have been used as a fiscal policy tool to significantly even out the volatility that otherwise would have emerged if the full pass-through of global fuel price shocks to domestic prices was allowed. This volatility, apart from its impact on input costs, could also have unanchored inflation expectations significantly, thereby creating a situation where monetary policy would have to be much more proactive. Therefore, when supply shocks impart significant volatility to the inflation path, fiscal-monetary co-ordination becomes crucial.

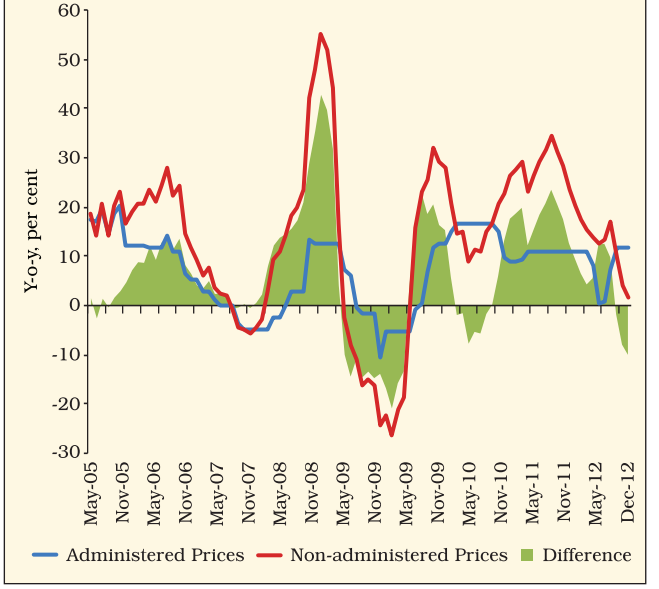
3.50 Administrative measures to insulate the domestic economy from commodity price shocks may yield lower inflation in the short-run, but the increased fiscal burden could lead to an increase in inflation in the medium-term. The appropriate policy mix would be to use fiscal/administrative measures only for the purpose of insulating the impact of sharp volatility in commodity prices on domestic inflation, whereas any shift in level should ideally be passed through as it would also help in demand adjustment. Recent announcement by the government to introduce open market pricing of diesel for bulk consumers and staggered increases in retail price of diesel, could add to near-term price pressures but it is a step in the right direction.

Chart III.5: Movement in International and Domestic Prices of Fuel



* ₹ Price of Indian Basket Crude Oil.

Chart III.6: Fiscal Control on Fuel Inflation

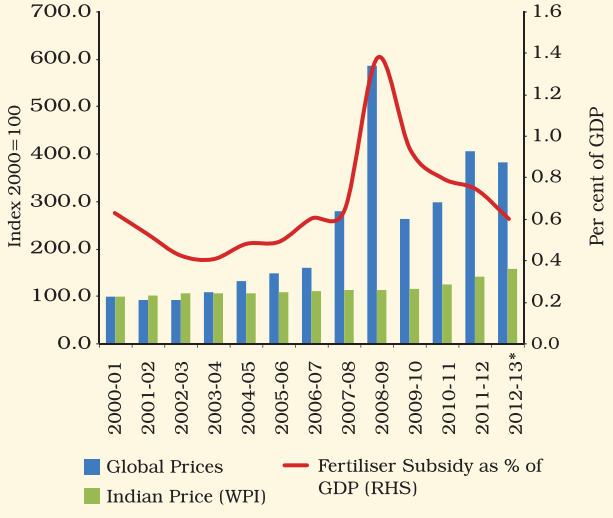


3.51 The government has been providing fertiliser subsidies, as it is one of the key inputs for the agriculture sector. It can be seen that international fertiliser prices have exhibited sharp increases in recent years and, as in the case of fuel products, the government has used subsidies as a major tool to insulate domestic prices from such volatility (Chart III.7). Although subsidies can be used as a tool for inflation management in the short-term, persistent high prices in the international market could lead to a substantial burden on the fiscal front and the pass-through of high import prices to domestic prices might become inevitable, especially when the import dependence is considerable.

Impact of Inflation on Government Finances

3.52 One major channel through which the interaction between monetary and fiscal policy works is through the causal relationship between inflation and government finances. If government revenues and expenditures respond differently to inflation, the fiscal balance would change depending on the net response of these components to inflation. If the elasticity of government expenditure to inflation is higher than that of revenue to inflation, an increase in inflation would lead to a widening of the deficit and *vice-versa.* Seminal work in this area was done by Aghevli and Khan (1978). They found a self-perpetuating process of inflation in emerging economies. Previous empirical studies on India (Sharma 1984, Jadhav and Singh, 1990) found support for the validity of the hypothesis of inflation-induced deficits in the Indian context.

Chart III.7: Fertiliser Prices and Subsidy



* Prices are for April-December, GDP Advance Estimates and Subsidy Budget Estimates for the Financial Year.

3.53 The interaction between inflation and government finances is empirically examined in Box III.4. It can be seen that the expenditure elasticity to inflation is much higher and statistically significant than revenue elasticity. This could be because most government expenditure is planned in real terms and gets automatically indexed to inflation. For instance, project costs escalate with inflation whereas salaries are indexed to inflation. Also, the subsidy expenditure on key items *viz.,* food and fuel is highly sensitive to inflation. Given that higher level of fiscal deficit could be inflationary, these results also point to the risk of self-perpetuating cycle of inflation and fiscal deficit.

V. Cyclicality of government spending

3.54 Keynesian approaches suggest that fiscal policy should ideally be countercyclical, that is, fiscal deficits should decline when the economy is expanding and increase during economic downturns. The cyclicality of government spending is normally defined in terms of how spending moves with the output gap. If government spending increases when there is a negative output gap (*i.e.*, output is below its potential), then spending is countercyclical. This implies lower spending when output is high, relative to its trend. Therefore, pro-cyclicality can be defined as an above-average spending-to-output ratio whenever output is above its potential.

3.55 Fiscal policies in several countries turn out to be pro-cyclical rather than counter-cyclical. Borrowing constraints, fiscal rules and weak institutions contribute to this phenomenon. Policies, especially government spending, often turn out to be expansionary in booms and contractionary in recessions. This is potentially damaging from the viewpoint of macroeconomic stability. It also has

Box III.4
Inflation and Government Finances: Is it a self-perpetuating cycle in India?

The empirical estimation of the inflation-deficit nexus in the Indian case is attempted by estimating the co-integrating relationship under a vector error correction model framework (VECM).

For a co-integrating relationship to exist, all the variables should be integrated of the same order. The variables were tested for stationarity and it was found that all the variables were non-stationary at levels but stationary at first difference, indicating that there could be a co-integrating relationship between these variables.

The presence and number of co-integrating vectors in the relationship between government revenue, inflation and growth has been estimated using the trace test and maximum Eigen value statistics following the methodology suggested by Johansen and Juselius (1992). Both tests indicate the presence of one co-integrating vector for the government revenue equation and government expenditure equation. This is in conformity with the arguments presented in economic theory. While government revenues (REV) could be positively affected by inflation and economic growth, the expenditure of the government (EXP) can both be a cause and an effect of high inflation. The estimated relationship (by specifying the relationship between government revenue, expenditure, inflation and growth in a VECM model) yielded the following results for the period 1990-2012.

Government Revenue

Log REV= -5.90 + 0.88 LogWPI + 0.75 LogGDP
t value (1.35) (2.51)*

Government Expenditure

Log EXP= -10.21 + 2.72 LogWPI -0.03 LogGDP
t value (2.56)** (-0.06)

* Significant at 5 per cent,
** Significant at 1 per cent

The empirical results indicate the following major implications in terms of the interaction between growth, inflation and government finances. It is seen that the long-term impact of inflation is much larger and significant on government expenditure than on government revenue. Government revenue responds positively to growth. This implies that high inflation can lead to higher government expenditure, which in turn would widen the fiscal deficit. Given that high fiscal deficit is inflationary in the long-term, the inflation-government finances nexus could lead to a self-perpetuating cycle as was argued by Aghevli and Khan (1978). Thus the co-ordination between monetary and fiscal policies in terms of inflation management becomes even more critical as high inflation in the long-run can be self-perpetuating. These results also indicate that higher growth may not necessarily lead to improvement in government finances, if inflation is not kept under control.

Reference

Aghevli and Khan (1978), "Government Deficits and the Inflationary Process in Developing Countries", *IMF Staff Papers*, Vol.25, 383–416

adverse welfare consequences. Further, fiscal policies in good times are not fully offset in bad times and leave an uncorrected deficit bias. This can risk debt sustainability and increase the default probability. Ideally, tax policies should be used to smooth tax distortions and expenditures over the business cycle, but pro-cyclical fiscal policies tend to exacerbate business cycle fluctuations. In India, a comparison between the growth rate of GDP and government final consumption expenditure (GFCE) indicates the nature of pro-cyclicality (Chart III.8).

3.56 To test pro-cyclicality, the following two exercises were carried out: (i) the fiscal spending and output relationship was tested in an error-correction framework that allows us to distinguish between the short-term effect of output on government spending and any longer-term effect between these two variables, and (ii) the OLS regression equation of the cyclical component of the government consumption spending/GDP (GFCE/GDP_C) ratio (real) and the cyclical component of GDP (real GDP_C) was estimated to understand the relationship between government spending and output[1]. The results for the period 1950-51 to 2011-12 were

Long-run Equation

Log real GFCE = 7.88 + 0.23 log(real GDP) + 0.04 trend(1971)
t (5.5)*** (2.1)** (7.4)*** Adj R^2 = 0.99

1 Similar results were obtained by considering 'Real GDP (at market price) excluding government spending' as a variable instead of Real GDP (at factor cost).

Chart III.8: Growth Rates of Government Spending and GDP

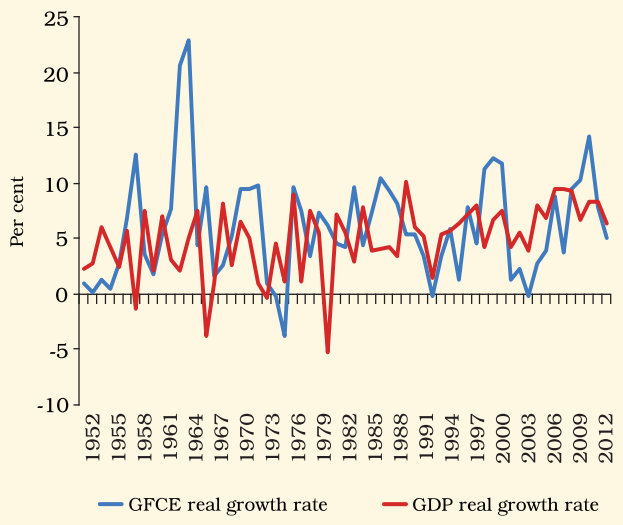
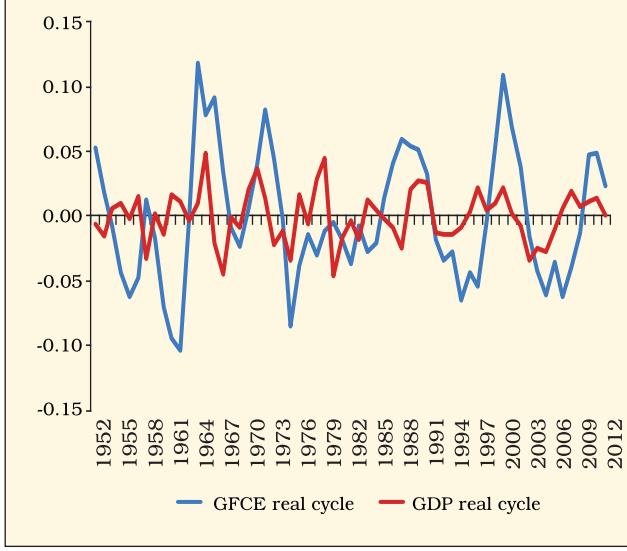


Chart III.9: Cyclical Components of GDP and GFCE (using HP-filter)



Short-run Equation:

d(log(real GFCE)) = 0.02 + 0.51d(log(real GFCE(-1)))
t (1.3) (3.8)***

+ 0.20 d(log(real GDP)) - 0.31 (residual_of long run equation (-1))
(1.2) (-3.4)*** Adj R^2 = 0.33

* Significant at 10 per cent, ** Significant at 5 per cent, and
*** Significant at 1 per cent

3.57 The results indicate that GFCE and GDP are co-integrated and that government spending is pro-cyclical both in the long-run and the short-run. However, for a shorter period (1980-81 to 2011-12) the results are statistically insignificant. This may have been caused by counter-cyclical fiscal expansion undertaken in 2008-09 in the backdrop of global financial crisis.

OLS on cyclical components

GFCE/GDP_C = c + β1*real GDP_C(-1) + β2*real GDP_C(-2)
+ β3*real GDP_C(-4)

The estimated equation yields:

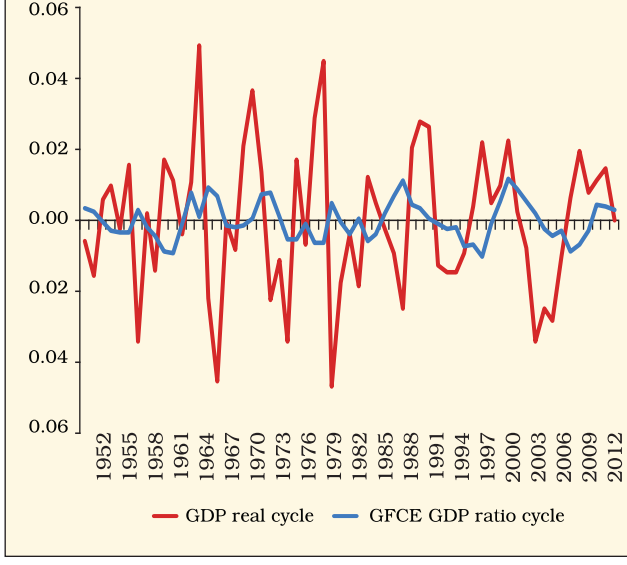
GFCE/GDP_C = 0.001+ 0.08 real GDP_C(-1) + 0.12 real GDP_C(-2)
t (-0.2) (2.5)** (4.1)***
+ 0.08 real GDP_C(-4) AdjR² =0.32
(2.8)***

* Significant at 10 per cent, ** Significant at 5 per cent, and
*** Significant at 1 per cent

3.58 Since the coefficients of real GDP_C are found to be positive, government spending is again found to be pro-cyclical. The above results present evidence on the pro-cyclicality of government spending. This is further corroborated by the movements in clyclical component of GDP and GFCE (Charts III.9 & III.10).

3.59 Pro-cyclicality of fiscal spending in a developing economy is not unusual and empirical

Chart III.10: Cyclical Components of GFCE-to-GDP Ratio and GDP



evidence is in substantial support of this, even though such behaviour defies common wisdom. Governments should borrow in "bad times" when revenues shrink and "social" spending rises, and repay debt in good times. However, fiscal policies do not smooth tax receipts and expenditures over the business cycle in EMDEs because of several reasons that include: (i) already stretched fiscal positions that leave limited space for counter-cyclical policies, (ii) insufficient provision in fiscal rules to support counter-cyclical policies, (iii) borrowing constraints faced by these economies, (iv) weak institutions that allow in-built deficit bias, (v) corruption that reduces the response of primary balance to output gap, (vi) voracity effect, wherein windfall revenue exacerbates the pressures for fiscal redistribution and accentuates the common pool problem. India is not devoid of such problems.

VI. Debt-Deficit Dynamics and Monetary Management

3.60 The behaviour of deficit and debt may play a significant role in shaping monetary management, even though the central bank conducts debt management as an agency function of fiscal authority. Theoretically, monetary and fiscal policies interact in a number of ways to condition the short-run and long-run levels and the path of macroeconomic variables, such as output and inflation. This section analyses the interaction between debt-deficit dynamics and monetary policy in India during the past three decades.

3.61 Debt-deficit dynamics originate from the government's decision to finance its expenditure through two alternative sources, *viz.*, tax (plus non-tax and other non-debt receipts) financing and debt financing. The rollover of debt financing of government expenditure over the years in higher proportions may add to the stock of public debt even if the government is making regular repayments. In India, during the period 1980-81 to 2012-13, on average, one-third of the total government expenditure was financed by borrowing, *i.e.*, for every ₹100 spent by the government, ₹33 were borrowed.

3.62 Despite the persistence of debt financing, its share witnessed a decline during the 2000s, reflecting the enactment of the Fiscal Responsibility and Budget Management (FRBM) Act, 2003 by the government, which brought about fiscal discipline in a gradual manner. Thus, the FRBM Act and the subsequent FRBM rules were milestones in the history of fiscal policy in India under which the government was legally required to achieve gross fiscal deficit of not more than 3 per cent of GDP by 2007-08, which was extended by a year to 2008-09. In fact, the central government was ahead of the target when it was able to achieve a fiscal deficit-to-GDP ratio of 2.5 per cent in 2007-08. However, the declining trend in debt financing was reversed with the onset of the global financial turmoil as the government implemented fiscal stimulus programmes to offset the impact of the global slowdown on aggregate demand in the economy.

3.63 Thus, in recent years, *i.e.,* 2008-09 to 2012-13, the share of debt financing of expenditure has gone up. The moderate decline in the share of debt financing in the financial year 2010-11 reflected the impact of a partial exit from an expansionary fiscal policy, supported by strong growth in revenue receipts, including non-tax receipts, and recovery in economic growth. However, in 2011-12 and 2012-13, the presistent low economic growth reduced the revenue resources of the government, and thus, expenditure fianancing through debt was slightly higher than in 2010-11 (Chart III.11).

3.64 The debt financing of expenditure entails a repayment obligation on the government, which according to the Ricardian equivalence will have to be financed by future tax and non-tax revenues. However, if the government is not able to raise adequate revenues in future to finance its past debt, it may have to resort to fresh borrowings to finance the old debt. This, in fiscal parlance, is popularly known as *ponzi* financing. Theoretically, to avoid this, the government has to generate a primary revenue surplus that is adequate to finance the interest payment obligations. In India, the

Chart III.11: Public Expenditures Increasingly Financed by Borrowings

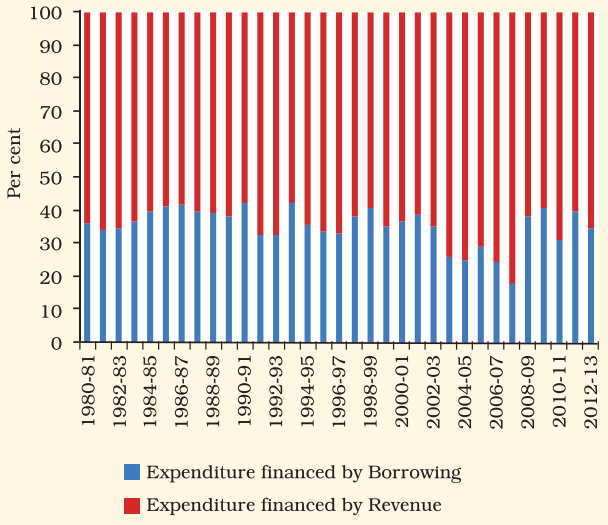
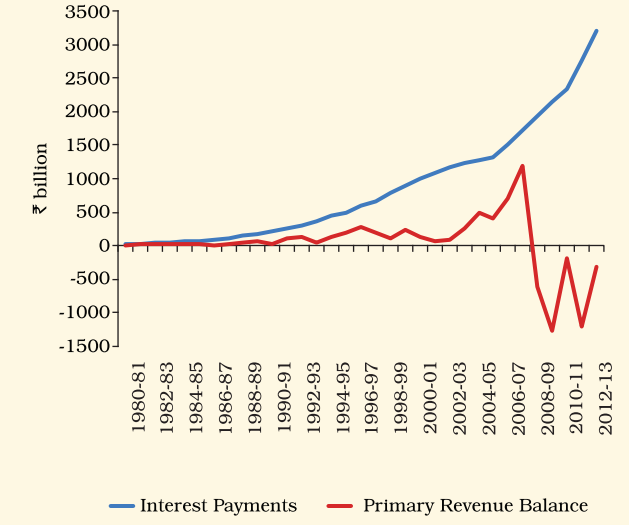


Chart III.12: Rising Interest Payments with Reversal in Primary Revenue Balance



central government has been running a primary revenue surplus for the past three decades except during recent years. However, during the past two decades, this primary revenue surplus was inadequate to finance the entire interest payments. With the implementation of the FRBM Act, when the government moved to a rule-based fiscal policy framework, the percentage of interest payments financed by primary revenue surplus witnessed an improvement in the fiscal arena. However, the fiscal stimulus programme with its expansionary mode eliminated the primary revenue surplus, and consequently the government reported a primary revenue deficit during recent years, which indicates that fresh borrowings were used to finance part of the interest payments (Chart III.12).

3.65 The implementation of the FRBM Act by the government played a major role in determining the level and path of fiscal deficit and debt in the Indian economy during the past decade. It is also argued in the literature that fiscal discipline is a mirror image of monetary independence. This is because while the amount of debt is the result of the fiscal policy of the government, the composition of debt is the result of debt management policy (Tobin, 1963). In many countries (including India), the debt management policy is vested with the central banks.[2] While central banks do not generally have any control on the amount of deficit, large fiscal deficits often make it necessary that fiscal-monetary co-ordination is achieved to enable the smooth conduct of both monetary and debt management. Cross-country experiences suggest that this is either done through an institutional arrangement, where the co-ordination is achieved with the central bank conducting the debt management on behalf of the government, or by setting up a separate agency for debt management. The latter would nevertheless require a co-ordination mechanism that can become difficult in the case of large government market borrowings. As the latter has implications for interest rates, liquidity management and credit flows, an integrated view at one place has its own advantages. The amount of borrowing as an outcome of deficit, which is determined by the government, is exogenously given to central banks to arrange for its financing. *Ipso facto*, the standard theoretical arguments in the realm of

2 For example, debt management is vested with the central banks in countries such as Sri Lanka, Kenya, Pakistan, Zambia, Costa Rica and Nicaragua.

fiscal-monetary interface rest on the interactions between debt management policy and monetary policy. Thus, the ways in which the deficit/debt is financed is as important as the size of deficit/debt. Further, given that the deficit/debt can be financed easily when its size is small, implies that fiscal discipline with commitment to bring down deficit/debt will improve the manoeuvrability available to central banks while conducting monetary policy.

External Financing of GFD and its Monetary Impact

3.66 Apart from being the monetary authority, in terms of Sections 20 and 21 of the Reserve Bank of India (RBI) Act, 1934, management of the public debt of the Government of India and the issuance of new loans is vested with the Reserve Bank of India. Further, under Section 21A of the RBI Act, the Reserve Bank may undertake the debt management of states, by agreements with the state governments. Thus, in India both the debt management policy and monetary policy are vested with the same institution.

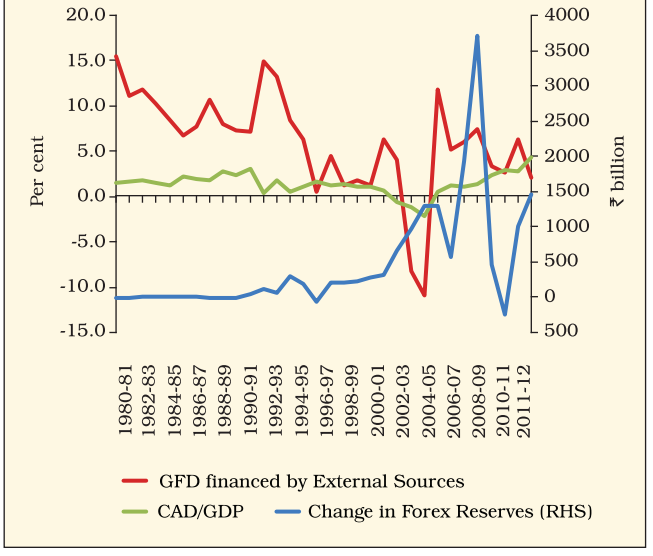
3.67 As far as the financing of deficit is concerned, it is primarily financed through internal sources in India. During the past three decades, on average, 6.1 per cent of the total GFD in India was financed using resources raised through external sources. However, over the years, the extent of external financing of GFD declined. Further, although foreign institutional investors (FIIs) are allowed to invest in government securities, the government debt held by FIIs is only a small portion of the total government debt. The loans from multilateral and bilateral creditors are other sources of external financing. Moreover, the government has not directly accessed the international capital market as a sovereign entity. Thus, the usual risks associated with such borrowing has been practically absent (GoI, 2011). Such risks on soveriegn debt have exacerbated the crisis in the euro area. Further, in India, the sub-national governments are not allowed to raise external loans on their own.

3.68 Theoretically, the financing of GFD through external sources adds another dimension to the fiscal-monetary interface through the net capital inflows. According to the Mundell-Fleming open economy model, an independent monetary policy is impossible when there is intervention in the foreign exchange market to keep the exchange rate at tolerable levels (or at a fixed rate) in the context of huge net capital inflows often resulting in appreciation of the currency. Thus, financing the GFD through external resources at higher proportions can have repercussions not only on fiscal sustainability but also on the impossible trinity, *i.e.,* open capital account, fixed exchange rate and independent monetary policy. The dependence on external finance for financing GFD has never been high and it has declined in the recent period, which is a welcome development in the Indian context. Importantly, from 2002-03 to 2004-05, the share of external financing turned negative, as high-cost external loans were pre-paid during this period (Chart III.13).

Net Capital Inflows, Market Stabilisation Scheme and its Monetary Impact

3.69 During the 2000s, India built up significant foreign exchange reserves, indicating the absorption of a part of net capital inflows by the Reserve Bank during this period. Theoretically, the

Chart III.13: External Financing of GFD Remains Limited



absorption of net capital inflows by the Reserve Bank creates reserve money, which through the multiplier effect leads to the creation of M_3 in the economy. However, the reserve money as a ratio of GDP did not show any jump during this period, despite the absorption of high net capital inflows by the Reserve Bank. The Market Stabilisation Scheme (MSS) put in place by the Reserve Bank of India and Government of India in 2004, was used to sterilise the impact of foreign exchange market intervention thus, limiting the monetary impact of net capital inflows. The interest payments on MSS bonds are borne by the government. Thus, in the process of neutralising the monetary impact of net capital inflows, fiscal costs were incurred, leading to higher gross fiscal deficit. However, fiscal policy, in this process, increased the flexibility of monetary policy rather than constraining it. In fact, the MSS stands out as an example of effective fiscal-monetary co-ordination that not only helped in monetary contraction to offset the surges in capital inflows, but also in monetary expansion through the unwinding of the MSS after the global financial crisis set in motion an economic downturn.

Internal Financing of Government Debt and its Monetary Impact

3.70 In India, more than 90 per cent of government debt is financed through internal sources. Theoretically, if the public debt is held domestically, then the risk of public debt is perceived to be low from the point of view of external sustainability. The recent experience of Portugal, Ireland, Greece and Spain, demonstrated that sizeable external holding of public debt has the potential to precipitate a sovereign debt crisis. From this viewpoint, the position of India is comfortable as the majority of India's public debt is held domestically. However, if the domestically-held public debt is excessive, it is still subject to refinancing risks and has certain monetary impacts through the channels of interest rate, crowding out and monetisation.

3.71 Theoretically, higher fiscal deficit, by appropriating a higher share of total loanable funds in the economy, may push up interest rates for the private sector. The high interest rates may reduce private sector investment and finally result in a lower aggregate supply. A shift in the aggregate supply curve to the left implies that a new equilibrium between supply and demand would be associated with a higher price. Thus, the fiscal deficit through the crowding out effect may increase the price level in the economy with a corresponding reduction in the overall output.

3.72 According to Sargent and Wallace, the resultant tight money and interest rate conditions may lead to an unsustainable debt financing process and, thus, higher inflation in the long-run. In this framework, inflation is a fiscal-driven phenomenon, and nominal monetary growth is endogenously determined by the need to finance the exogenously given deficit to satisfy the budget constraint.

3.73 Further, if the monetary authority decides to offset the impact of higher interest rates by preventing crowding out of private investment, it may have to increase the money supply. This implies a rightward shift of the LM curve with a corresponding reduction in the interest rate and an increase in the output. However, if the economy is operating at near-full employment level, the increase in money supply may not result in an increase in output; rather it may push up the price level in the short-run as the short-run aggregate supply curve is vertical.

3.74 The different theoretical arguments outlined above rest on the financing of GFD through market borrowings. In India, the share of GFD financed by market borrowings has witnessed an increase over the past three decades. The reserve money as a per cent of GDP also witnessed an increase, at a lower rate, though inflation was lower in the last decade. Notably, during the past decade almost 74 per cent of the total GFD was financed by market borrowings (Table 3.2). The technical analysis to understand the dynamics of debt, deficit and money is attempted later.

3.75 As alluded to earlier, various institutional reforms relating to the link between debt

Table 3.2: Market Borrowing, Deficits, Reserve Money and Inflation

Average	Market Borrowing as per cent of GFD	WPI Inflation	Reserve Money as per cent of GDP
1980-81 to 1989-90	26.9	8.0	13.4
1990-91 to 1999-00	37.3	8.1	14.8
2000-01 to 2009-10	73.4	5.4	15.9

management policy and monetary policy beginning 1996-97 have considerably improved monetary independence.

3.76 The monetisation issue, however, remains. Who ultimately finances government deficit depends not on who first subscribes to government securities in the primary market, but on who finally holds the government securities. In India, a portion of government securities is held by the Reserve Bank, and if this holding increases consequent to debt financing it leads to monetisation through secondary market operations. Thus, as Sargent and Wallace have pointed out, government deficits and debt will eventually be monetised over the long-run, resulting in reserve money creation. These issues were dealt with in detail in the earlier part of this chapter.

3.77 The relationship between debt-deficit dynamics and monetary management may also be affected by the wealth effect of government bonds (Kia, 2006). The proponents of the FTPL argue that in a non-Ricardian world, bondholders may not consider bonds as future taxes. Thus, as the government issues bonds to finance its deficit, the wealth of the nation is perceived to have gone up. This higher wealth effect may increase the demand for goods and services and may drive up prices in the short-run.

3.78 The theoretical possibilities outlined above are debatable, as the exact interface between fiscal and monetary policies will be conditioned by a number of factors in different country contexts. Thus, which theoretical relationship holds in a particular country depends on the macroeconomic priorities, political will, and other strengths and weaknesses of the economy. Some of the empirical evidence on the relationship between debt-deficit dynamics and monetary management is provided in Box III.5.

Empirical Analysis

3.79 In the empirical analysis, the combined debt of the central and state governments was taken for the following three reasons: First, as alluded to earlier, it is the debt management policy that has implications for monetary management. Moreover, the implications of fiscal deficit may get reflected in the debt management policy, as debt is an accumulation of past deficits. Second, it is not only the first subscription of government securities in the primary market, but also the final ownership of government securities through the secondary market operations, that matters for monetary management. Thus, taking the combined debt of the government as an explanatory variable may capture these dynamics better than the fiscal deficit of the government. Third, the combined debt is used for the reason that the central government debt alone may not be the right variable for assessing the relationship between debt and reserve money, as the state governments have also accumulated substantial amounts of debt over the past decades. Further, like the central government, state governments also approach the market to finance their deficits. The securities issued by the state governments also have SLR status in India and their debt issuances are managed by the Reserve Bank. Thus, the implications of states' debt for monetary management may be as important as the central government's debt.

3.80 To empirically analyse the dynamics of the relationship between debt and money, an auto-regressive distributed lag (ARDL) model is applied[3]. The first step in the ARDL bounds testing approach is to estimate the two equations by ordinary least squares:

3 ARDL was applied because of the different orders of integration of change in reserve money and combined debt.

Box III.5
Debt-Deficit Dynamics and Monetary Management: Empirical Evidence

In the empirical literature, there have been several attempts to understand the relationship between fiscal and monetary policies in different countries, including India. Metin (1998) and Hamburger and Zwick (1981) found that monetary policy is strongly influenced by government expenditure rather than deficits. Tekin-Koru and Ozmen (2003) found no direct relationship between deficit and inflation in Turkey. According to this study, inflation in Turkey was also not a result of seigniorage; instead both money and inflation are jointly determined. Similar results are obtained by King (1985) in 12 countries, Joines (1985) for the U.S., Karras (1994) for 32 countries and Sikken and Haan (1998) for 30 developing countries. Giannaros and Kolluri (1985) found that, in general, the government budget deficit is not a determinant of money supply growth or of inflation, either directly or indirectly. The U.S. is an exception, with some statistical evidence of direct and indirect effects of the budget deficit on inflation. Using data for the 1954-76 period, Barro (1978) concluded that it is government expenditure rather than deficits that influence monetary growth in the US. Using similar data, Niskanen (1978) found that government deficits do not have any significant effects on the inflation rate operating either through the rate of money growth or independent of it.

Cagan (1965) argues that money supply exhibits both endogenous and exogenous properties. For short-run and cyclical fluctuations, Cagan proposed a relation in which the money supply is endogenously determined by changes in the real sector. However, in the long-run, secular trend movements in money supply are independent of the real sector and are determined exogenously. Parida, Mallick and Mathiyazhagan (2001) find that fiscal deficits and money supply are influenced by each other. Further, the price level does not influence either the fiscal deficit or money supply, but rather is being influenced by both the variables.

Khundrakpam and Goyal (2008) in the Indian context find that money and real output cause prices both in the short as well as in the long-run. However, money is neutral to output. Further, the evidence shows that government deficit leads to incremental reserve money creation, even though the Reserve Bank financing of government deficit almost ceased to exist during most of the current decade. They argued that the government deficit, by influencing the level of sterilisation, impacts the accretion of net foreign assets to the Reserve Bank balance sheet and, therefore, continues to be a key factor causing incremental reserve money creation and overall expansion in money supply. Given the fact that money leads to inflation, government deficit remains relevant for stabilisation.

Reference

Khundrakpam, Jeevan K. and Rajan Goyal (2008), "Is the Government Deficit in India still Relevant for Stabilisation?", *Reserve Bank of India Occasional Papers*, Vol. 29, No. 3: 1-21.

$$\Delta X_t = a_x + \sum_{i=1}^{n} b_{ix}\,\Delta X_{t-i} + \sum_{i=0}^{n} c_{ix}\,\Delta Y_{t-i} + \delta_{x1} X_{t-1} + \delta_{x2} Y_{t-1} + \varepsilon_t$$

$$\Delta Y_t = a_y + \sum_{i=1}^{n} b_{iy}\,\Delta Y_{t-i} + \sum_{i=0}^{n} c_{iy}\,\Delta X_{t-i} + \delta_{y1} Y_{t-1} + \delta_{y2} X_{t-1} + \varepsilon_t$$

where, X_t is change in reserve money and Y_t is combined debt.

3.81 To test for the existence of a long-run relationship among the variables, an F-test for the joint significance of the coefficients of the lagged levels of the variables was conducted, *i.e.*,

H0: $\delta_{x1} = \delta_{x2} = 0$ against the alternative

H1: $\delta_{y1} \neq \delta_{y2} \neq 0$

The results were confirmed by a t-test on the coefficient of the lagged dependant variable, *i.e.,*

$\delta_{x1} \neq 0$ in the first equation of ARDL

$\delta_{y1} \neq 0$ in the second equation of ARDL

The results are provided in Table 3.3.

3.82 The existence of a long-run relationship between the variables was confirmed using both an F-test and t-test on the coefficient of the lagged dependent variable. The results of both tests indicate a co-integrating relationship between combined government debt and change in reserve money. The direction of causality is from combined government debt to change in reserve money[4]. The

4 However, it has to be kept in mind that the Reserve Bank can also alter reserve money through its liquidity adjustment facility, marginal standing facility and changes in cash reserve ratio, as has happened during recent years.

Table 3.3: Bounds Test for Co-integration between Government Debt and Reserve Money

Variables	Model	F-test			t-test	Null Hypothesis
		Test Statistic	Lower Critical Value (95 per cent)	Upper Critical Value (95 per cent)		(No Co-integration)
Δ Log RM/ Log CTD	Intercept and no Trend	10.058*	4.934	5.764	3.620**	Rejected
Log CTD/ Δ Log RM	Intercept and no Trend	7.050*	4.934	5.764	-0.671	Not Rejected/ Inconclusive

*: Significant at 5 per cent level.
**: Significant at 1 per cent level.
Where RM is change in reserve money and CTD is combined total debt.

test for reverse causality was inconclusive with a significant F statistic and insignificant t statistic. Once long-run relationship is established, the second step is to estimate the long-run coefficients. The long-run relationship was estimated using the following equation.

$$X_t = a_0 + \sum_{i=1}^{n} b_1 X_{t-i} + \sum_{i=0}^{p} \quad b_2 Y_{t-i} + \varepsilon_t$$

3.83 The lag length of the model was determined based on Schwarz information criteria. The long-run coefficient of combined government debt on change in reserve money is estimated to be significant. The short-run dynamics of the relationship was captured by estimating an error correction model associated with the long-run estimates. The error correction model associated with this long-run estimate is provided below. The estimation results are provided in Table 3.4.

$$\Delta X_t = a_0 + \sum_{i=1}^{n} b_1 \Delta X_{t-i} + \sum_{i=0}^{p} b_2 \Delta Y_{t-i} + ECT_{t-1} + \varepsilon_t$$

3.84 The error correction term obtained from the long-run relationship is negative and statistically significant, confirming the causality from combined government debt to change in reserve money. The speed of adjustment to equilibrium following a shock is quite high, with the coefficient of the error correction (EC) term at -0.99.

Table 3.4: Error Correction Model for Reserve Money

Dependent variable: log change in reserve money

Explanatory Variable	Coefficient	t-Statistic	p-value
d log CTD	-4.059	-0.843	0.406
ECM(-1)	-0.997	-4.974*	0.000

*: Significant at 1 per cent level.

VII. Concluding Observations

3.85 In this chapter, we presented anecdotal as well as formal empirical evidence that fiscal dominance on monetary policy remains to the extent that the monetary authorities have to modulate the use of various policy instruments keeping in view the financing requirements of fiscal deficit. However, the direct pressure on monetary policy has moderated as a result of institutional reforms that have been actively pursued in the area of fiscal as well as monetary management. Notwithstanding the improvement in fiscal-monetary frameworks, greater fiscal-monetary co-ordination would be needed in the times ahead. This co-ordination is important from the standpoint of inflation management, because, in the long-run, inflation leads to deterioration in the fiscal position as the expenditure response to inflation outstrips the revenue response.

3.86 The analysis in the chapter shows that on the whole government spending has been pro-cyclical. This pro-cyclicality of government expenditure can be accommodated if it is associated with a proportionate increase in revenue receipts, thereby keeping the fiscal deficit under check. In the absence of this, the pro-cyclicality of government expenditure could be risky, with higher fiscal deficit. This call for further institutional reforms to provide a more binding framework of fiscal rules that can withstand business and electoral cycles.

3.87 The empirical results also show that government debt granger causes reserve money growth in India, and the speed of adjustment to equilibrium following a shock is quite fast

with a high adjustment coefficient. This causal relationship over the period 1982-2011 may reflect the monetisation of debt by the Reserve Bank up to 1997 through *ad hoc* treasury bills and through primary subscription to government debt untill March 2006. In the subsequent period, this impact may still have persisted on account of large OMO purchases. Such fiscal dominance is particularly detrimental to overall macroeconomic stability if it leads to reserve money growth above the desired level, which is required for broad money expansion consistent with economic growth and inflation. In this context, further attention would be required in designing institutional frameworks as well as practices. To conclude, an enduring reduction in fiscal deficits can further reduce fiscal dominance and enable monetary policy to play a more effective role. It is in this backdrop that the revised fiscal roadmap following the Report of the Committee on Raodmap for Fiscal Consolidation (Chairman: Dr. Vijay L. Kelkar) assumes critical importance. The raodmap envisages lowering the GFD-GDP ratio to 3.0 per cent by 2016-17. The fiscal adjustment roadmap on the revenue account perhaps needs to bring about a quicker adjustment. The implementation of a strict rule-based fiscal regime would imrpove fiscal-monetary co-ordination and facilitate the overall macroeconomic management.

4 FISCAL OPERATIONS AND THE RESERVE BANK'S BALANCE SHEET

The Reserve Bank's balance sheet has undergone substantial transformation over the years, reflecting the shifts in the regimes of monetary policy operations and different phases of fiscal-monetary co-ordination. In the post-reforms period, the emergence of the market-based government borrowing programme, the Reserve Bank's withdrawal from the primary government securities market and substantial reduction in its contribution to various long-term funds, changed the nature of the interface between the central bank's balance sheet and fiscal policies. A surge in capital inflows added a new dimension to the balance sheet of the Reserve Bank, which not only changed the composition of assets along with associated changes in income, but also set an important milestone in the interface between the fiscal and monetary authorities, with the fisc also sharing the cost of sterilisation with the introduction of Market Stabilisation Scheme (MSS). Besides, the extent of the Reserve Bank's surplus transfer to the government and quasi-fiscal activities are other aspects that have had a bearing on the Reserve Bank's balance sheet post-reforms. Interestingly, the Reserve Bank's balance sheet shrank during the crisis year 2008-09, unlike the expansion witnessed by the central banks of several advanced economies. This is attributed to the measures taken to increase liquidity in the system through reduction in the Cash Reserve Ratio and unwinding of the government's MSS balances. The Reserve Bank's balance sheet has expanded significantly since then reflecting its liquidity management operations, aimed at strengthening the recovery process while containing inflation.

I. Introduction

4.1 A central bank, by virtue of its exclusive power to print money, is a unique financial institution. Its uniqueness also stems from the fact that it performs the functions of banker to banks and government. Its balance sheet is, thus, of particular interest from a public policy perspective. Being a descriptive account of the assets and liabilities of the central bank at any point of time, it has significant information in respect of its monetary operations as also its relationship with other major players such as commercial banks and the government. The central bank balance sheet also depicts the impact of institutional arrangements on the conduct of monetary policy operations (Hawkins, 2003). Illustratively, net central bank credit to the government will be the most noteworthy item of a central bank's assets in a fiscal regime marked by recourse to deficit financing. Similarly, when the exchange rate of an economy is characterised by a currency board arrangement, its balance sheet will reflect its operations in the foreign exchange market. In India, the multiple links between the Reserve Bank balance sheet and various sectors of the Indian economy are succinctly summarised as: *"… the balance sheet of the Reserve Bank reflects and, in a way, influences the development in the economy – the external sector, the fiscal and, of course, the monetary areas" (Reddy, 1997)*.

4.2 The inter-linkages between monetary policy operations and the Reserve Bank's balance sheet have attracted the attention of policy makers and researchers alike (e.g., Jadhav *et al.*, 2003, 2005; RBI, 2005). In the present Report, the intention is to go beyond monetary operations. In tune with the theme of the report, this chapter examines fiscal and monetary policy operations and their impact on the Reserve Bank's balance sheet. Fiscal and monetary policies are two arms of the overall macroeconomic policy and share the basic objectives of sustainable economic growth and price stabilisation. The extent of monetary and fiscal policy co-ordination is observed on several parameters, including the size and composition of the central bank's balance sheet, which are considered to be important due to the various risks faced by the central bank. The nature

of the co-ordination is also highly contextual. Apart from other factors, the level of external integration of the economy is an important determinant influencing the need for co-ordination. While the emphasis in this Chapter is on finding the inflexion points in the balance sheet of the Reserve Bank in the context of the changing relationship between the fiscal-monetary authorities, the chapter primarily delves into the more recent past since the initiation of economic reforms in the early 1990s.

4.3 The views on fiscal-monetary co-ordination in the context of a sustainable policy framework could be different under normal conditions as opposed to what may be required in a crisis. While the arguments regarding market failure, supplementary demand support and the provision of public goods may favour an active fiscal policy with the monetary policy assuming a passive role, well-functioning financial markets supported by sound government finances tend to improve the role of monetary policy. Policy responses, *viz.,* quantitative easing, monetary/fiscal stimulus measures and quasi-fiscal activities may be considered normal and necessary during a crisis as short-term measures, but need to be withdrawn at an appropriate juncture to avoid long-term distortions in the economy.

4.4 What has been the nature of the co-ordination between monetary and fiscal policies in India, as reflected in the central bank's balance sheet? What are the fiscal implications of opening up of the economy in general and capital inflows in particular that have an influence on the balance sheet of the Reserve Bank? What are the major issues relating to capital and reserves of the central bank? This chapter examines some of these issues, both in generalised as well as contextual strands.

4.5 The rest of the Chapter is organised as follows. Section II analyses the impact of fiscal operations on the central bank's balance sheet, while Section III deals with this issue in the context of the Reserve Bank's balance sheet. Various facets relating to fiscal-monetary co-ordination that have impacted the Reserve Bank balance sheet are analysed in Section IV. The recent economic crisis and its impact on the Reserve Bank's balance sheet are covered in Section V. Concluding observations are presented in Section VI.

II. Fiscal Policy and the Central Bank's Balance Sheet

A Stylised Central Bank Balance Sheet

4.6 The nature of the interaction between fiscal policy and the central bank's balance sheet can be understood from a stylised central bank's balance sheet. The link between fiscal policy and the central bank's balance sheet could come through government deposits with the central bank, or central bank's loans to the government, or the central bank's investment in government securities (Table 4.1).

4.7 In addition to the above, the profit and loss account of the central bank gets linked to the fiscal operations to the extent that the government is a recipient of profit transfer from the central bank. As far as the reflection of fiscal operations in the central bank's balance sheet is concerned, following components of the balance sheet deserve special mention.

Government Deposits

4.8 In its traditional role as a banker to the government, a central bank usually accepts government deposits, which constitutes a liability for the central bank. Changes in government deposits affect money supply and provide a useful monetary policy tool in countries where the central banks have the authority to shift deposits between their

Table 4.1: A Stylised Central Bank Balance Sheet

Liabilities	Assets
1	2
1. Currency	1. Loans to:
2. Banks' Deposits	(a) Government
3. Government Deposits	(b) Banks
4. Capital	2. Investments in
5. Reserves	(a) Government Securities
6. Other Liabilities	(b) Foreign Assets
	3. Gold
	4. Other Assets

books and those of commercial banks (for example, Canada, Malaysia and South Africa). When Asian economies faced large capital inflows before the 1997 crisis, the depositing of surplus government funds at the central bank helped to sterilise part of the rising stock of international reserves (Hawkins, 2003). The movements in government deposits can be highly volatile, leading to problems for liquidity management. There are also issues about returns to be paid on funds placed by the government.

Loans to Government/Investment in Government Securities

4.9 In a financially repressed regime, a central bank may be obligated to extend credit to the government through subscription to government paper in the primary market auctions. Such financing can be at highly concessional rates or at market-related rates with the former impacting the efficient functioning of markets and the effectiveness of monetary management. However, many countries prohibit central banks' purchase of government securities in the primary market through the enactment and implementation of fiscal responsibility legislations. Co-ordination challenges remain acute for countries that lack well-functioning financial markets and the necessary framework to pursue an effective indirect monetary policy.

4.10 In some emerging economies, it is regarded as desirable for central banks to make markets in government bonds in order to develop the markets. But in others, central banks stay away from this activity to avoid being caught with large holdings of government securities (Al-Jasser and Banafe, 2002).

4.11 A survey of central banks conducted by the BIS in 1999 found that the majority of central banks were not required, and often not allowed, to lend to governments, either by legislation or written agreements with their governments (Van't dack, 1999). Particularly strong prohibitions existed in Brazil, Chile, Peru and Poland, where lending to the government is precluded by the Constitution. It may be inappropriate to completely ban central bank lending in developing countries that have very small financial sectors, as this might prevent the government from smoothing temporary gaps between expenditure and revenue. But it is often argued that such lending should be limited and at market rates (as determined by the central bank) (Cottarelli, 1993). Thus, with a view to ensuring fiscal discipline and avoiding multitudes of problems emanating from fiscal profligacy, an increasing number of advanced as well as emerging market and developing economies (EMDEs) have adopted a rule-based fiscal responsibility framework (Table 4.2).

Investment in Foreign Securities: Sterilised Foreign Exchange Intervention

4.12 Central banks generally invest in foreign securities as part of foreign exchange reserve management. Some central banks intervene in the foreign exchange market to defend an exchange rate, which may at times involve the use of accumulated foreign exchange reserves and losses to the central bank. Further, the return from large amounts of international reserves may fall short of the cost of the central bank's domestic borrowing in the money market (Hawkins, 2003). There are cases when some central banks had to incur large losses in forward transactions to protect exporters or unhedged domestic borrowers from losses (Quirk *et al.*, 1988).

Central Bank Transfers to the Government and Capital Injections

4.13 An active monetary policy requires that the central bank balance sheet is strong and supported by an adequate capital base to withstand losses, if any, arising on account of the central bank's operations in financial and foreign exchange markets. However, central banks usually support fiscal authorities by transferring their surpluses as opposed to building up capital for such exigencies. In a few countries, central banks also pay tax to the government (Hawkins, 2003).

Table 4.2: Fiscal Responsibility Laws in Select Countries - Main Features

Country and Date	Original Law	Procedural Rules	Numerical Targets in FRL 1/	Coverage 2/	Escape Clauses 3/	Sanctions
1	2	3	4	5	6	7
Argentina: Federal Regime of Fiscal Responsibility (2004) 4/	1999, 2001	Yes	ER; DR	CG	No	Yes
Australia: Charter of Budget Honesty (1998)		Yes	-- 6/	CG	No	No
Brazil: Fiscal Responsibility Law (2000)		Yes	ER; DR	PS	Yes	Yes
Chile: FRL (2006)		Yes	BBR	CG	No	No
Colombia: Original Law on Fiscal Transparency and Responsibility (2003)	1997, 2000	Yes	BBR	NFPS	Yes	No
Ecuador: Fiscal Responsibility Law (2010)	2002, 2005	Yes	ER	PS	No	No
India: Fiscal Responsibility and Budget Management Act (2003)		Yes	BBR	CG	No	No
Jamaica: Fiscal Responsibility Law (2010)	2010	Yes	BBR; DR	CG 5/	Yes	No
Mexico (2006)		Yes	BBR	CG	Yes	Yes
Nigeria (2007)			BBR	CG	No	No
New Zealand: Public Finance (State Sector Management) Bill (2005)	1994	Yes	-- 6/	GG	No	No
Pakistan: Fiscal Responsibility and Debt Limitation Act (2005)		Yes	BBR; DR	CG	Yes	No
Panama: New Fiscal Responsibility Law (2009)	Law No. 2 on Economic Activity Promotion and Fiscal Responsibility (2002)	Yes	BBR; DR	NFPS	Yes	No
Peru: Fiscal Responsibility and Transparency Law (2003)	1999	Yes	BBR; ER	NFPS	Yes	Yes
Romania (2010)		Yes	ER	GG	Yes	Yes
Serbia (2010) FRL provisions introduced in the 2009 Budget System Law		Yes	BBR; DR	GG	No	No
Spain: Budget Stability Law (2007)	2001	Yes	BBR	NFPS	Yes	Yes
Sri Lanka: Fiscal Management Responsibility Act (2003)		Yes	BBR; DR	CG	No	No
United Kingdom: Budget Responsibility and National Audit Act (2011)	Code for Fiscal Stability (1998)	Yes	BBR; DR	PS	No	No

Notes:
1) BBR = budget balance rules; DR = debt rule; ER = expenditure rule;
2) GG = general government; CG = central government, PS=public sector; NFPS=Non-financial public sector.
3) Includes only well-specified escape clauses. In India's FRL, for example, the escape clause is very general.
4) The FRL has *de facto* been suspended since 2009.
5) Also includes public bodies.
6) These countries operate (*de facto*) rules that are however not spelt out in the FRL.

Source: Schaechter Andrea, Tidiane Kinda, Nina Budina, and Anke Weber (2012), 'Fiscal Rules in Response to the Crisis—Toward the "Next-Generation" Rules. A New Dataset', IMF Working Paper, July 2012

4.14 While profits are transferred to governments, losses are usually met by reductions in capital and reserves. At times, there is a transfer of extraordinary profits to reserves before distributing the same to the government. The Philippines is a unique example, where the government created a new central bank in 1992 by injecting capital after the previous central bank had incurred large bad debts.

4.15 There are three main issues that arise in the context of central bank reserves. The first question is whether central banks require reserves at all, given that the owner in most cases is the sovereign itself. It is widely accepted that a well-capitalised central bank is relatively more credible in a market economy, with the reserves serving as a cushion against large quasi-fiscal costs of market stabilisation, especially when the economies run large fiscal deficits. Despite the implicit sovereign guarantee, which can be invoked in case the central bank faces solvency problems, central banks in EMDEs often maintain large reserves, especially for precautionary purposes.

4.16 The second issue is what form the reserves should take in terms of its three constituents, *viz.,* paid-up capital, contingency reserves and revaluation accounts. Most central banks appear to prefer building up reserves by transferring part of their annual profits, rather than augmenting paid-up capital, while revaluation accounts are used for adjusting to prevailing market trends.

4.17 The third major question is how the central bank income should be apportioned between the central bank (*i.e.,* in the form of reserves), the government and non-government owners if part of the equity is held by private stakeholders. The government, as the "shareholder", is entitled to receive part of the total profit of the central bank, after a prudent proportion of the profit has been set aside for the capital and reserves of the central bank. There may be sound or mechanical rules governing the size of such transfers; it may be at the discretion of the central bank, at the discretion of the government, or a matter of negotiation between them. Central bank legislations often statutorily link the size of reserves to the size of the balance sheet, paid-up capital, annual surplus, or some macroeconomic variable, such as GDP or money supply. In any event, transfers to the government seldom cross 0.5 per cent of GDP, barring exceptions such as Hong Kong SAR and Singapore. Most central banks distribute over half of their profits (Kurtzig and Mander, 2003).

4.18 The size of profit transfer is an important consideration for fiscal-monetary co-ordination. Although governments typically appropriate the dominant share (often up to 90 per cent), especially given the right of seigniorage, this is often counter-balanced by parallel restrictions on the monetisation of the fiscal deficit.

Quasi-fiscal Activities of Central Banks

4.19 Central bank expenditure can be classified into three categories: (i) general administrative expenditure on wages and salaries, benefits, equipment and premises, (ii) interest payments on deposits of commercial banks with the central banks and any other central bank borrowing, and (iii) quasi-fiscal expenditure which is expenditure on activities that are additional to the central bank's monetary and exchange system responsibilities.

4.20 In many countries, central banks play an important role in fiscal policy. By undertaking financial transactions that serve the same role as taxes and subsidies, they reduce the effective size of the fiscal deficit. These so-called quasi-fiscal activities (QFAs) can have a significant allocative and budgetary impact in these countries. The majority of QFAs performed by central banks arise from their dual roles as regulator of the exchange and financial systems and as banker to the government. QFAs can involve multiple exchange rate arrangements (typically a tax on exporters and a subsidy to importers), exchange rate guarantees (a contingent subsidy to the borrower of foreign exchange), interest rate subsidies, sectoral credit ceilings, central bank rescue operation, and lending to the central government at below-market rates.

4.21 There are a variety of reasons why central banks may engage in QFAs. QFAs may allow the government to hide what should essentially be considered budgetary activities in the accounts of public financial institutions. Such QFAs may not receive equivalent legislative or parliamentary scrutiny compared to budgetary operations. Another rationale for some QFAs is that it may be more

convenient to administer them relative to budgetary operations. However, as they are not a charge on the budget, they show up in the balance sheet of the central bank. QFAs led to huge losses for the central bank of Chile in the late 1980s.

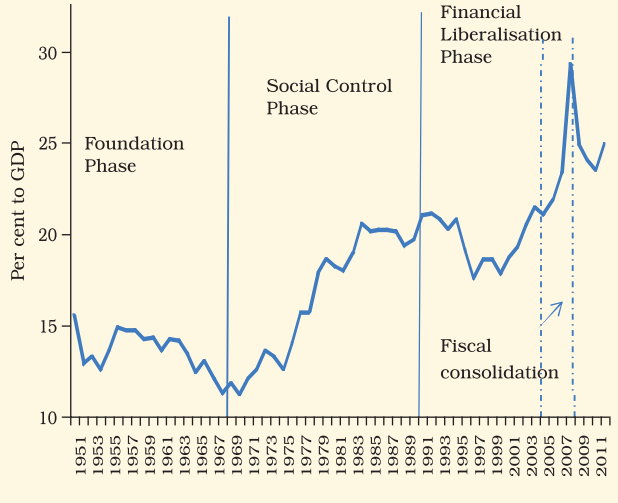
III. The Reserve Bank's Balance Sheet and Fiscal Operations

Evolution of the Reserve Bank's Balance Sheet

4.22 The Reserve Bank's balance sheet has undergone substantial transformation over the years in line with the shifts in the regimes of monetary policy operations and different phases of fiscal-monetary co-ordination. Three distinct phases can be discerned during the post- independence period – the formative phase (1951-1967), social control phase (1968-1990) and the financial liberalisation phase (1991 onwards) (RBI, 2006). While these phases have been documented extensively, for the present chapter, a quick rundown of the broad trend is presented so as to appreciate the context and evolution of fiscal operations in the balance sheet of the Reserve Bank (Chart IV.1).

4.23 During the formative phase, the Reserve Bank adopted a strategy of 'development central banking' that involved developing an institutional framework for industrial financing, extending rural credit and designing concessional financial schemes for economic development (Singh *et. al.,* 1982). The expanded role of the Reserve Bank in the nation-building process was reflected in the asset side of its balance sheet in the form of subscription to the share capital of several development financial institutions and contributions to various sector-specific dedicated development funds. To meet the growing needs of the fisc in a planned economy framework, the Reserve Bank undertook certain measures, such as dispensation of the ceiling on its investment in government securities, an increase in its advances to state governments and the automatic monetisation of government deficit through the creation of *ad hoc* treasury bills. There was a sharp draw-down of foreign exchange reserves to finance large-scale capital imports to cater to the Plan-led industrialisation process that was underway. Thus, the composition of the Reserve Bank's balance sheet witnessed a dramatic transformation, with domestic assets assuming dominance. With the depletion of foreign securities to back the currency expansion, the proportional reserve system, which required 40 per cent foreign asset backing for note issuance, was gradually replaced by a minimum reserve requirement of ₹2 billion in gold and foreign securities. The size of the Reserve Bank's balance sheet, however, declined during this phase, reflecting the gradual shift from a cash-based system to the banking channel, in keeping with the expansion of the banking network in the country.

Chart IV.1: Reserve Bank Balance Sheet Size



4.24 During the social control phase, which was characterised by bank nationalisation, directed credit and concessional financing, the entire financial system was geared to meet the objectives of the fiscal policy. The size of the Reserve Bank balance sheet increased significantly during this phase, reflecting the Reserve Bank's growing accommodation to the government to meet the latter's Plan needs as well as to face the macroeconomic challenges posed by the war and oil shocks and the use of monetary policy instruments to curb attendant inflation. With the Reserve Bank's net credit to the government

increasing to 90 per cent of the monetary base in the 1980s, the ratio of monetised deficit to GDP doubled over the previous decade. To contain the growing inflationary pressures exerted by the expansion of reserve money, the Reserve Bank had to take increasing recourse to hikes of reserve requirements, which led to an increase in bank deposits on the liability side of its balance sheet. The resultant expansion in the Reserve Bank's balance sheet was only partially offset by a sharp reduction in the currency-deposit ratio, reflecting the acceleration of financial deepening in the economy (Table 4.3).

4.25 The financial liberalisation phase, which began in the aftermath of the balance of payments crisis of 1991, was characterised by wide-ranging reforms in the financial sector. The Reserve Bank's balance sheet reflected the shift in the conduct of monetary policy and the growing integration of the economy with the rest of the world. The sizeable balance sheet expansion during the pre-reforms period continued in the first half of the 1990s. The expansion in the Reserve Bank's balance sheet on the asset side was driven by accretions to net foreign assets through its foreign exchange intervention operations to prevent the destabilising effects of large capital inflows. This was in contrast to the domestic asset-driven expansion in the earlier two phases on account of substantial increases in net Reserve Bank credit to the government. On the liability side, the expansion continued to be driven by increases in bank reserves in line with continued hikes in the CRR, as open market operations (OMOs) could only partially sterilise the surplus capital flows. With the discontinuance of *ad hoc* treasury bills and the parallel development of the government securities market, the Reserve Bank's balance sheet could be insulated from the switches in capital flows by trading the surpluses on the external account with the deficits in government account. This allowed the Reserve Bank to progressively bring down the CRR, which in turn resulted in a contraction in the size of the balance sheet during the second half of the 1990s.

Table 4.3: Evolution of the Reserve Bank's Balance Sheet - Select Indicators

(per cent)

Indicators	1970s	1980s	1990s	2000s	2010-12
1	2	3	4	5	6
1. Balance sheet size to GDP	14.6	19.6	19.6	22.5	23.9
2. Capital account* to total balance sheet size	NA	NA	13.7	20.4	26.5
3. Size of Issue Department to Banking Department balance sheet	2.0	1.0	1.1	1.1	1.1
4. Foreign Currency Assets to Domestic Assets	25.6	22.8	43.2	466.8	213.8
5. Surplus transferred to the government (per cent of balance sheet size)	1.4	0.4	1.4	1.8	0.8
6. Currency to M_3	33.2	22.8	19.4	15.7	14.5
7. CRR	6.0	15.0	9.0	6.0	4.75

*: Includes capital, reserves, provisions and revaluation accounts.
NA: Not available.
Note: Figures given in this table are end-year averages for the periods mentioned.

4.26 The Reserve Bank's balance sheet, however, again increased between 2001 and 2007, reflecting the Reserve Bank's efforts to prevent the destabilising effects of large capital inflows on the domestic economy, through intervention in the foreign exchange market. The monetary impact of large-scale foreign exchange accretion was offset by its sterilisation operations. Unlike central banks in several advanced economies, which witnessed significant expansion in their balance sheets as a result of their policy responses to the crisis, the Reserve Bank's balance sheet shrank during 2008-09. Measures to increase liquidity in the system through a reduction in the CRR and the unwinding of the government's MSS balances led to a contraction of the Reserve Bank's liabilities. There was a contraction on the asset side as well, as a result of a decline in foreign assets in keeping with the capital outflows. However, the size of the Reserve Bank's balance sheet increased significantly in the next three years – 2009-10, 2010-11 and 2011-12 – in response to its policy actions and liquidity management operations. On the assets side, there was an increase in the Reserve Bank's holding of both domestic securities, on account of open market purchases of government securities for injection of

liquidity, and foreign currency assets, due to valuation effects. On the liabilities side, the expansion of the balance sheet is explained by the rise in currency in circulation and deposits in 2009-10 and 2010-11 and currency in circulation and accretion to the Currency and Gold Revaluation Account (CGRA) in 2011-12.

Trends in the Government Account with the Reserve Bank

Government Deposits

4.27 Under Sections 20 and 21 of the Reserve Bank of India Act, 1934, the central government deposits all its cash balances with the Reserve Bank, free of interest, subject to a mutually agreed minimum. State governments also maintain minimum cash balances that are linked to the volume of budgetary transactions in accordance with mutual agreements. These balances are reflected as government deposits on the liability side of the Reserve Bank balance sheet. Surplus balances over and above the minimum balances are reinvested in central government securities with the Reserve Bank up to a pre-agreed ceiling, which reduces the investment portfolio of the Reserve Bank on the asset side. Excess balances beyond the ceiling for re-investment continue to be reflected under government deposits. During the post-reforms period up to 2001-02, government finances, in general remained in deficit, with only brief spells of surplus, mostly towards the end of the financial year. There was a transition in the pattern of central government cash balances from 2002-03, with the emergence of large surpluses (Box IV.1).

4.28 Since the 2003-04 balance sheet, government deposits also reflected the balances under the MSS account. As the funds in this account were maintained for the specific purpose of redeeming the MSS, they were not available to the government for its transactions. During 2008-09 and 2009-10, however, a part of the balances in this account were de-sequestered and transferred to the government in order to reduce the reliance on government market borrowing in the aftermath of the global crisis. Large intra-year variations in government deposits have complicated liquidity management for the Reserve Bank.

Box IV.1
Emergence of Large Surpluses in Government Cash Balances

The government balances with the Reserve Bank have witnessed large and prolonged periods of surplus since 2002-03. The main factors contributing to the surpluses were:

- Introduction of the Debt Swap Scheme (DSS) for States, which enabled them to pay their high-cost liabilities to the Centre.
- Increase in the notified amounts of treasury bill auctions between 2002-04 in order to build up government surpluses to sterilise the Reserve Bank's foreign exchange interventions.
- Surpluses of the state government, which are reflected in their investment in eligible central government treasury bills. These surpluses, in turn, are a result of:
  - Fiscal consolidation at the State level under the fiscal responsibility framework effected mainly through buoyancy in States' own tax revenues and containment of expenditures;
  - A sharp increase in the volume of devolution and transfer of resources from the Centre following the award of the Twelfth Finance Commission;
  - Buoyancy in small savings collections;
  - A shift in the sharing arrangement of the National Small Savings Fund (NSSF) proceeds between the States and the Centre from 80:20 to 100:0 between 2002-03 and 2006-07.[1]
- Improvement in government finances in 2008 prior to the onset of the crisis.
- Proceeds from the 3G and broadband auctions of the central government, during Q1 of 2010-11, in excess of the budgeted amounts.

Source: Reserve Bank Annual Reports, various issues.

1 At present, NSSF proceeds are shared between the States and the Centre in the ratio of 50:50 for 17 states /UTs and 100:0 for 13 states/UTs.

Loans and Advances

4.29 The Reserve Bank also extends loans and advances in the form of 'ways and means advances' (WMA) and overdrafts (OD), both to the central and state governments to meet their short-term liquidity mismatches.

Reserve Bank Investment in central government securities

4.30 During the post-reforms period, particularly since the second half of the 1990s, the Reserve Bank's investment in central government securities has been governed more by the conduct of its monetary policy operations than by the need to meet the borrowing requirements of the government. With the discontinuation of the Reserve Bank's primary subscription to the government securities auctions since April 2006, changes in the Reserve Bank's holding of government securities are brought about by open market purchases/sales in the secondary market, repo/reverse repo operations and reinvestment/disinvestment by the government in its own securities from cash surpluses in its account (Table 4.4).

Table 4.4: Government Transactions in Reserve Bank's Balance Sheet

(Percent of Total Liabilities/Assets)

Years	Liabilities			Assets	
	Government Deposits			Loans and Advances	Investments
	Cash	MSS	Total		
1	2	3	4	5	6
Average for:					
1990s	0.1	–	0.1	0.9	56.0
2000s	4.6	–	4.2	1.2	14.1
2010-12	0.0	0.0	6.1	0.0	24.1
2004	0.0	6.2	6.2	1.2	12.0
2005	0.1	10.5	10.6	0.1	10.0
2006	0.0	4.1	4.1	0.0	4.8
2007	0.0	8.1	8.1	2.0	8.9
2008	1.2	11.9	13.1	0.0	6.6
2009	0.0	1.6	1.6	0.0	7.6
2010	2.3	0.0	2.4	0.0	17.7
2011	0.0	0.0	0.0	0.0	22.3
2012	0.0	0.0	0.0	0.0	25.9

'–' : Not available.

Note: 1. Data are as on June 30
2. MSS account was created in 2004 to sterilise capital flows.
3. Government cash surpluses above the minimum balance and up to certain prescribed ceilings are re-invested in Government Securities and thus reduce RBI's investment in the same.

Role of the Capital Account

4.31 The Reserve Bank's capital base consists of an initial paid-up capital of ₹50 million as prescribed by Section 4 of the Reserve Bank of India Act, 1934 and a Reserve Fund as prescribed under Section 46 of the RBI Act. The original Reserve Fund of ₹50 million was created as a contribution from the central government for its currency liability. Thereafter, ₹64.95 billion was credited to this Fund by way of gain on periodic revaluation of gold up to October 1990, thus taking it to a total of ₹65 billion.

4.32 With a switch to indirect monetary policy operations since 1998-99 and rising capital flows since 2003-04, it was felt that the Reserve Bank's balance sheet needs to be sufficiently strong in order to enable it to independently undertake monetary policy actions without being constrained by balance sheet considerations. Therefore, besides the capital account and the Reserve Fund, the Reserve Bank has created certain reserves and revaluation accounts under the enabling provisions of Section 47 of the Reserve Bank of India Act, 1934 to meet unforeseen contingencies arising from market risks, even though there are no explicit provisions for maintaining such reserves. There are two reserves in the nature of provisions, *viz.,* contingency reserve (CR) and asset development reserve (ADR)[2]. The CR is maintained to strengthen the provisions meant for meeting depreciation on securities, exchange guarantees and risks arising out of monetary/ exchange rate policy operations. After being substantially eroded in the early 1990s to meet the exchange losses arising from the Foreign Currency

2 For details on these reserve accounts maintained by the Reserve Bank, refer to Report on Currency and Finance 2004-05, Chapter VIII, Box VIII.6.

Non-resident Account (FCNR(A)) scheme, the CR has been rebuilt since 1993 through the transfer of funds from the gross income and from the National Development Funds.[3]

4.33 Against the backdrop of the changing composition of the Reserve Bank's balance sheet and the evolving domestic and international environment, an informal Group set up by the Reserve Bank (Chairman: V. Subramanyam) in 1996-97 proposed a cover of 5 per cent of total assets for volatility in prices of domestic and foreign securities because of monetary/ exchange rate policy compulsions; 5 per cent for revaluation of foreign assets and gold; and 2 per cent for systemic risks and requirements relating to central bank development functions, internal frauds, unforeseen losses, *etc*. In pursuance of the recommendations of the Group, a medium-term target was set for achieving a CR of 12 per cent of assets by June 2005, with a sub-target of one per cent of assets for the ADR within the overall target.

4.34 The Reserve Bank set up the ADR in 1998 to meet internal capital expenditure and investments in subsidiaries and associate institutions. With a view to separating the central bank's function as the owner of banks/institutions from its role as regulator, as recommended by the Narasimham Committee, the Reserve Bank has progressively divested its holding in subsidiaries that it regulates. Accordingly, the Reserve Bank transferred its entire stake in the State Bank of India and 99 per cent of its stake in NABARD to the Government of India in 2007 and 2010, respectively. In line with these developments, the transfer to the ADR from the gross income is now mainly done to meet the Bank's capital expenditure. The target of 12 per cent was almost achieved in 2009 but there has been a fallback since then.

4.35 The Reserve Bank also maintains revaluation accounts to insulate the balance sheet from prevailing market trends. From October 1990, the valuation gain/loss on gold has been booked in the Exchange Fluctuation Reserve (EFR), renamed the Currency and Gold Revaluation Account (CGRA), which also includes gains/losses on valuation of foreign currency assets. The EFR was also used to replenish the Exchange Equalisation Account (EEA), to meet, *inter alia*, the exchange losses on an accrual basis in respect of liabilities under schemes involving exchange guarantees provided by the Reserve Bank. With the Reserve Bank no longer giving exchange guarantees and winding up schemes that enjoyed such guarantees, the balances in the EEA have come down over the years. At present, balances in EEA represent provision for exchange losses arising from forward commitments.

4.36 In 2009-10, Reserve Bank effected a change in its accounting policy for valuation of foreign dated securities which has implications for the size of the Reserve Bank's profits. Accordingly, foreign dated securities other than treasury bills are being valued at the market price prevailing on the last business day of each month and the net appreciation/ depreciation, as the case may be, is being transferred to a newly created Investment Revaluation Account (IRA). Further, discount/premium, if any, is now being amortised on a daily basis over the remaining period till maturity.[4] As depreciation is not adjusted against current income under the new accounting policy as was done earlier, the profits of the Reserve Bank, and by extension, the surplus transferred to the government, would be higher than in the pre-accounting change scenario.

4.37 While the share of capital and reserves in the total liabilities has been declining over the years, the share of provisions and revaluations has been rising in line with the increased risks in the operations of the central bank in a market-oriented and globalised environment (Table 4.5).

3 In 1992, the practice of transferring large sums to the Statutory Developmental Funds out of the surplus income of the Reserve Bank was discontinued, and the unutilised balances were also transferred to the CR from 1998 to strengthen the Reserve Bank's internal reserves.

4 Hitherto these securities were valued on the basis of lower of book value or market price (LOBOM) prevailing on the last business day of each month wherein depreciation was adjusted against current income and appreciation was ignored. Discount/ premium, if any, was not amortised.

Table 4.5: Reserve Bank's Capital Base

(Per cent to Total Assets)

Year	Capital Account		Provisions		Revaluation Accounts			Total
	Capital	Reserves	Contingency Reserves	Asset Development Reserves	Currency and Gold Revaluation Account	Exchange Equalisation Account	Investment Revaluation Account	
1	2	3	4	5	6	7	8	9
1935	2.1	2.1	–	–	–	–	–	4.2
1951	0.3	0.3	–	–	–	–	–	0.6
1971	0.1	2.6	–	–	–	–	–	2.7
1991	..	5.3	4.5	–	2.9	4.4	–	17.1
1995	..	3.0	1.9	0	3.4	1.2	–	9.5
2002	..	1.4	10.7	1.0	11.2	..	–	24.3
2008	..	0.4	8.7	0.9	11.2	..	–	21.2
2009	..	0.5	10.9	1.0	14.1	..	–	26.5
2010	..	0.4	10.2	0.9	7.7	..	0.6	19.8
2011	..	0.4	9.4	0.9	10.1	..	0.2	21.0
2012	..	0.3	8.8	0.8	21.4	0.1	0.6	32.0

'–': Not available / applicable. .. : Negligible

Source: Reserve Bank Annual Reports, various issues.

4.38 Although the recent crisis did not lead to erosion in the capital base of the Reserve Bank, given the stable build-up of provisions to safeguard against growing risks, several central banks around the world faced problems on their capital front (Box IV.2).

Box IV.2
Central Bank Capital: Issues and Perspectives

Though central banks, with their special status, do not require large amounts of capital, they generally prefer to have at least positive capital on their balance sheet. Views differ on the issue of financial soundness (in terms of capital held) of central banks. Some argue that adequacy of capital base of central banks is immaterial as central banks have the ability to print money to recapitalise them through seigniorage. Ultimately what matters are the institutional arrangements in place (*i.e.*, recapitalisation agreements with the Treasury) and the consolidated fiscal position (*i.e.*, fiscal ability to recapitalise the central bank). Many central banks have operated with negative capital for years. The central bank of Chile, despite carrying negative capital for several years, was considered highly credible and successful in maintaining inflation under control. What is required is a healthy consolidated government fiscal position. However, this argument has generally been contested on two fronts. First, even though central bank losses can be offset by future seigniorage, this would conflict with the goal of domestic price stability. Second, and more important, political economy reasons reinforce the need for central banks to be cautious about the health of their balance sheets. To minimize the need for transfers from the Treasury, governments may exercise greater oversight, which undermines central bank independence. Empirical evidence also supports the fact that central bank financial strength matters for the conduct of monetary policy. Large interest rate deviations from optimal policy can be explained to some extent by central bank balance sheet weaknesses (Adler, 2012). The dependence on the government for funding support could undermine the credibility and goal of independence of a central bank.

Central bank capital assumes importance on the back of several cases of losses incurred by central banks and the absence of specific legal provisions for the treatment of losses or rules to cover these losses. Sweidan (2011) identifies the reasons for central bank losses in 17 countries including Brazil, Chile, Indonesia, Philippines, South Korea, Thailand, and Uruguay. He holds open market operations using central bank securities as the dominant cause of central bank losses in these countries, though exchange rate fluctuations, foreign exchange revaluation and the interest differential between domestic liabilities and foreign assets also emerge as important reasons for central bank losses.

The latest global economic crisis has brought to the fore the issue of central bank capital and reserves in the backdrop of the 'lender of last resort' function played by central banks in advanced economies (Horakova, 2011). Keeping in view the risk factor associated with the role of central banks as 'lender of last resort', the losses that central banks may face from their unconventional policy measures and the

(contd...)

(...concld)

financial stability responsibility, there is a re-thinking on the issue of capital buffers for central banks.

For example, the Swedish government changed its policy stance after the crisis. Unlike its pre-crisis stance that a central bank does not need a lot of capital, after the crisis the capital level of the Riksbank was increased *vis-a-vis* the pre-crisis levels. The reason was that the central bank has to hold more dollar-denominated instruments than before to perform its lender of last resort function and fund these holdings.

Recognising the increasing risks due to volatility in foreign exchange rates, interest rates and gold prices, as well as credit risk, the European Central Bank (ECB) almost doubled its subscribed capital since December 2010, from 5.76 billion to 10.76 billion. Market participants viewed this as an attempt to create a buffer to cover potential losses from its euro area sovereign bond purchase programme, and interpreted this as a signal of the strengthened credibility of the ECB. The ECB does not have the option of going to a single European fiscal authority and the capital of the ECB comes from the national central banks of all European Union member states.

Although there is little consensus on the appropriate level of central bank capital, yet some qualitative distinction needs to be made between capital losses arising on account of revaluation of foreign-exchange holdings when the domestic currency strengthens and those which can be attributed to quasi-fiscal activities (QFAs). QFAs are defined as activities carried out by a central bank with an effect that can, in principle, be duplicated by budgetary measures in the form of an explicit tax, subsidy, or direct expenditure The experience of the Czech National Bank (CNB) falls in the first category. The erosion of capital of the CNB, particularly around the mid-2000s, stemmed mainly from the strengthening in the market value of its own currency liabilities. However, the central bank's seigniorage income remained sufficient, providing confidence that its capital would be rebuilt over time. BIS has also been supporting the CNB's position. The ECB with its eurozone bonds purchase programme belongs to the second category. The latter is relevant to central bank's role as lender of last resort. The capital requirements are expected to be larger for central banks entrusted with quasi-fiscal activities to ensure that any potential loss arising from such activities does not interfere with their monetary policy objectives. Such quasi-fiscal crisis measures also highlight the need for a rethink and discussion with the government on capital buffers or loss-sharing arrangements. If allocations take place when gains are recorded but there is no transfer from the government when the central bank posts losses, then this could entail the risk of running down the central bank's capital.

References

Adler Gustavo, Pedro Vastro and Camilo E.Tovar (2012), "Does central bank capital matter for monetary policy?", IMF Working Paper, February.

Horakova, Martina (2011), "Central Bank Capital Levels: Do They matter and What can be done?" *Central Banking Journal*, June 10.

European Central Bank (2010), *Convergence Report 2011,* available at http://www.ecb.int/

Sweidan, Osama D. (2011), "Central bank losses: causes and consequences", *Asian-Pacific Economic Literature,* Volume 25, May.

IV. Fiscal-Monetary Interface and the Reserve Bank's Balance Sheet: Some Issues

4.39 Chapter 3 has provided in detail the fiscal-monetary interactions since Independence and its impact on the effective operations of any central bank. It may be noted that the fiscal-monetary interface also has a direct bearing on the central bank balance sheet. During the pre-reforms period, the strategy of neutralising the monetary impact of deficit financing on the asset side with higher CRR on the liability side began to expand the Reserve Bank's balance sheet as a proportion to GDP from the mid-1970s. The Reserve Bank's accommodation to the government increased significantly, with the net RBI credit to the government accounting for over 90 per cent of reserve money in the 1980s. The Reserve Bank often expressed concern about fiscal deficit and its impact in terms of excess liquidity creation and reserve money. This concern was reflected in the Chakravarty Committee Report (1985), which prompted the government to modify the definition of budget deficit so as to better reflect the monetisation of the budgetary deficit. Post reforms, the move from *adhoc* treasury bills to WMA and finally to a Fiscal Responsibility and Budget Management (FRBM) framework in 2003 has freed the monetary policy and hence, the central bank balance sheet from fiscal deficit's straitjacket. Notwithstanding this, there are issues linked to fiscal-monetary interface in the post-reforms period, particularly linked to the

Reserve Bank's role of being a banker and debt manager of the government, that have a direct/ indirect bearing on the Reserve Bank's balance sheet. Some of these aspects are analysed below.

Performance of the Monetary Targeting Framework

4.40 Following the Chakravarty Committee's recommendations, Indian monetary policy adopted the framework of monetary targeting with feedback. This, coupled with other policy decisions relating to the financing arrangements for the central government, eased the impact of fiscal pressures on the Reserve Bank's balance sheet. The share of net RBI credit to the central government in the overall monetary base, which had declined from about 95 per cent in the 1980s to 65 per cent in the 1990s, declined further to only 12 per cent in the 2000s. It may be noted here that even though the monetary targeting framework could not accomplish the targets *per se* on most occasions, it succeeded in generating consciousness to undertake fiscal consolidation. This was in sharp contrast to the earlier situation characterised by automatic monetisation when deviations from the target had remained significant. In the 2000s, while the dominant role of fiscal expansion in monetary expansion gradually faded, capital flows took centre-stage, keeping the deviations significant, albeit lower than that of the monetary targeting regime. (Box IV.3).

Box IV.3
Performance of Monetary Targets (pre-1998) and Indicative Projections (post-1998) during the Multiple Indicator Approach Period

The link between fiscal deficit and reserve money creation, and accordingly the RBI balance sheet, was more prominent in the 1980s and the 1990s. Despite the adoption of formal monetary targeting in 1985, no specific monetary targets were set during the period 1985-90, except for fixing a ceiling linked to the average growth of broad money (M_3) in previous year(s). This was because there continued to be a large overhang of excess liquidity due to primary money creation. The Reserve Bank had no control over its credit to the central government, which accounted for the major chunk of incremental reserve money. The Reserve Bank could at best set limits on the secondary expansion of money through instruments, such as the cash reserve ratio (CRR), statutory liquidity ratio (SLR) and selective credit controls. Despite these measures, money supply growth remained high, which contributed to inflation.

M_3 growth during 1991-92 to 1994-95 was off the target on average by more than 5 percentage points. Along with fiscal expansion, this was attributed to larger-than-projected foreign exchange accruals and statistical factors due to year-end and fortnight-end bulges. The years of success were immediately preceded by years of sharp increases in money supply. The first few years of successful monetary targeting in the 1980s (1985-86, 1987-88 and 1990-91) were accompanied by a lower rate of expansion in both net RBI credit to the central government and net foreign exchange assets of the banking sector. In spite of the higher expansion in net RBI credit to the central government, the next year of success (1995-96) was rendered possible due to substantially lower expansion in the net foreign exchange assets of the banking sector. During 1997-99, the increase was due to a substantial expansion of domestic credit to both, the government and commercial sectors, and an increase in the net foreign exchange assets of the banking system.

The pressures on monetary expansion that emanated from the monetisation of fiscal deficit during the 1980s and early 1990s gradually gave way to the increasingly important role of capital flows in determining reserve money expansion in the 2000s. In the absence of restraint over capital inflows, the success of monetary targeting became contingent on fiscal adjustment. While in the early part of the 2000s (2001-02 and 2002-03), broad money slowed down in consonance with real GDP growth, money supply rose above indicative projections persistently through 2005-07 on the back of sizeable accretions to the Reserve Bank's foreign exchange assets and a cyclical acceleration in credit and deposit growth, particularly the latter, in 2007-08. Since 2006-07, when the Reserve Bank stopped subscribing to primary issuance of government securities, the fiscal impact on reserve money expansion has been limited. In the crisis year of 2008-09, there was a significant increase in the fiscal deficit due to fiscal stimulus measures that led to periodic upward revisions in the M_3 target. Though M_3 growth increased during the year, it ended the year close to the indicative projection of January 2009.

Looking at the degree of accuracy of the M_3 growth projections as quantified using Root Mean Square Error

(contd...)

(...concld)

(RMSE) and normalising it by the average actual M_3 growth for the monetary targeting period and post 1998-99 period (see table), it is observed that the gap between the target and actual M_3 growth remained high at above 20 per cent. There has been a reduction in the gap between the M_3 indicative projection and the actual in the post-1999 period, particularly after the quarterly assessments started in 2005-06. Thus, while large-scale monetisation of the government deficit and, to some extent, capital flows explained the large deviations observed in the monetary targeting regime, it is these deviations that underscored the importance of and urgent need for fiscal consolidation. In the 2000s, while the dominant role of fiscal expansion in monetary expansion gradually faded, capital flows took centre-stage, keeping the deviations significant, *albeit* lower than that of the monetary targeting regime.

Table: Growth in M_3 – Actual *vs* Projection

Period		Average actual M_3 growth (per cent)	RMSE of M_3 growth projection (per cent)	RMSE/Average Actual M_3 growth (per cent)
1985-86 to 1998-99		17.5	3.7	21.1
1999-2000 to 2011-12	Using April Projection	16.5	2.7	16.4
	Using January projection*	16.5	2.3	13.9

* The Reserve Bank started making quarterly projections since 2005-06.

Note: 1. Where the projection is a range, the average of the range has been used.
2. Deviations between actual and projected could also be due to financial innovations and instability in the presumed relationship that underpins current M_3 projection.

References

Mohanty, Deepak and A. K. Mitra (1999), "Experience with Monetary Targeting in India", *Economic and Political Weekly*, January 16-23.

Mohanty, Deepak (2010), "Monetary Policy Framework in India: Experience with Multiple Indicators Approach", *RBI Bulletin*, February.

Net Market Borrowings of Central Government

4.41 Following the enactment of the Fiscal Responsibility and Budget Management (FRBM) legislation, 2003, the Reserve Bank ceased to act as an underwriter of last resort in the government's issuances. From April 2006, as stipulated by the FRBM Act, the Reserve Bank's withdrawal from the primary market was operationalised. As the Reserve Bank continued to intervene in the secondary market, OMOs became a key instrument for monetary and public debt management, thereby necessitating a re-orientation through a review of processes and technological infrastructure consistent with market advancements.

4.42 In performing the role of banker to the government, the Reserve Bank manages the market borrowing programme of the government in tune with the liquidity requirements of the economy. Under this arrangement, the overall bank credit to the government is decided *a priori* in line with the overall monetary and macroeconomic scenario. Of course, how best the government adheres to the borrowing requirements is critical in determining the credit availability for the commercial sector in a growing economy. Given the SLR commitment on the part of banks, this also determines the net RBI credit to the government through investment in government securities, in turn impacting the reserve money and the Reserve Bank balance sheet.

4.43 Looking at the net market borrowing of the government during the post-FRBM period, it is observed that prior to the crisis the net market borrowings of the central government had generally remained in line with what was indicated by the Reserve Bank in the backdrop of monetary projections and as projected in the Budget (Table 4.6). During 2008-09, the actual market borrowings substantially exceeded the projected levels (both the Reserve Bank's indicative projections and the budgeted amounts) because of the fiscal stimulus measures that had to be undertaken in the wake of the financial crisis. The budgeted and actual net market borrowings were substantially higher than the Reserve Bank's projection in 2009-10 due to the continuation of the fiscal stimulus measures.

Table 4.6: Net Market Borrowings of Central Government* - Projected *versus* Actual

(₹ billion)

Year	Net Market Borrowings (indicated by the Reserve Bank)	Net Market Borrowings (indicated in the Budget)	Actual Net Market Borrowings
1	2	3	4
2006-07	1,100	1,138 460 (MSS borrowing)	1,104
2007-08	1,230	1,096 100 (MSS borrowing)	1,318
2008-09	1,130 1,500 (MSS borrowing)	1,006 298(MSS borrowing)	2,336#
2009-10	1,404 (if MSS is rolled over) 2,004 (if there is no MSS rollover) (Difference = 600=MSS)	3,980#	3,984#
2010-11	3,004	3,450	3,254
2011-12	3,580	3,430	4,364

* : Net market borrowings through dated securities.
# : Including MSS de-sequestering.
Source: Budget documents and RBI.

Although the budgeted net market borrowings for 2010-11 was close to that projected by the Reserve Bank, the actual borrowings were substantially lower due to the accumulation of large cash balances in the wake of one-off receipts from 3G spectrum auctions. During 2011-12, the net market borrowings presented in the Budget was broadly in line with that projected by the Reserve Bank, but the actual borrowings far exceeded the estimates due to large fiscal slippages due to the economic slowdown and overshooting of subsidies. This indicates that although there has been significant improvement in effective co-ordination between the Reserve Bank and the government, global and domestic uncertainties have impacted the outcome as reflected in the actual net market borrowings.

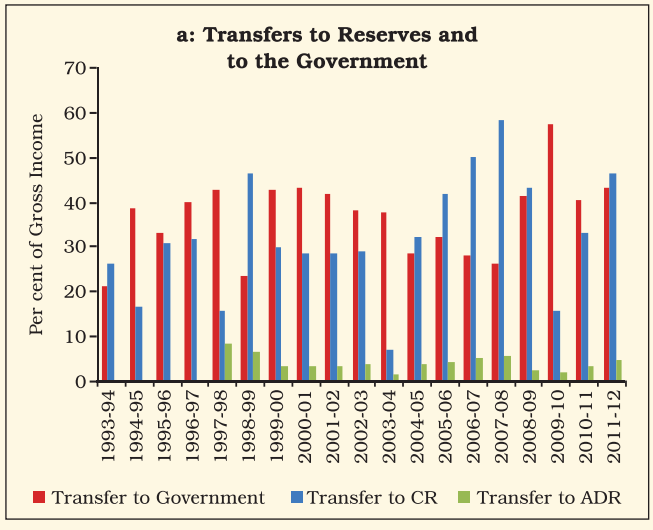
Transfer of Surplus from the Reserve Bank to the Central Government: Strengthening of Reserve Bank Balance Sheet

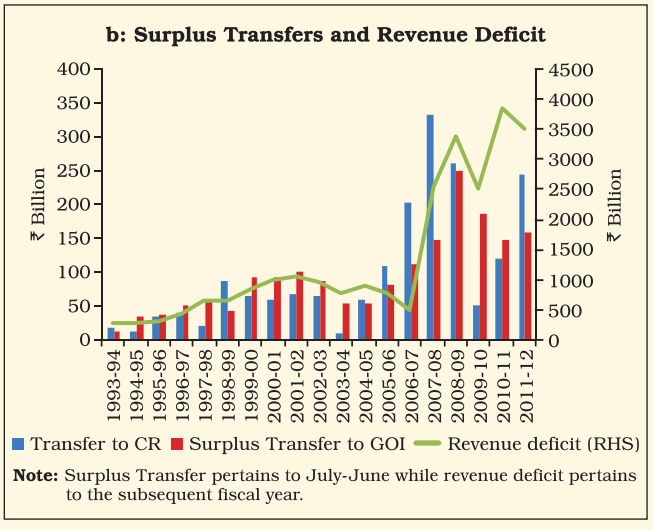
4.44 The transfer of surplus by the Reserve Bank to the government is determined by the magnitude of surplus generated by the Reserve Bank and the proportion that would be retained in its balance sheet. During the pre-reforms period, the Reserve Bank's surplus transfer to the government steadily declined, reflecting the impact of the social control of banking. During the post-reforms period, the Reserve Bank's surplus fluctuated in response to the shift in the monetary policy regime. Factors, such as substantial reduction in allocations to national funds from 1992 onwards (a token annual contribution of ₹10 million for each fund), acquisition of government securities at market-related interest rates, which were much higher than the earlier low-yielding *ad hoc* treasury bills, and transfer of quasi-fiscal cost (arising from exchange rate guarantees) to the government, played an important role in profit transfer during this period. However, the Reserve Bank's surplus transfer since the second half of the 1990s was negatively impacted by the decline in interest rates on government securities and depreciation in the investment portfolio following the turnaround in the interest rate cycle in 2004-05. Besides, surplus transfer was also affected by the sharp increase in the share of foreign assets in the total assets of the Reserve Bank and the resultant impact on interest income due to lower earnings on these assets on the one hand, and higher allocations to the contingency and asset development reserves in order to strengthen the balance sheet on the other. The decline in the surpluses on account of the above factors was partially offset by (a) higher interest earnings from the conversion of the 4.6 per cent special securities (created earlier from *ad hoc* and tap treasury bills) into marketable securities carrying higher interest rates and (b) a decline in interest payments on CRR balances due to a sustained cut in CRR rates up to 2003, delinking of interest payments on eligible CRR balances from the Bank Rate from 2004 and a progressive reduction in the interest on CRR balances before its ultimate discontinuation from March 2007.

4.45 Surplus transfer from the Reserve Bank has emerged as an important source of non-tax revenue for the central government, contributing as much as 21.5 per cent of the total non-tax revenue of the central government in 2009-10. The share of the

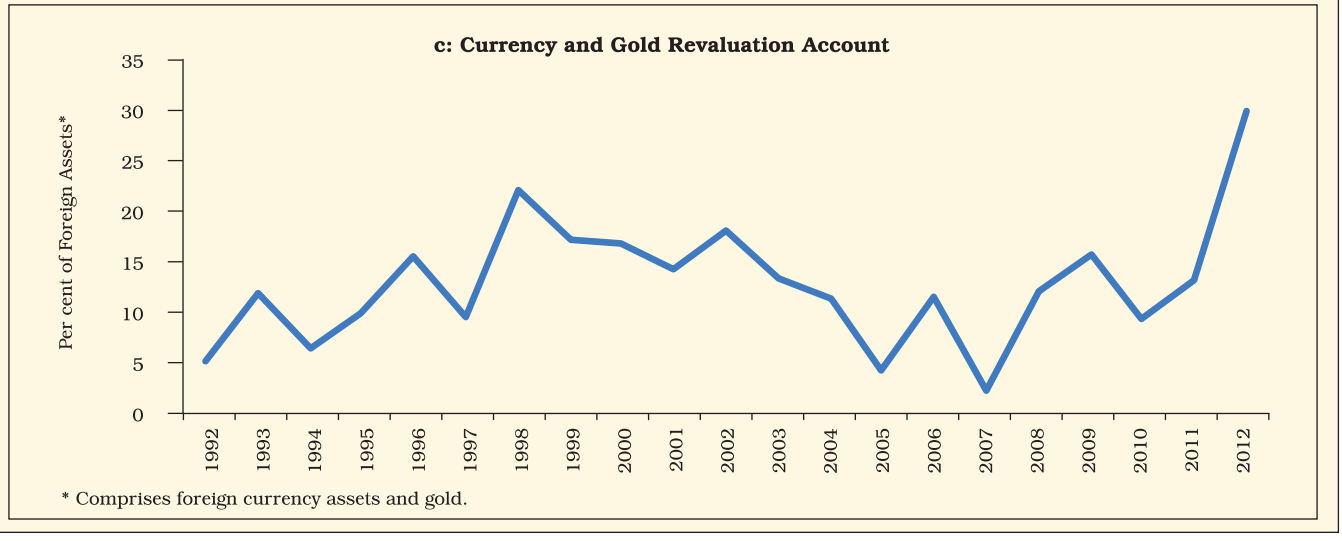
Reserve Bank's surplus transfer to the government in total non-tax revenue increased from 3.8 per cent in the 1980s to 8.5 per cent in the 1990s and further to 16.2 per cent in the 2000s. It constituted 12.1 per cent of the centre's non-tax revenue in 2011-12. The issue of retaining or transferring central bank surpluses has not been settled. As discussed earlier, the Reserve Bank has set a target of 12 per cent of total assets for the CR and ADRs, and has been pursuing a pro-active policy of strengthening the CR, particularly after the latter was depleted in the early 1990s. Transfers to the CR as a proportion of gross income were higher than the surplus transfer to the government in 8 out of the 19 years since 1993-94 (Chart IV.2). Since the enactment and implementation of the FRBM Act, transfers to the reserves have been generally higher than the transfers to the government even during some of the years when revenue deficit had increased. However, given the expansion of the balance sheet and the increased risks from the compositional shift to foreign assets, the need to strengthen the balance sheet cannot be over-emphasised. The currency and gold revaluation account as a proportion to foreign currency assets and gold has exhibited considerable volatility, particularly in recent years. Sharp fluctuations in gold and foreign currency assets have implications for the profitability of the central bank and hence the surplus

Chart IV.2: Transfers to the Reserves and to the Government





Note: Surplus Transfer pertains to July-June while revenue deficit pertains to the subsequent fiscal year.



* Comprises foreign currency assets and gold.

transfers to the government.[5] The CR would, therefore, have to be sufficient to make good any losses the central bank may suffer due to volatility in international markets. Thus, there may be a need to revisit the 12 per cent target in light of the growing size of the balance sheet and dominance of foreign currency assets.

Seigniorage

4.46 The role of seigniorage in the central bank balance sheet has engaged the attention of researchers over the years (Box IV.4). Seigniorage refers to the profit from money creation and, thus, is a way for governments to generate revenue without levying conventional taxes. Three concepts of seigniorage are generally employed in the literature: (i) the opportunity cost concept (also called fiscal seigniorage), which is measured in terms of the net interest earned on the central bank's reserves, (ii) monetary seigniorage, which is measured in terms of change in the monetary base over a year after deducting the costs that arise from the

Box IV.4
Seigniorage and Central Bank Profits

Seigniorage is the profit that accrues to central banks by virtue of their unique position of paying little or no interest on two of their major liabilities, *viz.*, notes in circulation and banks' deposits with them. In other words, seigniorage is the revenue from the interest-free credit the central bank obtains through the creation of the monetary base minus the cost of supplying the monetary base. It is also defined as the opportunity cost the government has to pay if it exchanged the monetary base against interest-bearing debt (Baltensperger and Jordan,1998). Drazen (1985) defines seigniorage as the total revenues associated with money creation, which is measured as the sum of the revenue from assets purchased due to money creation (after netting out that part of revenue used to keep assets constant) and the revenue from current expansion of money supply in real per capita terms. In other words, seigniorage according to this definition refers to the interest earned on central bank reserves minus losses (gains) due to an increase in the GDP velocity of the monetary base.

Seigniorage arising from note issuance is calculated as the notes in circulation (less the cost of printing and distributing them) multiplied by the market interest rate, which is the potential rate of return on central bank assets. Seigniorage accruing from bank balances with central banks arises from funds banks have to hold with the central banks to meet their reserve requirements, either as interest-free balances or at below market interest rates. A study done in the early 2000s shows that currency seigniorage has declined in several emerging market economies in line with the prevalent inflation rate (Hawkins, 2003).

A central bank functioning in a closed economy has complete monopoly over the creation of liquidity and money, and hence would need no liquidity reserves. It can then hold its entire portfolio in government debt, which has neither the default risk nor the currency risk. Interest rates on government debt provide a useful benchmark for measuring seigniorage. In reality, central banks face competition from substitute sources of liquidity and money, which would lead to shifts in the demand for domestic currency. Central banks would, therefore, have to hold reserve assets in the form of international reserves and gold to ensure the credibility and reliability of its money. Central bank profits, thus, depend on the investment profile of the central bank assets. These assets can have varying degrees of risk, such as currency risk (in the case of investments in foreign assets), market risk (for both domestic and foreign assets) and default risk (for lending to private sector and foreign countries). Apart from foreign assets and non-interest bearing gold, other factors could lead to a deviation in the central bank profits from the benchmark seigniorage measured in terms of its investments only in domestic sovereign debt. These include operating costs, which reduce profits; subsidised lending to domestic firms; interest-free credit to governments and interest rate fluctuations on long-term investment.

References

Baltensperger, Ernst and Thomas J. Jordan (1998), "Seigniorage and the Transfer of Central Bank Profits to the Government", *Kyklos*, Vol. 51, 73-88.

Drazen A. (1985), "A General Measure of Inflation Tax Revenues", *Economics Letters*, Vol. 17, 327-330.

Hawkins, John (2003), "Central Bank Balance Sheet and Fiscal Operations", *BIS Papers* No. 20, October.

5 If the balances in CGRA account get wiped out due to sharp fluctuations in gold and foreign currency assets, the losses on revaluation will have to be made good by drawing on the CR. In case the CR turns negative, it has to be replenished by drawing from the income for that year which, in turn, can affect the profitability of the central bank.

creation of the monetary base, and (iii) the inflation tax concept which is measured as the product of the inflation rate and the monetary base. Each of these three approaches has its limitations. While the 'tax base' for seigniorage in all three approaches is the stock of monetary base, the assumed 'tax rate' differs in each case. The opportunity cost approach ignores the effects on seigniorage due to changes in base velocity. The monetary approach ignores the effects due to the fact that the real rate of interest and the rate of growth of GDP may differ from each other, and the inflation tax approach ignores both the value of the real rate of interest and the effects due to changes in base velocity (Hochreiter and Rovelli, 2002). Thus, in practice, each of these approaches to seigniorage would yield a different result.

4.47 The choice of an appropriate measure of seigniorage would depend on the purpose for which it is used and the nature of the economy it is computed for. The concept of inflation tax is more applicable for use in economies where hyperinflation is an issue and where the central bank is a major financier of government deficit. Since both monetary seigniorage and the inflation tax approach neglect the role of real interest rates in the generation of seigniorage, it would be more useful to employ the opportunity cost concept in computing seigniorage for a country like India as this concept is similar to the accounting definition of seigniorage, *viz*., the net interest accrued to central bank reserves.

4.48 Using the methodology adopted by Hawkins (2003), which employs the opportunity cost concept for separately measuring currency seigniorage and seigniorage from bank reserves, the seigniorage for India has been computed as follows:

Currency seigniorage, $C = (c-g)*r - p$;

where c = notes in circulation, g = gold holdings of the central bank, p = cost of printing notes[6], *i.e.,* security printing and r = potential rate of return earned on currency weighted by the share of domestic assets and foreign assets of the issue department in total assets of the issue department, *i.e.,* $r = sDA_{id}*iDA + sFA_{id}*iFA$. Here sDA_{id} = share of domestic assets of the issue department (net of gold) in total assets of the issue department, iDA = weighted average yield on central government securities (on financial year basis), sFA_{id} = share of foreign securities held in issue department to total assets of the issue department and iFA = earnings on foreign assets as given by the Reserve Bank.[7]

4.49 As notes in circulation are the liability of the central bank, this has been taken into account instead of currency in circulation, which also includes coins that are the liability of the government. Gold holdings (as reflected in the issue department balance sheet of the Reserve Bank) have been netted out because it yields no return.

Seigniorage on bank reserves, B, is calculated as $b*(r'-i')$;

where b = bank reserves, r' is the potential rate of return earned on bank reserves weighted by the share of domestic assets and foreign assets of the banking department in total assets of the banking department, *i.e.,* $r' = sDA_{bd}*iDA + sFA_{bd}*iFA$, where sDA_{bd} = share of domestic assets of the banking department in total assets of the banking department and sFA_{bd} = share of foreign assets in the banking department to total assets of the banking department.

i' = effective interest rate paid by Reserve Bank (up to March 2007[8]) on deposits of scheduled commercial banks (which account for over 98 per cent of the total deposits).

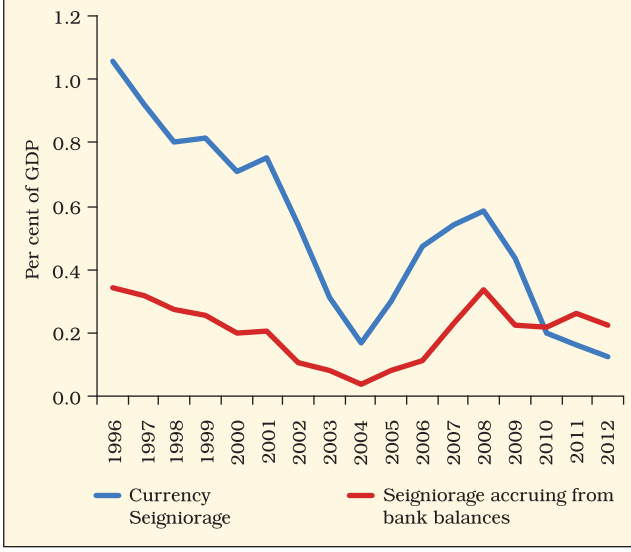
4.50 Both currency seigniorage and seigniorage on bank reserves, relative to GDP, declined during the 1990s, due to the decline in domestic and foreign interest rates. The increase in seigniorage revenue during 2000-01 is attributable to the sharp increase

6 Includes security printing and remittance of treasure.
7 Actual earnings on foreign assets were taken instead of potential returns as a benchmark return on these assets was difficult to arrive at without information on the portfolio of foreign investment of central bank assets which is not disclosed.
8 The Reserve Bank discontinued the practice of remunerating CRR balances from the fortnight beginning March 31, 2007.

in earnings from foreign assets, reflecting the significant rise in international interest rates during the first half of the year coupled with the increasing share of foreign assets in the total assets of the Reserve Bank. Seigniorage revenue from currency and bank reserves again increased sharply between 2004 and 2008 (Chart IV.3). Currency demand increased during this period, reflecting increased transaction demand in the face of high growth. The seigniorage from bank reserves increased on account of the combined effect of an increase in the aggregate deposits with banks as well as counter-cyclical hikes in reserve requirements.

4.51 The sharp fall in international interest rates since the onset of the crisis in 2008 and its impact on earnings from foreign assets affected seigniorage revenue. Thus, the currency seigniorage-GDP ratio continued to decline despite an increase in currency demand. The reduction in CRR from the peak of 9 per cent in August 2008, as a policy response to the global crisis, resulted in a fall in seigniorage on bank balances, which had started rising again following the hikes in CRR since February 2010. Seigniorage revenue from bank reserves marginally increased in 2010-11 due to the increase in the share of and returns on domestic assets but declined in 2011-12 due to cut in CRR.

Chart IV.3: Trends in Seigniorage

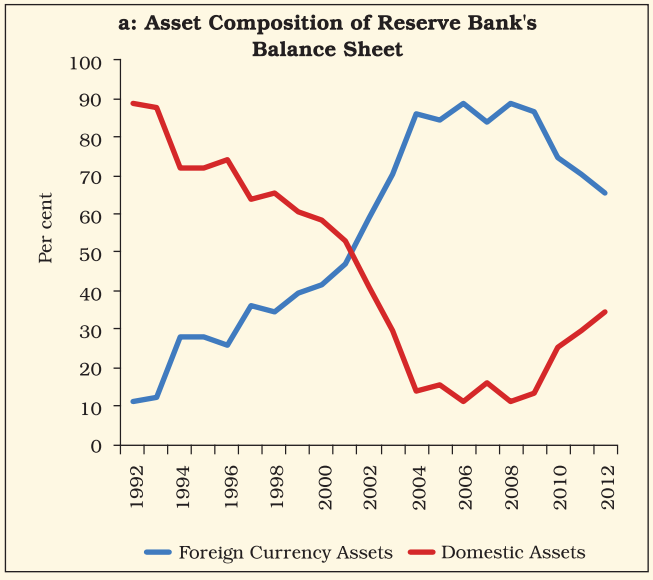


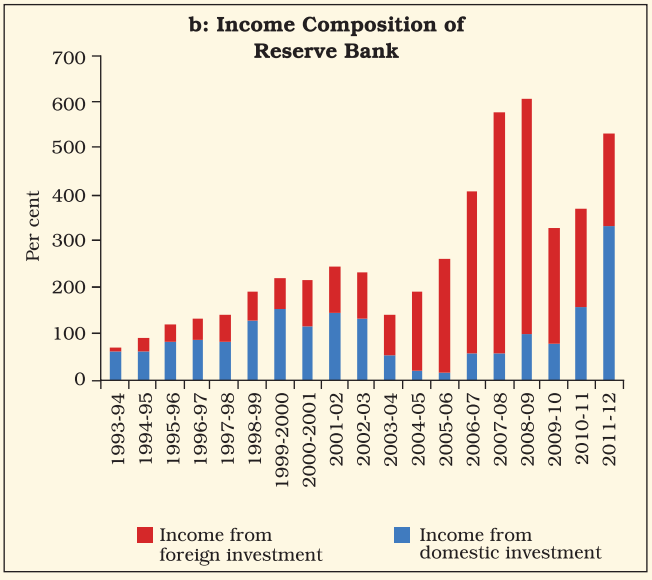
Capital Flows, Sterilisation and the Reserve Bank Balance Sheet

4.52 Since the introduction of the reform process in the early 1990s, India has witnessed a significant increase in cross-border capital flows, a trend that represents a clear break from the previous two decades. The large excess of capital flows over and above that required to finance the current account deficit has resulted in the accumulation of foreign currency assets, which are reflected in the Reserve Bank's balance sheet. Central banks, when confronted with a surge of capital flows, may intervene in the foreign exchange (forex) market to dampen disorderly movements of the exchange rate. The management of capital flows through market intervention and sterilisation operations, however, is associated with quasi-fiscal costs if the domestic assets yield higher returns than the foreign currency assets. The large-scale use of intervention measures also leads to changes in the size and composition of the central bank's balance sheet.

4.53 Barring the few years of strong remittances and non-resident deposit inflows in the mid-1970s and early 1980s, the Reserve Bank's asset base was almost entirely dominated by domestic assets, either in the form of its net credit to the government or sector-specific refinance facilities. Following the Reserve Bank's active intervention in the forex market in the backdrop of large capital flows, particularly in the mid-2000s, the composition of the balance sheet underwent a transformation in favour of a larger net foreign assets (NFA) in relation to the net domestic assets (NDA) (Chart IV.4). The movements in the NFA in the balance sheet of the Reserve Bank reflect its foreign currency operations, aid receipts by the government and income generated by foreign currency assets. While the accumulation of foreign exchange reserves was reflected in terms of a steady increase in NFA in the Reserve Bank's balance sheet, the Reserve Bank's holdings of domestic assets declined on account of sterilisation operations carried out through OMOs. Accordingly, the ratio of foreign assets to domestic assets in the Reserve Bank balance sheet increased dramatically, from 22.8 per cent in the 1980s to 182.4 per cent during the period 1997-2004.

Chart IV.4: Impact of Capital Flows on the Reserve Bank's Balance Sheet





4.54 In the face of large capital flows coupled with the declining stock of government securities, the Reserve Bank of India introduced a new instrument of sterilisation, *viz.*, the MSS to sustain market operations. Since the introduction of MSS in April 2004, the government has mopped up the Rupee liquidity released by the Reserve Bank's purchases in the foreign exchange market through the issue of securities and parking these proceeds with the central bank. The MSS, thus, immobilises the rupee liquidity released by the Reserve Bank's operations in the foreign exchange market within the Reserve Bank balance sheet, in contrast to the parallel offloading of domestic assets in the case of conventional open market operations.

4.55 Large-scale sterilisation operations are associated with both fiscal and monetary costs. To conduct a sterilised forex market intervention, the issuance of government securities (*e.g.,* MSS bonds in India) in an attempt to mop up the excess liquidity often places a debt-service burden on the government. For a central bank, operating losses can occur when the accumulated foreign exchange reserves are invested in foreign assets, which earn interest rates prevailing in the major world currencies that are often lower than the rates the central bank earns on the domestic securities it has sold. The magnitude of the cost varies with the extent of sterilisation and the yield differentials. These are termed as "quasi-fiscal" costs since the costs to the central bank are passed on to the sovereign through a lower transfer of profits (RBI, 2004). An estimate of the cost of sterilisation operations in India shows that such costs have been significant for the Reserve Bank during period of high capital flows (Box IV.5).

Quasi-fiscal Activities and their Impact

4.56 Central banks around the world often undertake quasi-fiscal operations in the nature of forced lending to unqualified borrowers, bank bailouts and provision of exchange guarantees, which affect their profitability. The Reserve Bank too had extended such quasi-fiscal support to the government in the past in the form of exchange guarantees for certain schemes in order to shore up the balance of payments of the country. As a result, the profitability of the Reserve Bank came under severe pressure during the early 1990s as the Bank had to make large provisions to cover the exchange risk in respect of foreign currencies borrowed under (i) the foreign currency non-resident (accounts) (FCNR(A)) and foreign currencies deposited under similar schemes by foreign banks in India, (ii) funds mobilised under India Development Bond and (iii) foreign currency loans obtained by financial

Box IV.5
Costs of Sterilisation in India

The Reserve Bank undertakes sterilisation operations through three means – the MSS, OMOs/LAF and CRR increase. MSS involves a cost for the government as it has to bear the interest costs. Any OMO sale to absorb liquidity or LAF reverse repo operation implies a cost for the Reserve Bank, as securities parted with under OMO sales generally earn higher interest than that on foreign securities acquired by the central bank. The net cost incurred by the central bank, termed quasi-fiscal costs, at times turn out to be substantial, with implications for the central bank balance sheets *per se* and the conduct of future monetary policy. For certain Latin American countries, these quasi-fiscal costs are estimated to be between 0.25–0.5 per cent of GDP. Further, the quasi-fiscal costs increase during periods of surges in capital flows. In such situations, central banks have used sterilisation operations through OMOs in conjunction with other measures like increases in cash reserve requirements, exchange rate appreciation and also imposition of capital controls. The increase of CRR for sterilisation purposes imposes a burden on the banking system as it leads to the impounding of reserves by such amount that otherwise would have been available to banks for lending and earning a return. The Table attempts to quantify the cost of sterilisation for the central bank, the government and the banking system in India for the pre-crisis period when capital flows were high. As can be noticed, during periods of high capital inflows particularly 2004-05 to 2006-07, the maximum cost of sterilisation was borne by the Reserve Bank.

It may be noted that the Reserve Bank could intervene to sell securities either because domestic money supply is higher than projected or because there are excess capital flows. The Reserve Bank publishes in its policy statements the projected M_3 growth, which is consistent with the prevailing growth, inflation and external sector dynamics and takes into account the market borrowing requirements of the government and the likely growth in demand for credit from the private sector. Accordingly, the desirable/threshold level of reserve money beyond which it would be considered as excess could be computed as the level consistent with the projected M_3 growth, given the money multiplier. It is observed that while sterilisation kept the actual reserve money after adjusting for CRR changes close to projected levels for most of these years, for some of these years, despite sterilisation activity, the actual reserve money remained above the desirable/threshold level, indicating that sterilisation fell short of the requirement. Further, considering that net RBI credit to the Centre was low during the period of high capital inflows from 2004-05 to 2007-08, expansion in reserve money and the consequent sterilisation undertaken was due to expansion in the net foreign exchange assets of the Reserve Bank.

Table: Cost of Sterilisation for the Reserve Bank, Government and Banks

(as percentage to GDP)

Year	RBI	Government	Commercial Banks
2004-05	1.7	0.1	0.2
2005-06	0.4	0.1	0.3
2006-07	0.6	0.1	0.3
2007-08	0.1	0.2	0.5
2008-09	0.0	0.2	0.4

Note: 1. Cost for the Reserve Bank has been calculated by taking the difference between the interest that the Reserve Bank has to pay on OMO/LAF sales and the return that it earns on forex. It may be noted that the return on forex in rupee terms, after taking into account exchange rate changes, could be different.

2. Interest payments on MSS have been taken as the cost for the government.

3. Cost for banks is taken as the return that banks would have earned on the amount that is impounded due to CRR. Except during the first half of 2008-09 when inflation was in double digits, the period being considered was generally a low inflation period and CRR was generally raised for liquidity management purposes. Otherwise, given that the entire CRR is not only for sterilisation purposes, the actual cost for banks would have been lower.

institutions and deposited with the Reserve Bank pending utilisation under a Parking Fund Scheme. The burden devolving on the Reserve Bank on account of the exchange risk borne on FCNR(A) withdrawals/renewals aggregated to ₹106.15 billion during the period 1990-93. This burden was borne by the EFR, which was replenished by depleting the CR, which fell to a low of ₹8.59 billion in June 1993. The Government of India took over the exchange risk liabilities related to FCNR(A) deposits on annual outflows from July 1, 1993 onwards, with the understanding that the Reserve Bank would transfer additional funds over and above the normal transfers in order to meet these losses. The government also met a small fraction of the losses from its budget during 1993-94 and 1994-95. Over the period 1993-98, the Reserve Bank transferred an additional sum of ₹128.47 billion from its profit to meet the FCNR(A) losses (Table 4.7). With an objective of withdrawing exchange rate guarantees on various deposits, the FCNR(A) scheme was phased out in the late 1990s and the FCNR(B) scheme was introduced under which foreign exchange risk is borne by banks based on their risk perception.

Table 4.7: Quasi-fiscal Costs arising from Exchange Guarantee for FCNR(A) Scheme

(₹ billion)

Year	Losses on account of FCNR(A) Guarantee	Losses borne by the Reserve Bank by drawing down its reserves	Amount transferred from Reserve Bank surplus to cover losses	Losses borne by the government from its budget
1	2	3	4	5
1991	25.14	25.14	-	-
1992	55.32	55.32	-	-
1993	25.70	25.70	-	-
1994	56.86	-	55.87	0.99
1995	25.95	-	23.28*	2.66
1996	24.38	-	24.38	-
1997	27.63	-	27.63	-
1998	18.27	-	18.27	-

'–': Not applicable.

*: Includes gains of ₹2.7 billion at the time of closure of the scheme in August 1994.

V. Global Financial Crisis and the Reserve Bank's Balance Sheet

4.57 Monetary authorities all over the world took recourse to a number of unconventional policy measures to address the liquidity shock generated by the global financial crisis. Monetary authorities in the advanced economies first responded through aggressive monetary easing, followed by the use of unconventional measures to augment liquidity. With the financial crisis spreading to the real sector and raising concerns about an economic recession, credit and quantitative easing acquired policy priority in most central banks (Mohanty, 2011). These liquidity-augmenting measures resulted in unprecedented expansion as well as changes in the composition of the balance sheets of several central banks (Box IV.6).

4.58 The policy measures adopted by the central banks of the advanced countries and the emerging market and developing economies (EMDEs) differed significantly. The central banks in advanced countries extensively used credit and quantitative easing measures, while they were barely used in the EMDEs (Subbarao, 2011). To combat the contagion effects of the global financial crisis, the EMDEs first took recourse to liquidity augmenting measures through instruments like currency swaps and CRR before activating policy rate cuts, *albeit* from a much higher level compared to the advanced economies. Most of the emerging market central banks conducted outright sales of foreign exchange reserves to meet the demand for foreign funding in the domestic market and to ease the pressure on the exchange

Box IV.6
Unconventional Monetary Policy Measures and Central Bank Balance Sheets in Advanced Economies

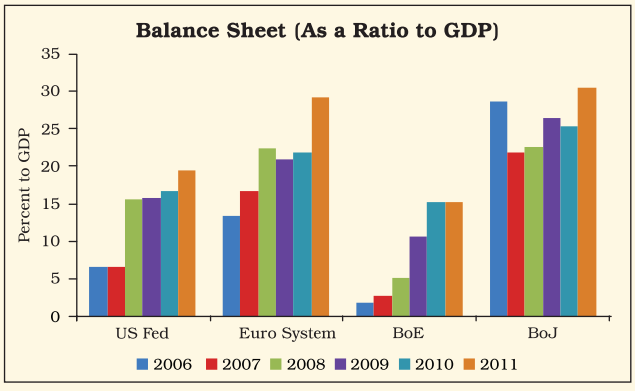
Central banks the world over resorted to unconventional, widespread and aggressive use of their balance sheets during the recent global financial crisis in order to tackle liquidity problems arising from intense market stress and also to overcome the policy impasse arising from policy rates approaching the 'zero lower band' to interest rates, which impeded the monetary transmission mechanism. To start with, central banks in advanced economies extended conventional liquidity easing measures by expanding the pool of securities as well as the number of counter-parties eligible for their central banking operations, and also extended the maturity of those liquidity-providing operations. As the crisis deepened and the interest rate channel became ineffective, central banks in these countries were forced to go for quantitative easing. Country-wise measures have been enumerated in detail in Chapter 2.

As a result of the extensive use of credit and quantitative easing, the balance sheets of central banks in advanced economies have expanded sharply. The ratio of total assets to GDP of the Federal Reserve and the Bank of England (BoE) increased from less than 10 per cent to over 15 per cent of GDP, while the increase in the case of the eurosystem was from 13 per cent to more than 20 per cent of the euro area GDP (Chart). The size of the balance sheet of the Bank of Japan (BoJ) was even larger at around 30 per cent of GDP, though it was more on account of quantitative easing undertaken in the early 2000s. In the emerging market economies, the size of the central banks' balance sheets had already expanded considerably before the crisis on the back of accumulation of reserves by central banks. The combined foreign exchange reserves of major emerging market economies stood at US$ 5 trillion in mid-2008 (Hannoun, 2010).

The large-scale economic slowdown that accompanied the crisis evoked counter-cyclical fiscal policy measures

(contd...)

(...concld)



of unprecedented magnitude leading to the Keynesian resurrection (also refer to Chapter 2). Reflecting such fiscal stimulus measures, some of the leading advanced economies witnessed significant deterioration in their fiscal position in terms of a rise in the share of government debt to GDP (IMF, 2011) and high government borrowing programme with concomitant implications for monetary transmission and liquidity management by central banks.

While the large-scale asset purchases by central banks in advanced economies seem to have stabilised financial markets, the resultant expansion in balance sheets along with their compositional shifts has, however, increased their vulnerability to interest rate, exchange rate and credit risk factors. While the interest and credit risks have assumed significance in the balance sheets of central banks in the advanced economies, as they have acquired private sector assets as part of the central bank asset purchases during the global financial crisis, the central banks in emerging market economies, which hold large foreign currency assets, face the exchange rate risk (revaluation risk) and the risk of return on foreign assets falling short of the cost of short-term sterilisation bonds, if issued by the central bank or the interest income foregone on domestic assets.

References

Subbarao, Duvvuri (2011), "Implications of the expansion of central bank balance sheets", Comments by Governor of the Reserve Bank of India, at the Special Governors' Meeting, Kyoto, January 31.

Mohanty, Deepak (2011), "Lessons for Monetary Policy from the Global Financial Crisis: An Emerging Market Perspective", Paper presented in the Central Banks Conference of the Bank of Israel, Jerusalem on April 1.

Hannoun, H. (2010), "The expanding role of central banks since the crisis: what are the limits?" BIS Speech.

IMF (2011), *Fiscal Monitor Update*, June 17.

RBI (2010), *Report on Currency and Finance,* 2008-09.

rate. The central banks of Brazil, Korea, Mexico and Singapore had dollar swap arrangements with the Federal Reserve. However, the use of credit easing and quantitative easing measures was more limited for the emerging economy central banks compared to their advanced economy counterparts. Accordingly, the impact of the liquidity augmenting measures on the central bank balance sheets was less severe in the case of EMDEs.

4.59 Unlike the experience of several foreign central banks whose balance sheets have grown in size due to the granting of loans and advances and the extension of refinance facilities to various institutions, the Reserve Bank's balance sheet shrank during 2008-09, despite the Reserve Bank's extensive use of both conventional and unconventional measures to meet the domestic and foreign exchange liquidity needs of the increasingly liberalised Indian financial markets. This contraction in the balance sheet size was brought about by specific liquidity injecting measures undertaken during the crisis. On the liability side, the reduction in the CRR by 400 basis points and the unwinding of the government's MSS balances served to reduce the overall liabilities of the Reserve Bank. Since CRR balances are a part of reserve money, a reduction in the CRR shows up as reduction in reserve money and *vice versa*. In addition, the MSS was another instrument that came handy for the Reserve Bank to expand liquidity in the system by unwinding of the securities held under MSS. The amount sterilised through MSS remained immobilised in the central government's account with the Reserve Bank[9]. The unwinding of MSS balances gave adequate space

9 In the aftermath of the crisis, fresh issuances under the MSS were withheld and part of the government's market borrowing was financed by de-sequestering the balances under the MSS cash account. Buyback of existing MSS securities was also undertaken to inject liquidity into the system. This essentially resulted in a compositional shift within the head 'Deposits' on the liabilities side of the balance sheet. Reflecting these operations, MSS balances declined significantly over the six-month period, from over ₹1,740 billion at end-September 2008 to around ₹229 billion by end-June 2009.

for the Reserve Bank to embark on necessary liquidity expansion without resorting to expansion in its balance sheet by any significant measure.

4.60 On the asset side, one major factor that led to the contraction in the balance sheet of the Reserve Bank was the reversal in capital flows as the crisis deepened and global macro-economic conditions deteriorated. Consequent to the capital outflows, the balance of payments position of India came under pressure during the third quarter of 2008-09. As a corollary, the Reserve Bank was required to drawdown the reserves to make up for the shortfall in order to ensure orderly conditions in the foreign exchange market. The drawdown of reserves led to a corresponding contraction in the base (reserve) money. Therefore, on the asset side, reduction in foreign assets to stabilise the exchange rates served to reduce the overall assets.

4.61 Although domestic assets expanded through OMOs and the accommodation of the liquidity needs of select Indian financial institutions, the net effect was a contraction in the balance sheet size resulting from the large and sustained reverse repo operations due to the dampened credit environment. As a result, the size of Reserve Bank's balance sheet declined to ₹14,082 billion as on June 30, 2009 from ₹14,630 billion on June 30, 2008. Thus, the release of earlier sterilised liquidity back into the system stabilised the markets and also prevented the Reserve Bank's balance sheet from showing any unusual increase, unlike the global trend.

4.62 There are some key differences between the actions taken by the Reserve Bank and the central banks in many advanced economies to combat the crisis (Mohanty, 2011). First, in the case of injection of liquidity in the market by the Reserve Bank, the counter-parties were banks, unlike non-banks in the case of the advanced economies. Even liquidity measures for other financial institutions, such as mutual funds, non-bank finance companies and housing finance companies were channelled through the banks. Due to restrictions in the statutory provision of the RBI Act, 1934 for lending to non-bank financial companies (NBFCs), an innovative arrangement was put in place by the central government for providing liquidity support for meeting the temporary liquidity mismatches for eligible Non-Banking Financial Companies-Non-Deposit Taking-Systemically Important (NBFC-NDSI) companies through a special purpose vehicle (SPV). Under this arrangement, the Reserve Bank was to purchase government guaranteed securities issued by the SPV and the latter, in turn, was to invest the funds received from the Reserve Bank in short term instruments[10]. Although the availment of this facility was limited, it was an example of effective co-operation between the government and the Reserve Bank to manage the liquidity crisis. Second, unlike the mortgage securities and commercial papers in the advanced economies, in India the range of collaterals was not expanded beyond government securities, which kept the collateral standards intact. Third, despite large liquidity expansion, the Reserve Bank's balance sheet did not show unusual increase because of the release of earlier sterilised liquidity.

4.63 The size of the Reserve Bank's balance sheet increased significantly in the next three years. It expanded to ₹15,531 billion by June 2010, ₹18,047 billion by June 2011 and further to ₹22,089 billion by June 2012 in response to the policy actions and liquidity management operations aimed at strengthening the recovery process while containing inflation. On the assets side, there was an increase in the Reserve Bank's holding of both domestic securities on account of open market purchases of government securities for injection of liquidity and foreign currency assets due to valuation effects. On the liabilities side, the expansion of the balance sheet is explained by the rise in currency in circulation and deposits in 2009-10 and 2010-11 and accretion to the CGRA along with increase in currency in circulation in 2011-12.

10 Short-term instruments include commercial papers and non-convertible debentures with residual maturity of not more than 90 days and rated as investment grade.

VI. Concluding Observations

4.64 The central bank's balance sheet echoes its relationship with two key economic agents to whom it acts as a banker, viz., banks and governments. While the relationship of the central bank with banks in some sense is the core area of interest of monetary policy transmission, the interface between the fiscal and monetary authorities gets reflected in the central bank's balance sheet. This could assume significance, as has been the case in the recent global economic crisis when central banks adopted unconventional monetary policy measures including purchases of government bonds to provide liquidity and stability to financial markets. Thus, having analysed the connection between the central bank's balance sheet and monetary dynamics in an earlier issue of this Report, the present chapter analysed the developments in the Reserve Bank's balance sheet as a mirror of the evolving relationship between the government and the Reserve Bank of India, particularly in the post-reforms period. As discussed in the chapter, the link between the two authorities from the Reserve Bank's balance sheet perspective can come through three sources, *viz.*, government deposits with the central bank, the central bank's loans to the government through WMA and overdrafts and its investment in government securities.

4.65 Historically, fiscal dominance was evident during the period of social control (1968–1990). The initiation of monetary targeting approach since the mid-1980s underlined the need to overcome operational constraints and rigidities, arising on account of fiscal dominance, in monetary policy operations. The emergence of a market-based government borrowing programme, cessation of the Reserve Bank's involvement in primary government securities issuances and the substantial reduction in its contribution to various long-term funds ushered in a new era in the interface between the central bank's balance sheet and fiscal policies. The share of net RBI credit to the central government in the overall monetary base has progressively declined over the last three decades.

4.66 In the 2000s, while the dominant role of fiscal expansion in monetary expansion gradually faded, capital flows took centre-stage and added a new dimension to the balance sheet of the Reserve Bank, as the net foreign assets were accumulated simultaneously with a reduction in net domestic assets on the Reserve Bank's balance sheet. As a result, deviations between the projected and actual M_3 growth remained significant, *albeit* lower than that of the monetary targeting regime of the 1980s and the 1990s. The introduction of the MSS under which government securities were issued for sterilisation purposes was an important milestone in the interface between the fiscal and monetary authorities, with the fisc also sharing the cost of sterilisation.

4.67 It is important to note that the adoption of unconventional monetary policies and quantitative easing measures during the global financial crisis have expanded the balance sheets of several central banks. In contrast, in India, the intervention by the Reserve Bank was structured such that its balance sheet contracted in 2008-09. The Reserve Bank's balance sheet has expanded significantly since then reflecting its liquidity management operations, aimed at strengthening the recovery process while supporting the government borrowing programme and containing inflation. In light of the increasing valuation and systemic risks in today's market oriented and globalised environment, particularly in the post-crisis scenario that saw several central banks facing problems on the capital front, a need is being felt to strengthen the balance sheet, which has implications for the surplus transfer from the Reserve Bank. Revenue on account of seigniorage that essentially refers to the profit from money creation has also generally moderated post-crisis reflecting the fall in international interest rates coupled with a decline in CRR.

4.68 As already indicated, the central bank's balance sheet captures the spirit of the relationship of the central bank with commercial banks and the government. This relationship is not static, but undergoes significant transformation over a period of time. The Indian experience is no exception to this general trend.

5 FISCAL-MONETARY POLICY CO-ORDINATION AND INSTITUTIONAL ARRANGEMENTS FOR GOVERNMENT DEBT AND CASH MANAGEMENT : A MEDIUM-TERM OUTLOOK

The assessment of the medium-term outlook for fiscal-monetary policy co-ordination is based on the estimation of a linear relationship between the call rate (which is the operating target of monetary policy and can be generally used as a proxy for the monetary policy rate) and the output gap, inflation gap and the fiscal deficit to GDP ratio. The results of the exercise showed that an increase in the fiscal deficit to GDP ratio tends to put upward pressure on the call rate after a lag, even after controlling for the output gap and inflation gap. At the present juncture, with the likelihood of inflation moderating and the output gap remaining negative, stimulating investment with a view to reverting to the trend rate of growth of the economy over the medium-term is high priority. In this context, an orderly and qualitative fiscal adjustment would provide more headroom to monetary policy to address macroeconomic stability, in general, and the growth objective, in particular, over the medium-term. On the issue of institutional arrangements for debt/cash management, international experience with regard to the global financial crisis highlights the intertwining of fiscal, monetary and debt management and, thus, underscores the need for closer co-ordination between monetary and debt managers and fiscal authorities. At the present juncture in India, government borrowing continues to be large and the general economic environment warrants close monitoring of the evolving fiscal situation. In this context, persisting with the central bank's engagement with government debt management coupled with more intensive co-ordination with the government appears to be the appropriate approach for the medium-term.

I. Introduction

5.1 The global financial crisis marked an inflexion point in the history of monetary-fiscal co-ordination, with governments and central banks in almost all countries working on an unprecedented and unconventional scale to restore financial stability. While governments in many advanced economies acted decisively in bailing out and even outright nationalising failed investment banks, non-banks and insurance companies and provided sizeable fiscal stimulus to minimise the impact of the crisis on the real economy, central banks opened liquidity windows to banks and non-banks alike and started currency swap lines.

5.2 A similar degree of coherence was, however, not observed in the exit from unconventional fiscal and monetary policies that were initiated during the crisis. In advanced economies, as fiscal exit seems to be an arduous and protracted process given the size of the extant deficit as well as the lack of political consensus towards austerity measures, monetary policy has continued to be accommodative to provide the requisite boost to the fragile state of economic recovery. In the euro area, the seemingly recalcitrant sovereign debt problems, despite several initiatives to restore fiscal discipline, have entailed a persistent accommodative monetary policy stance, even as the pace of contraction of the economy has shown some remission in the recent period. Emerging market economies, on the other hand, had been pursuing both fiscal and monetary consolidation contemporaneously, in view of the early recovery from the crisis and emergence of inflationary pressures. Subsequently, however, the slackening of global growth, domestic structural impediments and (past) monetary tightening to address commodity and/or asset price pressures, impacted the prospective growth trajectory of emerging market countries. This has triggered some monetary easing in the recent period even as the policy space for further accommodation has reduced in some countries.

5.3 In general, post-crisis, there has been a gradual realisation that as globalisation matures, and, more particularly, as financial globalisation

deepens and exposes economies to invisible risks, the scope for collective action is likely to broaden where governments and central banks might have to work in unison more frequently while respecting each other's domain of activities. An immediate manifestation of the underlying turn in international policy thinking testifying to the need for increased fiscal-monetary co-ordination are the newly institutionalised collegial arrangements involving the central bank, other regulators and the government, which have been entrusted with the primary responsibility for fostering financial stability.

5.4 Notwithstanding the positive experience gained on fiscal-monetary co-ordination and the reduction in government deficits in many countries in 2011, the IMF's latest Fiscal Monitor (October 2012) highlighted the elevated fiscal vulnerabilities emanating from the still very high public debt rollover requirements in many advanced and some emerging market economies, even as it recommended an orderly pace of fiscal adjustment in the context of the general slackening of activity in many countries. The document also observed that putting public finances on a sounder footing over the medium-term should be a priority as this remains a key pre-requisite for growth.

5.5 In India too, the resumption of fiscal consolidation efforts after shaking off the indirect drag of the global financial crisis has been beset with challenges. Indeed during the first year (2012-13) of the Twelfth Plan, notwithstanding a modest improvement, significant risks remain to global economic prospects. Additionally, further reduction in WPI inflation, despite the recent easing, is contingent upon the alleviation of supply constraints and progress on fiscal consolidation. Moreover, as the fiscal deficit during 2012-13 so far remains high, a turnaround in the fiscal position would be imperative for generating the required resources for the Twelfth Plan. The Union Budget for 2012-13 had, in fact, proposed to reduce the fiscal deficit to 5.1 per cent of GDP from 5.9 per cent in the revised estimates of the previous year. The Budget had also introduced some amendments to the FRBM Act. On October 29, 2012, the Finance Minister announced the government's decision to adopt a fiscal consolidation plan during the Twelfth Five Year Plan that would progressively bring down the fiscal deficit from 5.3 per cent of GDP in 2012-13 to 3.0 per cent of GDP in 2016-17. Significant steps since taken by the government largely to reduce fuel subsidies have an important signalling impact even though their effect on the fiscal deficit of 2012-13 is expected to be negligible.

5.6 Against this backdrop, Section II of this chapter assesses the entrenched relationship between fiscal and monetary policies in the post-reforms period and draws some implications for their evolutionary path over the medium-term. This exercise, which is based on Zoli (2005), estimates a linear function with the call rate – which is the operating target of monetary policy and can be generally used as a proxy for the monetary policy rate – as the dependent variable and the inflation gap (*i.e.* the difference between the WPI inflation rate and its trend component), output gap (*i.e.,* the de-trended or cyclical component of GDP), the ratio of the Centre's fiscal deficit to GDP (with a one-period lag) and the one-period lagged call rate as explanatory variables. Annual data largely over the post-reforms period are used for the estimation. The estimated equation provides broad guidance on the implications of the evolving path of fiscal deficit, output gap and inflation gap for monetary policy over the medium-term.

5.7 Section III of this chapter discusses the evolution and intertwining of debt management policies with fiscal and monetary policies, particularly in the context of the recent global financial crisis, which has thrown up challenges to well-entrenched paradigms, internationally. As far as India is concerned, an important watershed in the institutional arrangements for the central government's debt management – which have been entrusted to the Reserve Bank of India by statute – was the setting up of a Middle Office in the Ministry of Finance in 2008, to formulate the debt management strategy of the central government. Taking this forward, the Union Budget 2011-12, presented in end-February 2011, stated, "The Government has

been in the process of setting up an independent Debt Management Office in the Finance Ministry. A Middle Office is already operational. As a next step, I propose to introduce the Public Debt Management Agency of India Bill in the next financial year." (Budget Speech of the Finance Minister, Paragraph 20). The Union Budget for 2012-13, presented in mid-March 2012, has, in fact, proposed to move the Public Debt Management Agency of India Bill, 2012 in the Budget Session of Parliament. An important rethink in this process, however, was earlier set in motion by Governor Subbarao of the Reserve Bank at the meeting of the Central Bank Governance Group on May 9, 2011 at the Bank for International Settlements, where he averred, "….as long as there are institutionalised mechanisms to negotiate various trade-offs in a given context within the overarching objective of achieving monetary and financial stability, separation of debt management from the central bank seems to be a sub-optimal choice. Even internationally, the emerging post-crisis wisdom recognises the interdependence between the functions of monetary policy, financial stability and sovereign debt management and the need for close association of the central bank with sovereign debt management." In the context of the post-global financial crisis, this section discusses issues that could impinge on the institutional arrangements for co-ordinating monetary and debt management over the medium-term. The last section sums up the discussion.

II. Fiscal-Monetary Co-ordination: Outlook for the Medium-Term

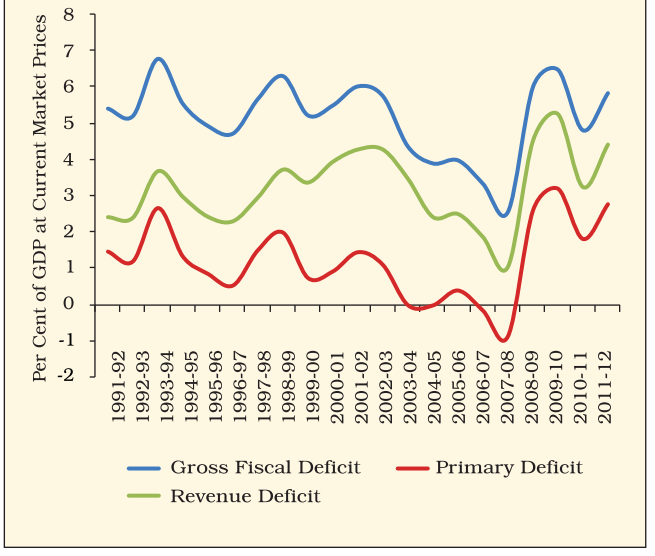
Recapitulation of Past Trends

5.8 To begin, a recapitulation of the fiscal and monetary management story since 1991-92 is necessary, because the evolving trends will be used to assess the medium-term outlook.

Fiscal Trends

5.9 Following the initiation of structural reforms, including fiscal reforms, in the aftermath of the external payments crisis in 1990-91, fiscal imbalances generally declined during the first half of the 1990s but started increasing during the second half, largely due to the slacking of tax revenue induced by the growth slowdown and rising interest payments and wages and salaries (Chart V.1). Subsequently, fiscal imbalances again started declining as interest payments relative to GDP began falling (due to general monetary easing) and, more substantially because of the enactment and implementation of the Fiscal Responsibility and Budget Management (FRBM) Act in 2004-05 as well as the strong growth of over 9 per cent during three consecutive years ending in 2007-08 that helped boost revenues. A primary surplus was, in fact, obtained during 2003-04, 2004-05, 2006-07 and 2007-08. The fiscal deficit, in fact, declined to 2.5 per cent of GDP in 2007-08, the lowest level since the initiation of reforms. Fiscal stimulus measures to stave off the adverse indirect impact of the global financial crisis on growth during 2008-09 and 2009-10, however, resulted in a sharp increase in deficit measures. With the economy recovering fairly quickly, fiscal consolidation efforts resumed in 2010-11, which was supported by substantial one-off increase in revenues from telecommunication services. The sharp decline in growth in 2011-12 coupled with large direct tax refunds and higher

Chart V.1: Key Deficit Indicators of the Central Government



subsidies, however, resulted in a sharp increase in fiscal imbalances. Disconcertingly, the share of capital expenditure, as conventionally defined, in total government expenditure has generally declined from around 26 per cent in 1991-92 to around 12 per cent in 2011-12.

Evolution of the Monetary Policy Stance

5.10 Monetary policy formulation in the *milieu* of structural reforms beginning in 1991-92 was facilitated by a reduction in fiscal imbalances and institutional arrangements to limit unbridled government access to monetisation through *ad hoc* treasury bills. After recording double digit rates in the first half of the 1990s, inflation subsequently declined, reflecting global trends as well as the impact of domestic reforms. Reflecting the easing of the monetary policy stance, the Bank Rate was progressively reduced from 12 per cent in October 1991 to 6 per cent in April 2003; after the institution of the full-fledged Liquidity Adjustment Facility (LAF) in June 2000, the Bank Rate was kept unchanged at 6 per cent between April 2003 and January 2012 when it was aligned with the Marginal Standing Facility (MSF) rate which, in turn, was linked to the LAF repo rate. On the other hand, the LAF repo rate was brought down from 9 per cent in April 2001 to 6 per cent in end-March 2004. The Cash Reserve Ratio (CRR) was also progressively reduced from 15 per cent in 1991-92 to 4.5 per cent in August 2003. Subsequently, with the significant increase in the growth rate and an upsurge in capital inflows, the CRR was steadily hiked to 7.5 per cent by November 2007. Open Market Operations, LAF and the Market Stabilisation Scheme (MSS) (introduced in April 2004) also helped restrain the growth of domestic liquidity in the face of strong capital inflows.

5.11 The LAF repo rate was increased from 6 per cent in end-March 2004 to 7.75 per cent in end-March 2007, as inflation had picked up somewhat during this period. During the first half of 2008-09, inflation increased sharply under the pressure of hardening international commodity prices, which necessitated an anti-inflationary policy response in the form of increases in the CRR and the LAF repo rate to 9.0 per cent each by July/August 2008. The monetary policy stance had to be changed abruptly in October 2008 to deal with domestic liquidity shortages and the growth slowdown induced by the global financial crisis. Reflecting this, the CRR was reduced sharply to 6.5 per cent in October 2008 and further to 5.0 per cent by January 2009. The LAF repo rate was also brought down progressively to 4.75 per cent by April 2009. Unconventional monetary policy measures were also taken to enhance domestic liquidity. Along with the accommodative monetary policy, fiscal policy too turned expansionary to support the recovery process, as alluded to earlier.

5.12 As the economy recovered fairly quickly from the indirect effects of the global financial crisis and inflationary pressures started taking root, the LAF repo rate was progressively increased to 8.5 per cent by October 2011 and the CRR was raised to 6.0 per cent by April 2010. With growth declining sharply to below-trend in 2011-12 and with the moderation in the inflation rate, the CRR was reduced to 4.75 per cent by March 2012 and the LAF repo rate was reduced to 8.0 per cent in April 2012 (*i.e.*, during 2012-13). Further reduction in the LAF repo rate was subsequently put on hold as the expected complementary policy actions towards fiscal adjustment and improving the investment climate did not follow. However, credit and liquidity conditions were eased through a 100 basis point reduction in the SLR in July 2012 and a cumulative 50 basis point reduction in CRR in September-October 2012. With the announcement of a series of reforms by the government beginning in September 2012 and the moderation in inflation rate, even as growth declined significantly below trend, the LAF repo rate and the CRR were reduced by 25 basis points each to 7.75 per cent and 4.0 per cent, respectively, in the third quarter review of monetary policy in January 2013.

Changes in Sources of Reserve Money and Money Supply

5.13 Over the period 1991-92 to 2007-08, the steady decline in the share of net RBI credit to the central government in the outstanding amount of

reserve money and the corresponding increase in the share of net foreign exchange assets of the RBI was clearly evident (Chart V.2). This reflected the impact of the general reduction in fiscal imbalances and institutional arrangements to limit monetisation of budget deficits coupled with the initiatives aimed at the development of the government securities market, on the one hand, and the liberalisation of foreign exchange markets and capital inflows, on the other. In fact, from 1999-2000 onwards, net foreign exchange assets replaced net RBI credit to the Centre as the predominant source of reserve money. Furthermore, the period from 2004-05 to 2007-08 was marked by substantial mopping up of excessive domestic liquidity to the sequestered government account through MSS operations in the face of strong capital flows. The trends in the shares of net RBI credit to the Centre and foreign exchange assets of the RBI in reserve money reversed sharply, beginning in 2008-09 under the indirect impact of the global financial crisis.

5.14 The crisis induced a reversal of capital flows and the consequent exchange market pressures triggered RBI's market operations to stem volatility in the exchange rate, which exacerbated the stressed domestic liquidity conditions. In response, domestic liquidity was augmented through (i) monetary support to the government's fiscal stimulus-engendered large market borrowing programme through OMOs; (ii) the unwinding and de-sequestering of MSS balances; and (iii) substantial liquidity injection to the banking system through LAF. In 2011-12, the shares of both net RBI credit to the Centre and net foreign exchange assets in reserve money increased; the increase in the share of net foreign exchange assets was mainly due to currency revaluations, on account of Rupee depreciation.

5.15 Similar trends were evident in the sources of broad money as far as the share of bank credit to the government and foreign exchange assets of the banking system were concerned (Chart V.3). Bank credit to the commercial sector, however, remained the predominant component of broad money right through the period, with its share increasing significantly after 2003-04.

Trends in Call Rate, GDP Growth and Inflation

5.16 Post-reforms, with the market determination of interest rates, the call rate has generally moved in line with the monetary policy rate, responding to the

Chart V.2: Sources of Reserve Money

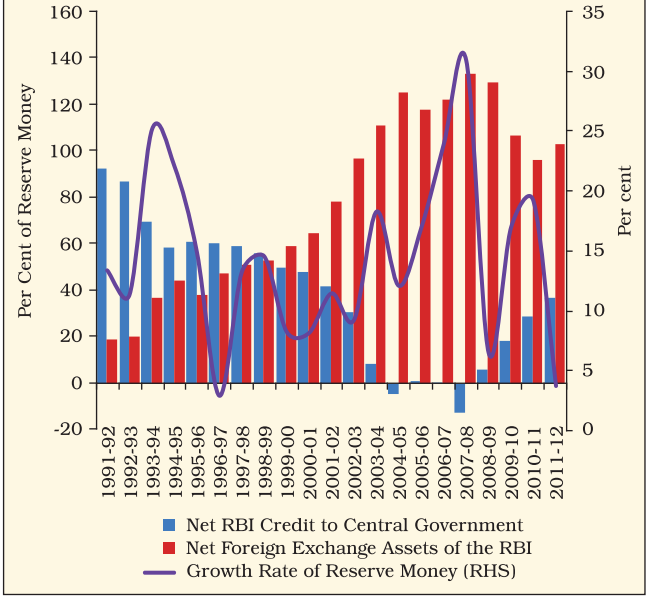
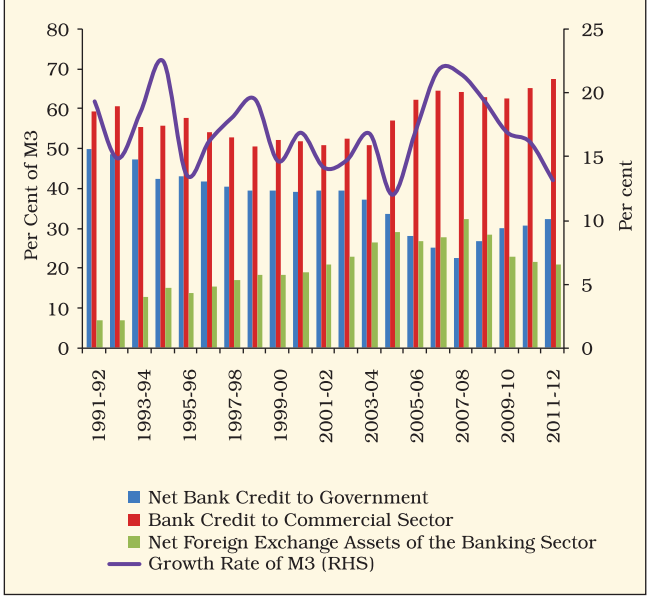


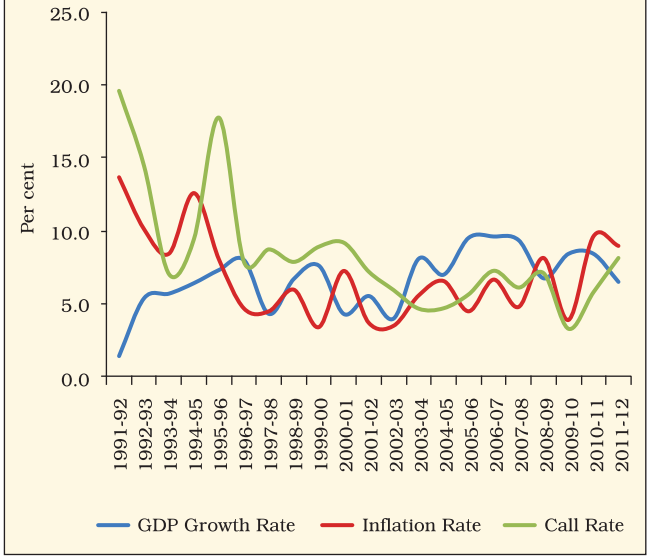
Chart V.3: Sources of Broad Money



liquidity and inflation conditions (Chart V.4). After the institution of LAF in 2000, the volatility in the call rate declined significantly. The inflation rate declined significantly after the mid-1990s, even though there was a sharp increase after 2010-11, reflecting a combination of different factors on the supply and demand sides during the year. The real GDP growth rate picked up consequent upon the initiation of structural reforms in 1991-92, but slackened in the late 1990s mainly as the industrial reform process lost momentum. The growth rate picked up again and more substantially after 2003-04 supported by fiscal consolidation, moderate inflation, substantial capital inflows and high rates of savings and investment. The growth rate slipped in 2008-09 in the aftermath of the global financial crisis but staged a quick recovery in the following two years, supported by co-ordinated fiscal-monetary policy actions. The worsening of global economic conditions and the persistence of structural impediments adversely impacted the growth process during 2011-12.

5.17 Having reviewed the broad trends in fiscal-monetary interactions since the initiation of structural reforms in the early 1990s, the theoretical constructs underlying such interactions as also some of the empirical literature on the subject are briefly discussed next.

Chart V.4: Growth Rate, Inflation Rate and Call Rate



Channels of Interaction between Fiscal and Monetary Policies – An Eclectic Review of Theoretical and Empirical Issues

5.18 Both fiscal and monetary policies are instruments of macroeconomic stabilisation. Co-ordination between the two policies is necessary to judiciously harmonise the attainment of the objectives of growth, price stability and financial stability, which are often complicated by the differential weights assigned to these objectives by the fiscal and monetary authorities and by the uncertainty about evolving macroeconomic and financial conditions. For example, an increase in aggregate demand brought about through an (excessively) expansionary fiscal policy to stimulate growth could shunt the inflation rate over the comfort zone of the monetary authority. Similarly, a tight monetary policy could translate into higher market interest rates and an increase in the outgo of interest payments and the budget deficit.

5.19 The interaction between the two policies could also be analysed from the financing side of the budget deficit, *i.e.,* broadly in terms of bonds and money. Bond financing of budget deficits could lead to a general pressure on interest rates that could crowd out private sector investment and, beyond a point, adversely impact growth prospects. The crowding-out effect plays out only in the case of non-Ricardian behaviour on the part of the private entities, *i.e.,* they do not perceive that, for instance, an increase in budget deficit today implies an increase in future tax burden, and accordingly do not increase their savings to the same extent as the decline in public savings. On the flip side, to the extent that (large) budget deficits are (disproportionately) financed through money creation, these inevitably interfere with, if not compromise, the avowed monetary policy objectives of price stability.

5.20 At the same time, as the Indian experience with the recent global crisis showed, the substantial increase in the budget deficit, engendered by

fiscal stimulus measures, was supported by an accommodative monetary policy stance so as to preclude financial market instability and more generally to sustain the process of recovery, even as the inflation rate remained subdued initially. Another channel through which fiscal deficits could impinge on monetary policy is *via* their impact on the current account deficit (through higher imports) and country risk premium and, in turn, on the exchange rate (Mohanty and Scatigna, 2003).

5.21 From a theoretical perspective, Sargent and Wallace's 'Unpleasant Monetarist Arithmetic' (1981) showed that whenever the real rate of interest exceeded the growth rate of the economy, any attempt to curtail monetary financing of the budget deficit by the monetary authorities in the short run (from the viewpoint of maintaining price stability) would eventually result in even more monetary financing and higher inflation in the future. This is because a reduction in monetary financing in the short run would imply more bond financing, which would push up interest rates. This, in turn, would lead to higher interest payments and, thus, larger budget deficits over time. Given the perceived limits to the government's ability to service a progressively higher order of bond obligations, monetary financing would be inevitable and large eventually, which would have inflationary consequences.

5.22 On the other hand, even if the central bank does not acquiesce to monetary financing of deficit, the fiscal theory of price level (FTPL) maintains that inflation control can still be compromised (for example, Cochrane, 1999; Woodford,1995). This is because, according to the FTPL, the government's inter-temporal budget constraint is an equilibrium condition and the only variable that can adjust to equate the nominal value of the extant stock of bonds to the present value of exogenously given primary surpluses is the price level. It is, thus, fiscal policy that determines the price level. The FTPL has, however, been criticised on theoretical grounds and empirical support has also been mixed (Zoli, 2005).

5.23 From an empirical standpoint, a number of studies have analysed the interaction between fiscal and monetary policies in a VAR framework. For instance, Muscatelli *et al.* (2002), showed that the response of monetary policy to a fiscal policy shock was not uniform in a set of select OECD countries: while in the UK and the US such a shock led to a significant decline in the interest rate within the first quarter (signifying accommodative monetary policy), there was no clear monetary reaction in Germany and France. Raj *et al.* (2011) assessed fiscal-monetary interaction in India using quarterly data over the period 2000 to 2010 and found, *inter-alia*, that while monetary policy reacted to output and inflation shocks in a counter-cyclical manner, fiscal policy reaction was primarily pro-cyclical. The positive impact of expansionary fiscal policy on output was found to be temporary, with the impact turning significantly negative over the medium to long term. A fiscal policy shock (*i.e.* an increase in fiscal deficit) led to a tightening of the monetary policy stance, which peaked after three quarters and reverted to equilibrium after seven quarters. A monetary policy shock (*i.e.* an increase in the call rate) similarly led to an initial increase in the fiscal deficit, with the effect petering out after the fourth quarter.

5.24 The more traditional approach towards empirical assessment of fiscal-monetary interaction is the monetary policy reaction function. As alluded to earlier, Zoli (2005) empirically ascertained for a set of seven emerging market countries whether fiscal stance at all impacts monetary policy decisions or, more technically, whether fiscal variables enter significantly in the reaction function of the central bank. In a linear-type (Taylor, 1993) monetary policy reaction function – with the central bank's policy rate as the dependent variable and the output gap and inflation rate as the independent variables – an additional variable, *viz*., real primary balance was included, as a measure of fiscal stance. The rationale for the inclusion was based on previous empirical work conducted by Melitz (1997, 2002) and Wyplosz (1999) for industrialised countries.

5.25 Zoli (2005), however, found that in all the seven countries monetary policy did not respond to

changes in primary balances or, in other words, fiscal policy did not impinge on monetary policy. Aisen and Hauner (2008) in their study of a set of 60 advanced and emerging market countries over the period 1970 to 2006 found that in a GMM framework, budget deficits tend to have a positive and statistically significant impact on interest rates. The impact was, however, conditional on whether the budget deficits were high, how it was funded (largely domestically financed or whether it interacted with high domestic debt), and whether financial openness was low, interest rates were liberalised and financial depth was low. In essence, the exercise brought to the fore the non-linear impact of budget deficit on interest rates. More recently, Tillmann (2011) found that US data over the period 1982 to 2004 supported a non-linear Taylor rule. Such non-linearity did not arise from the non-linearity of the Phillips curve or non-quadratic central bank preferences but from the monetary policy approach to the uncertainty about the slope of the (linear) Phillips curve. In effect, with a view to avoiding "very bad" outcomes, the monetary policy response to inflation becomes stronger the higher the inflation rate and the larger the output gap.

Impact of Fiscal Policy on Monetary Policy Stance in India – An Empirical Assessment

5.26 Against this backdrop, the impact of fiscal policy on monetary policy in India over the period of reforms in India is assessed using Zoli's (2005) approach, which estimates the following:

$$INT_t = \alpha + \beta\, INT_{t-1} + \gamma\, INFL_{t-1} + \delta\, OUTPUTGAP_{t-1} + \theta\, \Delta RPB_{t-1} + \varepsilon_t$$

where INT is the monetary policy intervention rate, INFL is the annual inflation rate, OUTPUTGAP is the difference between actual output and potential output, ΔRPB is the change in real primary balance and ε is the error term. For inflation-targeting countries, the term "INFL" in the equation was replaced with the term "expected inflation *less* the inflation target". Real primary balances were incorporated in the above equation in difference form because the series was found to be non-stationary in all the countries in the sample. Zoli conceded that even though such a specification of the monetary policy reaction function was not obtained from theoretical constructs, it facilitated an assessment of the direct impact of fiscal policy on monetary policy that transcends the indirect impact *via* aggregate demand pressure (output gap) and inflation.

5.27 The above approach was adopted for India with some modifications, using annual data for the period 1988-89 to 2011-12. Even though broad-based structural reforms were initiated in 1991-92, money market reforms started somewhat earlier with the setting up of the Discount and Finance House of India (DFHI) in 1988 followed by the deregulation of call money rates in 1989. This period also broadly covers two monetary policy frameworks: monetary targeting which started in 1985-86 and the multiple indicators approach since 1998-99. The weighted average call rate (CALLRATE), which is the operating target of monetary policy, was taken as a proxy for the monetary policy rate. Following the introduction of the full-fledged LAF in June 2000, the weighted average call rate has generally hovered around the effective policy rate, *i.e.,* the repo rate in the case of banking system liquidity deficit and the reverse repo rate in the case of banking system liquidity surplus. To the extent that changes in banking system liquidity also reflect monetary policy actions through direct instruments such as the CRR or through indirect instruments such as OMOs, LAF and the MSS, the call rate can be reasonably expected to reflect the overall monetary policy stance right through the period (Singh 2010).

5.28 The output gap (OUTPUTGAP) variable in the equation was taken as the de-trended or the cyclical component of the log of real GDP using HP filter. The equation also included an 'inflation gap' variable instead of just the inflation rate, as proposed by Zoli for non-inflation targeting countries. Even though India is not an inflation-targeting country, price stability (along with growth) has remained a key objective of monetary policy and the Reserve Bank provides indicative projections of inflation and growth as a guide to such policy; these indicative projections, set out at the beginning of the year (usually in April), are reassessed periodically in the light of evolving developments. Moreover,

the emphasis between price stability and growth objectives varies from year-to-year, depending upon the evolving macroeconomic situation. Keeping this in view, the inflation gap (INFLGAP) was defined as the deviation of the year-on-year WPI inflation rate from its (HP-filter-based) trend rate and was incorporated in the equation.

5.29 In line with typical Taylor-rule specifications, the contemporaneous output gap and inflation gap were incorporated in the equation. The real primary balance was replaced by the ratio of the Centre's Gross Fiscal Deficit to GDP (GFDR) (lagged one period), not only to get a sense of the impact of the overall net borrowing requirements on the call rate but also because in India annual targets in the Budget and the FRBM statements are specified in terms of the fiscal deficit-GDP ratio (apart from the revenue deficit/effective revenue deficit). Although this specification is not a typical policy reaction function, as in vogue in many advanced countries, it aims to capture some of the dynamics of the multiple indicators approach[1] to monetary policy formulation that was adopted in India in the late 1990s.

5.30 All the variables were found to be stationary as corroborated by both the ADF and KPSS tests. Granger Causality F-tests showed that over the period 1988-89 to 2011-12 the fiscal deficit to GDP ratio uni-directionally caused a change in the call rate (at one lag, lag length being decided on the basis of Schwarz information criterion) (Table 5.1). This showed that past values of the fiscal deficit-GDP ratio have tended to influence the call rate (or the monetary policy rate).

Table 5.1: Granger Causality Test

Null Hypothesis:	F-Statistic	Prob.
GFDR does not Granger Cause CALLRATE	3.90	0.06
CALLRATE does not Granger Cause GFDR	0.57	0.46

5.31 Next, the call rate was regressed on its lag, the output gap, the inflation gap and the lagged GFD-GDP ratio. Two dummy variables were included to take cognisance of year-specific outliers; DUM1 for the year 1995-96 took into account the sharp increase in the call rate following the temporarily stressed domestic liquidity conditions as a result of the RBI's operations in the foreign exchange market to stem volatility; and DUM2 captured the sizeble easing of domestic liquidity conditions during the years 1996-97 (that reflected the base effect of the previous year's forex market operations) and 2008-09 to 2011-12 (that largely resulted from the policy responses to the global financial crisis as well as sovereign debt crisis). The results of the estimation are set out below:

$$\begin{aligned} CALLRATE = {} & 0.58 + 0.50\ CALLRATE(-1) + 0.88\ INFLGAP + 0.72\ OUTPUTGAP \\ & (0.79)\ (0.00) \qquad\qquad (0.00) \qquad\quad (0.03) \\ & + 0.72\ GFDR(-1) + 7.89\ DUM1 - 2.37\ DUM2 \\ & (0.07) \qquad\quad (0.00) \qquad (0.06) \end{aligned}$$

Adj R-Square: 0.75
Prob (F-statistic): 0.00
LM-stat: 0.96

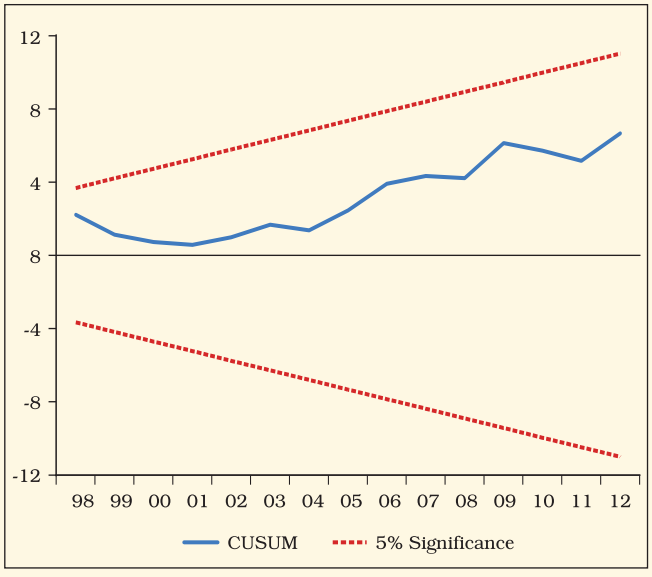
Note: Figures in parentheses are p-values

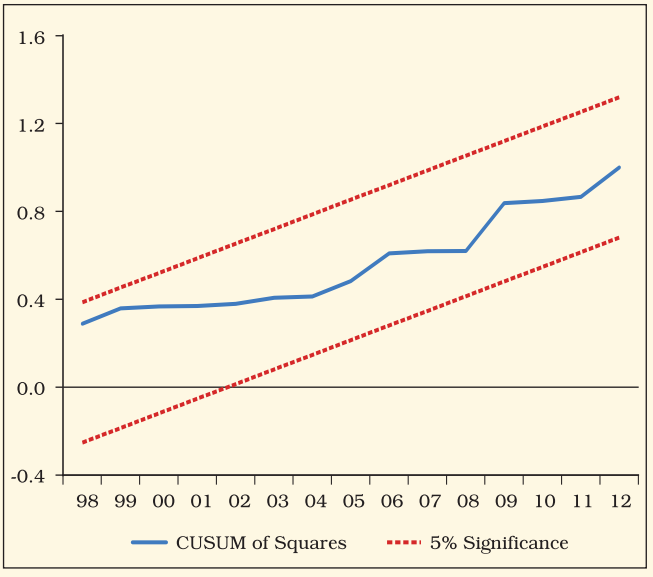
5.32 The Adjusted R-square value indicates good explanatory power of the model, especially in the emerging market context. All the coefficients of the independent variables, *viz.*, lagged call rate, inflation gap, output gap and fiscal deficit-GDP ratio were found to be statistically significant, individually as well as jointly, and had the expected signs. Statistical tests (CUSUM and CUSUM squares) confirmed the stability of the parameters in the estimated equation, as depicted in Chart V.5.

5.33 In the estimated equation, the contemporaneous coefficients of output gap and inflation gap were both positive, and the magnitude of the latter was greater than that of the former indicating greater sensitivities of monetary policy to inflation outcomes. The estimated coefficient also indicates that, on average, a one percentage point

1 As a part of the multiple indicators approach, information content from a host of quantity variables such as money, credit, output, trade, capital flows and fiscal position, as well as from rate variables such as rates of return in different markets, inflation rate and exchange rate, are analyzed for drawing monetary policy perspectives.

Chart V.5: Parameter Stability Tests





increase in the GFD-GDP ratio leads to a direct increase of 0.72 percentage point in the call rate, with a one-period lag, in addition to the indirect impact of the increase in the fiscal deficit on the call rate that may be felt *via* increases in the inflation rate and the output gap. The positive relation between the call rate and the GFD-GDP ratio is along expected lines since a higher fiscal deficit would tend to put pressure on the level of lendable resources, which in turn, would impact money market liquidity. In this context, it may be pointed out that since the share of capital expenditure in budgetary expenditures has generally declined over the years, the impact of the fiscal deficit on the potential output growth rate may have been somewhat muted, amplifying the output gap. The negative coefficient of DUM2 underlines the significance of liquidity enhancing measures by the Reserve Bank generally in the aftermath of the global financial as well as sovereign debt crises.

5.34 The results (*i.e.* the size of the coefficients of the inflation gap and output gap) need to be viewed in light of the fact that the specification is not that of a typical monetary policy reaction function as it is augmented by the inclusion of a fiscal variable. Moreover, as the equation is estimated using ordinary least squares, it may be viewed as an approximation in the light of more advanced estimation techniques being used in the literature. Notwithstanding these issues, from the monetary policy perspective, this exercise suggests that the fiscal context matters for the conduct of monetary policy in economies like India.

III. Institutional Arrangements Relating to Debt and Cash Management – Quo Vadis?

5.35 The Reserve Bank is the debt and cash manager of the central government by statute (RBI Act). The Reserve Bank also manages the debt and cash of the state governments by mutual agreement, as provided in the same Act. The issue of separating monetary and debt management and, more specifically, of taking the debt management function out of the Reserve Bank has been intensively debated in official forums at least since the mid-1990s, with forceful arguments from both sides (Box V.1). The recent global financial crisis led to a re-think to the debate.

Pre-Global Crisis Philosophy

5.36 The treatment of public debt management as a separate macroeconomic policy with its own objectives and instruments and not merely as an

Box V.1
Evolution of Views on Institutional Arrangements for the Separation of Debt and Monetary Management in India

The policy stance on the issue of separation of debt and monetary management has evolved over the years, in tandem with institutional, macroeconomic and financial developments. In particular, the advent of wide-ranging structural reforms in 1991-92, fiscal consolidation and the transition from an administered to a market-oriented price discovery mechanism for government securities were important initiatives that impacted the interaction of monetary and debt management.

The Committee on Capital Account Convertibility, 1996 (Chairman: Shri S.S. Tarapore) was perhaps the first official committee set up in India in the post-reforms period to specifically recommend the separation of monetary and debt management and the setting up of an Office of Public Debt by the government.

In March 1997, automatic monetisation of the central government's budget deficit through the issue of *ad hoc* treasury bills was abolished and a system of Ways and Means Advances was put in place. This provided greater headroom to monetary policy.

An internal Working Group of the RBI, which submitted its Report in December 1997, also suggested that the two functions be separated and that debt management should be taken over by an independent corporation as a wholly-owned subsidiary of the RBI under the Companies Act.

In June 2000, a full-fledged Liquidity Adjustment Facility put in place by the RBI emerged as the principal operating instrument of monetary policy. This provided greater flexibility in operating monetary policy.

The RBI Annual Report 2000-01 stated, "The separation of the functions of debt management and monetary management is regarded as a desirable medium-term objective, conditional upon development of the government securities market, durable fiscal correction and an enabling legislative framework…The Reserve Bank has proposed amendments to the Reserve Bank of India Act, 1934 which would take away the mandatory nature of management of public debt by the Reserve Bank and vest the discretion with the central government to undertake the management of the public debt either by itself or to assign it to some other independent body, if it so desires." (Paragraph 11.25).

The RBI's Annual Policy Statement 2001-02 mentioned "… while no view was taken on the details of implementation, a decision to separate the two functions was considered desirable in principle……[O]nce legislative actions with regard to Fiscal Responsibility Bill and amendments with regard to the Reserve Bank of India Act are accomplished, it is proposed to take up with the government the feasibility of and further steps for separation of government debt management function from RBI." (Paragraph 90)

An internal Expert Group of the Ministry of Finance, 2001 (Chairman: Shri A. Virmani) recommended a two-stage process to separate the two functions, *viz*., setting up a centralised middle office in the Ministry of Finance to develop a comprehensive risk management framework and then establishing an autonomous Public Debt Office.

The Fiscal Responsibility and Budget Management (FRBM) Act that came into force in July 2004 provided for a mandated and time-bound reduction in the fiscal deficit and revenue deficit of the central government. It also provided for prohibiting participation of the Reserve Bank in the primary market for government securities with effect from April 2006. This, combined with the institution of LAF in 2000 and the auction-based mechanism for selling government securities in the primary market put in place in the early 1990s, considerably reduced the conflict of interest between debt management and monetary management, even though both remained under the purview of the RBI.

In the context of the FRBM Act, the Annual Policy Statement of the RBI for the year 2005-06 indicated a re-orientation of government debt management operations while simultaneously strengthening monetary operations within the Reserve Bank in order to move towards a functional separation of the debt management and monetary operations. Towards this objective, the Financial Markets Department (FMD) was constituted in the RBI on July 6, 2005 to provide an integrated market interface for the Reserve Bank and to bring about integration in the Bank's conduct of monetary operations. The FMD is functionally separate from the Internal Debt Management Department of the RBI.

The Committee on Fuller Capital Account Convertibility July 2006 (Chairman: Shri S.S. Tarapore) recommended the setting up of an Office of Public Debt to operate independently outside the RBI for effective functional separation, enabling more efficient debt management as also monetary management.

The Union Budget 2007-08 announced, "World over, debt management is distinct from monetary management. The establishment of a Debt Management Office (DMO) in the government has been advocated for quite some time. The fiscal consolidation achieved so far has encouraged us to take the first step. Accordingly, I propose to set up an autonomous DMO and, in the first phase, a Middle Office will be set up to facilitate the transition to a full-fledged DMO." (Budget Speech, Paragraph 106).

Subsequently, the Ministry of Finance, Government of India, set up an Internal Working Group on Debt Management, 2008 (Chairman: Dr. Jahangir Aziz) to analyse how best to establish a DMO. Highlighting internationally accepted best practices

(contd...)

(...concld)

(citing, *inter alia*, the guidelines on public debt management issued by the IMF and the World Bank in 2003) that debt management should be disaggregated from monetary policy and taken out of the realm of the central bank, the Working Group recommended the establishment of a statutory body (the National Treasury Management Agency) to perform debt and cash management of the central and state governments in India. The Working Group provided the following rationale for a separate debt management agency:

- Important gains would be achieved by consolidating the debt management function and the consequent unification of related information in one agency instead of it being dispersed across several departments, as is the case in several emerging market countries including India, that obfuscate lines of action and accountability.
- A conflict of interest becomes manifest if the central bank also manages government debt in that it could be tempted to keep interest rates relatively low to minimise the cost of debt, even in the face of inflationary pressures. A conflict of interest can also occur since the central bank, as the regulator and supervisor of the banking system, has an incentive to mandate that banks hold a large amount of government securities.
- A conflict of interest could arise if the central bank which owns/administers the operating system of the government securities market is also a participant in the market.

The Chairman of the Committee on Financial Sector Assessment (CFSA), 2009, Dr. Rakesh Mohan, concurred with the proposal to set up a Middle Office, which is akin to the role of the DMO in the US Treasury, but personally viewed that setting up an independent DMO and the decision about the complete separation of debt management from the Reserve Bank needs to be revisited on several grounds, such as:

- Even a combined (Centre and States) fiscal deficit of 6 per cent of GDP, as envisaged under Fiscal Responsibility Legislations, would be among the highest among the major economies and, combined with an overall debt-GDP ratio of over 80 per cent, would necessitate maintaining overall consistency between fiscal and monetary management in the future.
- A reduction in the SLR would be conditional upon further reduction in the combined fiscal deficit and, until then, monetary management, debt management and bank regulation would continue to remain interlinked.
- In the context of volatile capital flows, the forex market operations of the RBI would be necessary on a fairly continuous basis. The concomitant sterilization of these operations through the MSS and their harmonisation with the market borrowing programme of the government would be difficult if the debt management operations are separated out of the RBI.
- Since 70 per cent of the banking assets relate to public sector banks, setting up a DMO in the Ministry of Finance may result in a conflict between the government's role as a debt manager and its status as the owner of a substantial portion of the banking sector.
- There is a need to ensure that further deepening of the government securities market (which is, in turn, necessary for debt management) is undertaken along with the maintenance of monetary and financial stability.
- There is a need to harmonise the market borrowing programmes of the central and state governments. Moreover, it may not be appropriate for a central government authority to also undertake state government debt management.
- While setting up a DMO in the Ministry of Finance would facilitate an integrated approach to overall (external and internal) debt management policy, the Reserve Bank could continue to conduct all market borrowing operations as the agent of the government, in a manner very similar to the functions of the Federal Reserve Bank of New York on behalf of the US Treasury.
- It has always been difficult to set up new government authorities. Due to government rules on service, these institutions have usually been staffed by officers on deputation from different government departments, which makes it difficult to develop appropriate expertise.
- The RBI is able to handle debt management operations because of the large size of its staff and expertise developed in managing regulation and supervision of banks, money market operations and debt market operations. The staff of the DMO will need to be conversant with financial markets and also be able to interact continuously with market players. Moreover, technical infrastructure for, *inter alia*, issuance and trading, would have to be set up, which would involve avoidable expense.

The Financial Sector Legislative Reforms Commission (FSLRC), which was constituted by the Government of India in March 2011 to review and recast the legal and institutional structures of the Indian financial sector in line with the contemporary requirements of the sector, in its Approach Paper of October 2012, observed that public debt management requires specialized investment banking capability. The FSLRC endorsed the view of several expert committees that a professional debt management agency should undertake this function because (i) unifying information on onshore and offshore liabilities of the government that is, at present, fragmented across the RBI and Ministry of Finance, would lead to more efficient debt management; and (ii) there is a conflict of objectives of the RBI that is required to manage public debt and maintain price stability. FSLRC also proposed to integrate the tasks of cash management and obtain a comprehensive picture of contingent liabilities of the government into a new debt management law.

extension of monetary and fiscal policy generally began in the 1980s, mainly because the trade-offs between the three policies began to be increasingly felt (Togo, 2007). While this change in thinking was triggered by the pernicious effects of fiscal activism of the previous decades on inflation and fiscal sustainability, it was facilitated by the development and liberalisation of financial markets (Hoogduin *et al*., 2010).

5.37 The classic conflict between monetary policy and debt management policy related to the decision on setting the policy interest rate. Similarly, the conflict between fiscal policy and debt management policy related to the choice of keeping debt-servicing costs low (and hence meeting deficit targets) over the short term (which generally fell within the electoral cycle) or over the medium/long term. Separation of the policies was expected to avoid such conflicts and improve policy credibility. Accordingly, countries such as New Zealand, Belgium, France, Ireland, Portugal, Sweden, Denmark and the United Kingdom decided to decentralise debt management to varying extents.

5.38 It was also recognised that the efficacy of policy decentralisation and its credibility depended on (i) the Tinbergen rule, *i.e.,* the availability of as many independent policy instruments as there were objectives, a requirement that is difficult to meet in practice; and (ii) the consistency of the overall policy mix. Policy co-ordination, thus, became necessary to get the 'desired' policy mix. Fiscal Responsibility Legislations and the Stability and Growth Pact in the euro area that provided for deficit and/or debt ceilings are examples of such co-ordination mechanisms.

5.39 This kind of separation of policies was also considered desirable by the IMF and World Bank, as reflected in the guidelines on public debt management issued by them in 2003 and, in particular, "….where the level of financial development allows, there should be a separation of debt management and monetary policy objectives and accountabilities." (Guideline 1.3). The same Guideline also emphasised, "Debt managers, fiscal policy advisors, and central bankers should share an understanding of the objectives of debt management, fiscal, and monetary policies given the interdependencies between their different policy instruments" and "debt management, fiscal, and monetary authorities should share information on the government's current and future liquidity needs."

5.40 The recommended separation of the two functions conditional upon the level of financial development is important. As Blommenstein and Turner (2011) explain, when monetary policy and debt management frameworks become more sophisticated, the central bank is able to influence the spectrum of interest rates by acting only in the very short end of the inter-bank market. With the development of the local capital market, the central bank's role in developing the government securities market becomes smaller. With the principal objective of public debt management being to minimise the risk-adjusted cost of long-term market-based funding, the separation of the two functions then becomes desirable as well as pragmatic.

Post-Crisis Experience: What has changed?

5.41 The perception about government debt management changed in the context of the global financial crisis. A Study Group (Chairman: Mr. Paul Fisher) in May 2011, commissioned by the Committee on the Global Financial System, observed that the strength of the interactions between sovereign debt management, monetary policy and financial stability have increased in the aftermath of the global financial crisis on account of (i) a sharp increase in government deficit and debt, reflecting fiscal stimulus programmes to support economic recovery. In addition, the average maturity of outstanding debt has declined in a number of advanced economies; (ii) the use of unconventional monetary policy, mainly in the form of large-scale purchases of government securities of varying residual maturities by central bank, thereby blurring the zones of operation of the monetary authority and the debt manager; (iii) the imposition of new prudential liquidity requirements that have increased the demand by banks and financial

institutions for government securities, even as the riskiness of government securities has increased in some countries; and (iv) an increase in the foreign ownership of government debt, facilitated by the general process of liberalisation and globalisation.

5.42 As a consequence, decisions regarding maturity, indexation and issuances as part of sovereign debt management (SDM), which earlier had limited impact on other policy areas, have begun to significantly affect monetary policy and financial stability.

Impact of Debt Management on Financial Stability

5.43 An increase in the share of short-term debt (which cannot be easily inflated away, unlike long-term debt) leads to an increase in refinancing and rollover risks, particularly when investors (mostly banks) hold only a small portion of government bonds in their portfolios to maturity. This, in turn, sets off systemic and financial stability risks. The problems get amplified when the level of debt itself evokes fiscal sustainability concerns. Foreign ownership of government debt results in rapid transmission of overseas shocks to the domestic G-Sec market which can result in mark-to-market (MTM) losses to the investors. Issuances of sovereign bonds in foreign currencies expose governments to currency mismatches between their domestic currency denominated assets and partly foreign currency denominated liabilities that have financial stability implications.

Impact of Debt Management on Monetary Policy

5.44 An increase in short-term debt issuance results in more intensive participation by the government in the money market, which is the operating area for monetary policy. This can interfere with the setting of policy (short-term) interest rates. Moreover, since central banks purchased government bonds as part of their monetary policy response to the financial crisis, the impact of debt management on monetary policy was also felt at the longer end of the market. This apart, a high level of debt that triggers sovereign risk concerns (as in the case of some euro area countries) can dilute the eligibility of government bonds as collateral in monetary policy operations and, thus, impede monetary policy transmission.

5.45 In this context, the Fisher Study Group (2011) observed that the separation of sovereign debt management (SDM) from other policy functions is generally underscored in economies with deep financial markets. This is in contrast with the practice in developing economies, where the central bank may issue securities for sterilisation purposes or may manage the government's debt and cash balances, wherein policy co-ordination or debt management by the central bank has generally been the norm. The Study Group did not detect substantive impediments engendered by the extant arrangements for operational independence of SDM and monetary policy functions. Altering such arrangements, in the opinion of the Study Group would be prone to risk. Rather, the Group felt that in the present *milieu*, or where financial systems are still developing, it would be useful if debt managers took a broad view of cost and risk and central banks kept abreast of SDM activities.

5.46 Recent experience has corroborated that medium-term strategic outcomes for the maturity structure and risk characteristics of outstanding debt matter for financial stability. In this context, the Study Group observed,"This underscores the importance of close communication among the relevant agencies, yet with each agency maintaining independence and accountability for its respective role. Such an approach is consistent with Principle 6 from the Stockholm Principles: Guiding principles for managing sovereign risk and high levels of public debt, which were recently promulgated by debt managers and central bankers from 33 advanced and emerging market economies."

5.47 It is evident that the Fisher Study Group (2011) and the Stockholm Principles (2010) have stopped short of recommending the separation of debt management out of the central bank. Even the guidelines on public debt management issued by the IMF-World Bank in 2003 (*i.e.,* in the pre-crisis period)

had recommended this separation conditional on the level of financial development in the economy. The difference between the two sets of views is the recognition now of the closer inter-linkages between government debt management, monetary policy and financial stability and the concomitant enhanced emphasis on close communication between debt managers and central banks, even while each agency maintains its independence and accountability.

5.48 A similar case is made by Blommenstein and Turner (2011). They argue that while policy responses to the global financial crisis have led to some blurring of the lines between public debt management and monetary policy and that the conventional microeconomic approach to debt management is likely to conflict with macroeconomic considerations, they caution against drawing any implications for changing the extant responsibilities of central bankers, debt managers and fiscal authorities, which have the (proven) advantage of assigning clear accountabilities and precluding myopic policies. They indicate that any contemplated change in the existing arrangements would, however, benefit from a fuller understanding of and consensus on the macroeconomics of government debt management and the recognition about political or institutional constraints as well as appropriate governance mechanisms.

5.49 A different case is, however, made by Goodhart (2010), who observes, "but now many countries face the prospect of sharply rising debt levels, to a point that may, once more, test the confidence of market participants. Debt management is again becoming a critical element in the overall conduct of policy, as events in Greece have evidenced. Debt management can no longer be viewed as a routine function which can be delegated to a separate, independent body. Instead, such management lies at the cross-roads between monetary policies (both inflation targets and systemic stability) and fiscal policy. When markets get difficult, and government bond markets are likely to do so, the need is to combine an overall fiscal strategy with high-calibre market tactics. The latter is what Central Banks have as their metier. During the coming epoch of Central Banking, they should be encouraged to revert to their role of managing the National Debt."

The Indian Case

5.50 Governor Subbarao (May 2011) has argued that while the progress towards fiscal consolidation and institutional developments in the pre-crisis years indicated prospective efficiency gains from separating out debt management from the central bank to a DMO, in the post-crisis scenario, there is a need to reconsider the content and pace of this process. In this context, it is worth reiterating that the RBI's record of public debt management has been impressive. As Governor Subbarao stated, "With the average maturity of government debt at around 10 years, India has one of the longest maturity profiles in the world, which proved to be a source of major strength and comfort during the crisis."

5.51 The Reserve Bank's deft handling of debt management operations during 2008-09 and 2009-10, when the Indian economy faced the indirect effects of the global financial crisis, has vindicated its past record. In fact, by synchronising liquidity management operations with those of exchange rate management and non-disruptive internal debt management operations, the RBI was able to ensure that appropriate liquidity was maintained in the system so that all legitimate requirements of credit were met, particularly for productive purposes, consistent with the objective of price and financial stability. The liquidity injection efforts of the Reserve Bank, despite being large, could be achieved without compromising either on the eligible counterparties or on the asset quality in the Reserve Bank's balance sheet, in contrast to many other central banks.

5.52 Liquidity expansion achieved through unwinding (redemption, buy-back and de-sequestration) of MSS and reduction in reserve requirements (CRR) ensured that the Reserve Bank's balance sheet did not expand, again unlike in several other central banks. In addition, auction-based open market purchases of government securities

were launched in February 2009 for more effective liquidity management and the smooth conduct of the government market borrowing programme. This synchronisation of liquidity management, exchange rate management and internal debt management, particularly during periods of stress, was immensely facilitated because these operations were housed within the same organisation, even as monetary and debt management remained functionally separate.

5.53 More generally, given the magnitude of the government borrowing programme in India, debt management becomes part of overall macroeconomic management, rather than an exercise in resource mobilisation. Consequently, central banks, which have the overall perception, necessary expertise and instruments, are better placed to conduct debt management rather than a DMO with a limited mandate. If, on the other hand, debt management were to be shifted out of the central bank, conflict resolution would become even more difficult as the central bank would be expected to manage market volatility and market expectations emanating from the government borrowing programme. Finally, as argued by the Chairman of the CFSA, the need to harmonise the market borrowing programme of the state governments – given its magnitude – with that of the Centre and the political economy considerations of the Indian federal structure, weakens the case for separating out the debt management function from the central bank.

5.54 Going forward, therefore, there is perhaps a need to reconsider the proposed separation of debt management out of the Reserve Bank at this stage. Instead, the expertise at the Middle Office that has already been set up in the Ministry of Finance may be suitably enhanced to deal with the post-crisis challenges that have been highlighted by international experience and the research literature. There is also a need for close co-operation between the RBI and the Middle Office in matters relating to debt management.

Cash Management

5.55 In recent years, the importance of sound cash management, *viz*., managing the timing and volume of the government's short-term cash inflows and outflows in a cost-effective manner that minimises various risks, such as operational, credit and market risks, is increasingly being recognised. Governments have been, accordingly, developing a more sophisticated cash management function, and, particularly in advanced economies, the trend has been towards transiting from relatively passive to more active cash management. Active cash management aims at minimising idle cash balances in the Treasury Single Account (TSA) maintained with the central bank and maximising returns on excess balances in the main treasury operational account held at the central bank. Active cash management involves financial market intervention by the government cash manager (which could also be the central bank) with the aim of smoothing the daily mismatches in net cash flows and adding flexibility to the ways in which the timing of government cash inflows and outflows can be matched. Central government cash management operations in India too have undergone substantial reforms since the mid-1990s **(**Box V.2**).**

5.56 The Government of India's Internal Working Group on Debt Management, 2008 (Chairman: Dr. Jahangir Aziz) underscored the close relationship between cash management and monetary policy given that large inflows and outflows of cash to/from government accounts can have a significant impact on the money market. Further, treasury bills, which are the usual instrument for cash management, were observed to be a potential source of (i) additional volatility in short-term interest rates and (ii) interference with the signalling impact of monetary policy. The Working Group also observed that government cash management in India was largely passive due to "a lack of end-day balance management, presence of surplus funds in the form of idle balances, and delay in the remit of cash balance information to the Budget Division."

5.57 The policy conflict and the passive nature of cash management were stated to make a case for moving government cash management to the National Treasury Management Agency (NTMA). International experience, however, revealed that

Box V.2
Central Government Cash Management in India

The existing cash management operations of the government are being undertaken through a two-tier system, with commercial banks acting as the first tier and the Reserve Bank [Central Accounts Section (CAS), Nagpur] forming the second tier of the system. The arrangement works through a system of accredited commercial banks (accredited by Comptroller and Auditor General of Accounts) with which different departments/ministries of the Government of India maintain their accounts. All receipts of the department/ministry are credited to the account maintained by the accredited bank and the concerned bank, in turn, is required to transfer them to the Treasury Single Account (TSA) of the Government of India maintained at CAS, Nagpur. Cash receipts are credited the same day, while receipts by cheque are credited based on T+1 in case of electronic mode, T+3 for locations (where the branch is within the clearing zone) and T+5 (for outside locations).

In terms of the Second Supplementary Agreement signed by the Reserve Bank and the Government of India on March 6, 1997, automatic monetisation of the government's deficit was discontinued and replaced by a scheme of Ways and Means Advances (WMA) and Overdraft (OD) to meet the short-term funding requirements of the government, effective April 1, 1997. If the cash balance of the government slides below the minimum cash balance that it is required to be maintained on any day (₹100 million on any day, except for every Friday, March 31 and June 30 when it is ₹1 billion), a short-term advance is automatically extended by the Reserve Bank to the government under its WMA facility, up to a pre-announced limit that is usually fixed on a half-yearly basis, to restore the cash balance to the minimum stipulated level. The advances under the WMA system are extended at a mutually agreed rate of interest, currently at the Repo Rate, and have to be repaid in full by the government within three months. The Reserve Bank also provides an OD facility to the government under which additional advances, over and above the WMA limit, are made available at a higher interest rate, which is currently at the Repo Rate plus 2 percentage points. The government is not allowed to be in OD at a stretch for more than 10 consecutive working days.

Conversely, upto 2003-04, whenever the accounts of the government showed a surplus position, funds in excess of the minimum stipulated cash balances were automatically invested in central government dated securities made available by the Reserve Bank from its own portfolio. With the depletion of government securities from the Reserve Bank's portfolio due to its sterilisation operations, the Reserve Bank, in consultation with the government, placed a limit on the investment of the surplus balance of the Government of India. The ceiling is subject to the availability of securities in the Reserve Bank's portfolio after meeting the requirement of securities arising from the Bank's monetary policy operations under the Liquidity Adjustment Facility (LAF). The government surplus balance in excess of the limit is kept as an idle cash balance with the Reserve Bank at CAS, Nagpur and does not earn any interest.

Besides using treasury bills, the central government introduced cash management bills (CMBs) in 2010-11 for cash management purposes. CMBs are non-standard maturity instruments with all generic characteristics of Treasury Bills. A large volume of CMBs were issued during 2011-12.

government cash management usually migrates to a debt management office at a later stage than debt management, particularly because of the daily and dynamic nature of the function. In this context, observing that "cash management by the NTMA may be difficult in the short-term because it is operationally intensive, requires more staff and close co-ordination between different agencies and systems", the Working Group recommended that the present arrangements for government cash management in India may be maintained in the short-term and this function should gradually transit to the NTMA over the medium-term.

5.58 While government cash management would continue to be vested with the RBI for some time, further reforms are being contemplated. As the Working Group on Operating Procedure of Monetary Policy, 2011 (Chairman: Shri Deepak Mohanty) observed, "Given the impact that government cash balances have on liquidity management, there is a need for closer co-ordination between the RBI and the fiscal authority. In this context, the Group understands that the issue of auctioning of government cash balances is under consideration of the Government and the RBI. The Group, therefore, recommends that a scheme of auctioning of

Box V.3
Conflicts between Government Cash Management and Liquidity Management

Strains can emerge between cash management and liquidity management if the government invests its surplus cash balance in a market that is characterised by surplus liquidity and the central bank does not have adequate securities in its portfolio to mop up the excess liquidity or the central bank is forced to issue its own securities (*e.g.,* central bank bills) with implications for the central bank balance sheet and the availability of surplus for transfer to the government. Effective co-ordination between cash management and monetary policy would involve the parking of the idle surplus cash balance with the central bank, which facilitates passive sterilisation of liquidity.

If the government is in cash deficit while the market is in a surplus mode and the central bank and the government use two different instruments (but of similar maturities) for liquidity management and cash management, respectively, market liquidity may get fragmented, thereby increasing the illiquidity premium. For example, before 2004, Croatia's Ministry of Finance and the central bank each issued their own bills. For similar maturity bills, the discount for T-bills was about 8 per cent, while the discount for Central Bank (CB) bills was only 1 per cent (Mu, 2006).

To avoid market fragmentation, a more appropriate option would be to use add-ons to treasury bill auctions, as the appropriate instrument for monetary policy implementation (World Bank and International Monetary Fund, 2001). Alternatively, or as complement, reissuance of existing government dated securities issued earlier under the market borrowing program can be considered if surplus liquidity is perceived to be of a more durable nature. To avoid confusion among the market participants, transparency needs to be ensured by announcing the amount of add-ons by the central bank for each treasury bill auction. Further, explicit and well-defined arrangements should be made to ensure that the proceeds from the sale of securities issued for the purpose of liquidity management should not be available for the financing of government expenditure but would remain impounded in the central bank. Whether there should be a cost-sharing agreement or whether the government will meet the expenditure out of its budgetary resources would need to be clearly specified. The exceptional circumstances under which government balances could be utilised to finance the fisc also need to be specified.

Many countries have issued government securities in the past in place of central bank securities for the purpose of liquidity management. These countries include Brazil (since 2002), India (under MSS since 2004; the exceptional circumstances under which sequestered government balances could be utilised to finance the fisc was specified in 2008-09), Mexico, Croatia and Macedonia. In the UK, the DMO and the Bank of England have agreed to such an arrangement (although it has not been drawn on) (Williams, 2010). This process is reversed in Mozambique as the central bank issues central bank bills from its own balance sheet, but some of the stock can be hypothecated to the government. In New Zealand, the central bank can issue Treasury Bills at its own discretion (within a framework agreed on with the Treasury) with the proceeds directly passed to the government's account. Cross-country experiences indicate that these arrangements have not worked satisfactorily in some countries, as the government may not always be willing to issue additional Treasury Bills for monetary policy purposes.

An alternative option would be for the central bank and the Treasury to issue securities of different maturities. While the central bank can issue short-term papers to absorb liquidity, the Treasury may issue dated securities to fund its deficit. In that event, the government may not have any cash management tool to fund temporary liquidity mismatches. In China and Indonesia, for example, the money market is dominated by CB bills and the near absence of Treasury Bills (Williams, 2010). The option of issuing short- and long-term securities at low costs presumes the development of a wide, deep and liquid government securities market. Nonetheless, the conflict cannot be entirely avoided if the residual maturity of government securities declines to that of primary issuance of CB bills leading to market fragmentation.

The government's borrowing from the central bank can also conflict with the central bank's liquidity absorption operations when the market operates in a surplus mode. The government can modulate the auction size of Treasury Bills or issue cash management bills to fund its temporary cash mismatch. Hence, the policy option for the central bank would be to use the same instrument for liquidity management as used by the government for its cash management operations, share information with the government on its financing plan and, accordingly, modulate the amount of Treasury Bills to be issued for the purpose of liquidity absorption.

Cash Management and Volatility of Government Cash Balances

One indicator of the successful co-ordination between cash and liquidity management could be the ability of the DMO and the central bank to limit the volatility of the government balance at the central bank.

(contd...)

(...concld)

In the UK, the outstanding daily balance varied significantly prior to the transfer in 2000 of the government's day-to-day sterling cash management from the Bank of England to the DMO, which is an Executive agency of the Treasury. After the transfer, borrowing from the Bank of England under the 'Ways and Means' facility was not used to facilitate day-to-day cash management and the balance was stable at around £13.4 billion until the facility was repaid during 2008 (Cross *et al*., 2010). At the end of December 2008, at the height of the global financial crisis, HM Treasury borrowed temporarily from the Bank of England.

In the euro area, government deposits, aggregated at the euro area level, have been the most volatile autonomous factor, causing a large part of the errors in the forecast of liquidity needs. In 2006, the highest volatility of government deposits was experienced in Italy, followed by Spain, Ireland and Greece. Among these countries, debt management in Italy and Spain are conducted departmentally within the Ministry of Finance (MoF). In Greece, debt management is conducted by an executive agency of the MoF, while Ireland has a statutory DMO. In Belgium, Germany, France, Luxembourg, the Netherlands, Austria, Portugal and Finland, the volatility of government deposits is low. Among these countries, while Austria, Germany and Portugal have statutory DMOs, in Belgium, France, Luxembourg, Netherlands and Finland, the DMOs are located in the MoF. While countries that established statutory DMOs (*viz*., Austria, Ireland, Portugal, Sweden, Germany, Hungary, Slovakia and Ireland) are part of the European Union, not all euro area countries have statutory DMOs/ independent agencies. Furthermore, the performance of cash management by the DMO appears to be independent of the institutional structure of debt management.

Government surplus cash balances at the discretion of the RBI be put in place in consultation with the Government to address a major source of volatility in frictional liquidity in the system."

5.59 Even on the proposed auctioning of government cash balances, more intensive co-ordination between the government and the RBI may be necessary not only because surplus balances of the government with the Reserve Bank effectively act as a (very useful) instrument of liquidity management, but also because inter-institutional conflicts can potentially be exacerbated, as shown by international experience (Box V.3).

5.60 While the views from the government side seem to favour the retention of cash management with the RBI over the short-term, international experience and the imperatives of liquidity management in an emerging market country like India, underscore the need for close co-ordination between the RBI and the government on this matter, as in the case of debt management.

IV. Concluding Observations

5.61 Fiscal-monetary policy dynamics in India have changed significantly since the initiation of reforms. While the Agreement on Ways and Means Advances (1997) has precluded the automatic monetisation of fiscal deficits and the adverse fallout of financial repression, the implementation of the FRBM Act has taken this forward by prohibiting the participation of the RBI in the primary market for government securities and, more generally, by placing a timeline on the reduction in fiscal imbalances. Similarly, the institution of a full-fledged LAF in June 2000 and the Market Stabilisation Scheme in April 2004 have added to the traditional arsenal of monetary policy instruments, such as Open Market Operations and the CRR, to deal with pressures emanating domestically (including the fiscal side) as also from inherently volatile capital flows. Following these institutional arrangements on both the fiscal and monetary sides, the general reduction in fiscal imbalances until 2007-08 was accompanied by robust growth, moderate inflation and lower order of volatility in the call money rate, even as capital inflows increased sharply. The challenges to fiscal-monetary co-ordination have, however, become more complex in the aftermath of the global financial crisis and the euro area crisis, as it is being felt that central banks may henceforth have to, at least partially, grapple with financial stability and sovereign debt sustainability apart from being exclusively responsible for price stability (Subbarao, 2012).

5.62 At the same time, with the liberalisation of financial markets, the use of a plethora of policy instruments (sometimes unconventional) and taking cognisance of the increasingly important role played by expectations, the interaction between macroeconomic, including monetary and fiscal variables has become complex. Nevertheless, the empirical exercise conducted in this chapter showed that the increase in fiscal deficit tends to put upward pressure on the monetary policy rate, though with some lag, even after controlling for the output gap and inflation gap. In this context, a durable and qualitatively superior correction in fiscal imbalances would provide more headroom to monetary policy to address growth and price stability objectives over the medium-term.

5.63 The thinking on institutional arrangements for the debt and cash management of the government has also been subject to fresh debate in the context of the global financial crisis. With the intertwining of debt management not only with monetary policy but also with the maintenance of financial stability, as revealed by international experience, the move to separate government debt management from the central bank has been questioned in several forums. The lessons of the crisis clearly emphasise the need for closer co-ordination between debt/cash and monetary management. Moreover, the large volume of central government market borrowings would pose challenges to monetary management, especially if private investment demand picks up. Keeping in view the emerging economic situation and the lessons of the global financial crisis, the institutional arrangements for government debt management in India over the medium-term would require the continued involvement of the central bank coupled with more intensive co-ordination with the government.

6 LESSONS AND FUTURE CHALLENGES

Historically, economic crises/shocks have provided valuable lessons for fiscal-monetary co-ordination. The global financial crisis of 2008 evoked expansionary fiscal and monetary policies in cohesion. A post-crisis evaluation suggests the need to address financial stability as a separate objective besides growth and price stability in the context of fiscal-monetary co-ordination, while associated risks from the financial sector on the real economy would have to be analysed endogenously. Other post-crisis challenges include the primary involvement of central banks in financial stability policy in addition to their core responsibility of price stability, greater proactive interaction between central banks, governments and other authorities to address financial stability issues, risks of negative feedback from sovereign debt-related concerns, calibration of fiscal consolidation to avoid a collapse of aggregate demand and greater fiscal-monetary co-ordination at the international level. In India, while phasing out of automatic monetisation and discontinuance of Reserve Bank's participation in the primary government securities market have reduced the degree of fiscal dominance, the Reserve Bank's open market purchases, though largely guided by the objective of liquidity management, at times, result in de facto monetisation of deficit. In the wake of the post-crisis escalation of fiscal deficits, which has unwound the cushion created during the pre-crisis rule-bound phase in India, returning to a credible path of fiscal consolidation would require addressing the structural constraints in government finances in a durable manner. Going forward, greater fiscal-monetary co-ordination in a frame work where central bank autonomy is not compromised is desirable, particularly in attaining the overarching objectives of growth, price stability and financial stability.

6.1 The analysis of international and Indian experiences shows that fiscal and monetary policies need to co-ordinate at all times to improve macroeconomic welfare, although the form of co-ordination has varied during different episodes of economic crisis/shock. The global financial meltdown of 2008 challenged the prevalent view that monetary policy should be used to stabilise the economy in the short-run, whereas fiscal policy should be used to address income distribution concerns and establish the foundations of long-run growth. The global financial crisis evoked an unprecedented fiscal stimulus together with an accommodative monetary policy. Interest rates were reduced further from their low levels, and several advanced countries resorted to unconventional expansionary measures, as monetary policy operations were constrained by their low interest rate bounds. After the post-global financial crisis, financial stability has emerged as another important policy objective, besides growth and price stability, of monetary policy. Going forward, the financial stability issue has assumed another dimension with feedback loops emerging from concerns relating to fiscal and sovereign debt sustainability. In India, although the implementation of the FRBM Act, 2003 has reduced fiscal dominance of monetary policy, fiscal constraints continue to occupy a central position on the back of sizeable market borrowing programmes, necessitating open market operations to address liquidity concerns. Against this backdrop, this chapter flags the major policy lessons and challenges that policymakers may face in the area of fiscal-monetary co-ordination at the international level, as well as in the Indian context.

Macroeconomic stability not a sufficient condition to guard against financial instability

6.2 Prior to the global financial crisis, the broad consensus, both in academia and among central banks, was that achieving price and output stability promotes financial stability. Paradoxically, the stable macroeconomic environment prevalent up to 2007

turned out to be a harbinger for under-pricing of risks; it allowed the pursuit of pro-cyclical fiscal and monetary policies and led to the build-up of financial imbalances. This indicated flaws in the pre-crisis policy framework. In particular, monetary and financial policies failed to incorporate fully the implications of rapid pro-cyclical growth on financial leveraging and risk-taking, especially across national borders, while the fiscal policy failed to create sufficient space for policy manoeuvre in the event of a crisis. During the crisis, the explicit pre-crisis assignment of policy instruments to objectives became blurred. The recent experience from the global financial crisis has demonstrated that macroeconomic policymaking is expected to do a fine balancing act to achieve multiple and, at times, conflicting objectives of monetary stability, fiscal stability and financial stability.

6.3 The existing models need to provide for the integration of financial sector more substantively, so as to allow the balance sheet channel of financial intermediaries and risk premia to influence economic outcomes. The substantive incorporation of financial intermediaries would enable these models to predict how asset prices and financial frictions interact with the real sector and, in that process, generate booms/busts endogenously. Policy authorities would have to remain alert to feedback between credit, asset values and binding financial constraints. They have to guard against undesirable macroeconomic outcomes of sustained deviations of asset prices from their fundamentals, whether resulting from co-ordination failures and herding among rational agents or from irrational pricing of risks that generate self-reinforcing waves of optimism and pessimism.

6.4 With the ongoing sovereign debt crisis, the feedback loops between financial and sovereign debt sustainability need to be properly assessed. It emerges that an appropriate mix of fiscal, monetary and macro-prudential policies may have to be used to achieve macroeconomic objectives without adversely affecting financial stability. In the near term, it may be important to support the recovery process, keep inflation low, and pursue internationally co-ordinated financial and structural reforms that would help enhance financial market resilience and strengthen the prospects for macroeconomic stability. In the medium-term, the policy priority should be to ensure that the overall policy framework is more robust than prior to the crisis, which may require institutional reforms with adequate space for fiscal-monetary policy co-ordination.

Financial stability, although a primary mandate for central banks, necessitates greater co-ordination with fiscal authorities

6.5 After the global financial crisis, it is being held that the central banks' involvement in the formulation and execution of financial stability policy must increase if such a policy is to be effective. Although in the post-crisis period central banks are still grappling with balancing the demands of price stability and financial stability in an uncertain global environment, concerns about fiscal and sovereign debt sustainability seem to have added to their challenges. In this context, the role of the central bank in the prevention, management and resolution of financial crises involves a number of intricate issues. These issues pertain to governance arrangements needed for the effective and sustainable conduct of core monetary policy functions in combination with an explicit mandate to contribute to financial stability, taking into account the impact of growing sovereign debt burdens on the autonomy and governance of central banks.

6.6 In short, the global financial crisis seems to have underscored the need to expand the mandate of central banks from the single objective of price stability to multiple objectives of price stability, financial stability and sovereign debt sustainability. However, achieving these objectives are no less than a trilemma, as there is vast scope for trade-offs between these policy objectives. Central banks may not be able to determine the degree of precision for *inter se* priority to be accorded to each of the three objectives under different sets of circumstances. The recent massive government budget deficits in advanced countries and the reluctance to rein in future entitlements indicate that fiscal dominance may

pose greater challenges for central banks to ensure financial stability. It, therefore, calls for a greater degree of co-ordination between various decision-making authorities to avoid conflicts and achieve optimum macroeconomic outcomes.

Need to lay out a policy co-ordination framework

6.7 Unlike the Great Depression period, the central banks' response to the recent global financial crisis has been multi-dimensional and has proved to be effective. Nonetheless, central banks have taken significant credit risks on their balance sheets through their liquidity management operations and credit enhancement policies. Further, the use of unconventional measures undertaken by the central banks with a fiscal element has diluted the boundaries between the mandates of public debt management and that of monetary policy operations. While the national debt management offices operated more extensively at the short end of the yield curve, central banks became active in the long-term segment of the government bond markets. Many studies (*e.g.*, Blommestein and Turner, 2012) argue that these developments may lead to a situation of fiscal dominance and, thereby, interfere with the conduct of monetary policy. Going forward, therefore, the policy functions and objectives of central banks are likely to have greater interaction with those of fiscal/ debt management authorities. In this *milieu*, the policy decisions of various authorities would increasingly become inter-dependent, necessitating close interaction and co-ordination between them, though it does not necessarily mean the loss of independence of central banks. Co-ordination structures may vary across countries and could involve formal advice being provided to the responsible agency by other experts. However, whether financial stability should be an exclusive mandate for central banks or whether a formal body should look into systemic risks and financial stability issues is still debatable. Similarly, there is not yet any consensus on whether 'arm's length' co-ordination or face-to-face discussion should be the main co-ordination mechanism.

6.8 The choice of co-ordination mechanism may also depend on whether fiscal authorities have a proper understanding of the monetary policy reaction function, and the same applies to the monetary authorities as far as fiscal policy rules are concerned. If this is the case, then each authority can tacitly take account of considerations of the other without going for face-to-face discussions. Such a co-ordination mechanism has worked effectively in normal periods. However, under the current phase of extreme adversity during the post-crisis, as might be characterised by Sargent's "unpleasant monetarist arithmetic", policymakers may have to move towards the extreme situation of joint decision-making. As the interaction between various policies is expected to be complex, the need for new functional arrangements between fiscal authorities/ debt managers and central banks, either temporarily or permanently, has also been flagged in policy circles. The current institutional arrangements for sovereign debt management need to be examined to determine their efficacy in dealing with these co-ordination problems in situations of major shifts in policies and/or policy outcomes (*e.g,* unconventional measures, high fiscal deficits, *etc.*).

6.9 A well co-ordinated policy approach will ensure that fiscal consolidation being emphasised and pursued at country-level does not hamper the overall growth process. A well-specified co-ordination framework will facilitate policy-makers to rebuild fiscal and monetary policy space and calibrate domestic policies to downplay the downside risks to growth, which continue to exist across the majority of the economies.

Need to insulate financial sector from negative feedback from sovereign debt concerns

6.10 The financial crisis giving way to a sovereign debt crisis in some advanced economies has highlighted the existence of a feedback loop between financial stability and sovereign debt sustainability. In particular, the major challenge emanates from the lingering weakness of the banking sector in the euro area. The vulnerability of the banking sector, in turn, adds to the sovereign risks, as investors perceive member states as an ultimate backstop for vulnerable financial institutions. Such concerns have led to high costs of borrowing for both sovereigns and financial

institutions, which may not be sustainable if such a situation persists for long. Moreover, the public sector may tend to deleverage, whether out of choice or under compulsion, affecting growth prospects that could, in turn, undermine debt sustainability.

6.11 Some of the recent measures in the euro area, such as, move towards a budgetary union in March 2012, towards banking union in December 2012, and strengthening of the European Financial Stability Facility/European Stability Mechanism (EFSF/ESM) are promising efforts to ensure fiscal sustainability and break the adverse loops between banks and sovereigns. Further, 'Outright Monetary Transaction' announced by the ECB on September 6, 2012 should ensure transmission of low policy rates to borrowing costs for countries under macroeconomic adjustment or precautionary programme with EFSF/ESM.

6.12 To sever the link between banking, sovereign and growth problems, policies in the euro area should support individual countries' efforts to repair public and private balance sheets, and implement structural reforms to restore competitiveness. Further, repair of banks' balance sheets through injection of more capital into domestically systemic banks and resolution of non-viable banks seems inevitable. At the same time, it also needs to be ensured that fiscal consolidation is not fully offset by the worsening of private sector balance sheets.

Fiscal Consolidation needed for independent conduct of monetary policy

6.13 Unprecedented escalation of sovereign debt levels after the global financial crisis has made government finances vulnerable in many economies. While fiscal vulnerabilities need to be addressed, fiscal consolidation has to be structured and calibrated to avoid the collapse of aggregate demand. Further, this process needs to be complemented by other policies, which entails a careful assessment of new and complex interactions between sovereign debt management and monetary policies. High sovereign debt levels reduce fiscal space, which, in turn, could constrain the use of monetary policy instruments and also create considerable uncertainty about future interest rates.

6.14 Amid increased uncertainty, fiscal-monetary feedbacks are likely to be stronger when public debt/GDP ratios rise. Further, high debt can adversely affect growth mainly through (i) the high cost of capital, (ii) distortionary taxes, (iii) inflation, and (iv) a lower capital-labour ratio that can lower productivity. Such infirmities arising out of a high debt overhang may also pose an additional burden on other policy options, including monetary policy. In this context, Jordan (2012) argues "central banks must guard against finding themselves in a position where they are forced to take action because of other institutions' inactivity".

6.15 Given the implications of high sovereign debts, early actions that boost the prospects of a credible medium-term fiscal consolidation need to be accelerated across countries afflicted with debt overhang. An explicit link between sovereign debt levels and medium-term fiscal policy objectives could be articulated, which would help anchor fiscal policy expectations. It is also important to fine-tune the process of fiscal consolidation with monetary policy operations. In the initial phase of fiscal consolidation, monetary policy, due to prevailing low policy rates in many countries, may not be able to offer much support for fiscal consolidation. However, as growth recovery begins and monetary policy becomes less constrained by zero lower bound, the pace of fiscal consolidation may be accelerated. Fiscal consolidation should be driven by policy initiatives that facilitate long-term growth and minimise the burden on monetary policy.

Fiscal-monetary co-ordination not only at national level but also at international level

6.16 After the global financial crisis, numerous weaknesses in the global monetary and financial systems have come to the fore. These weaknesses, in turn, lead to faster cross-border transmission of the crisis. Fiscal-monetary co-ordination is, therefore, required not only at the national level, but also at the international level to address these weaknesses. Accordingly, the world's largest economies have to develop a co-ordination mechanism to help guide fundamental economic policies and find greater synergy, especially between fiscal and monetary policies.

6.17 Recognising the high degree of financial inter-connectedness at the global level and the potential for seamless spread of any economic/ financial shock across borders almost anywhere and everywhere, attempts are being made to bring about more effective international policy co-ordination through various forums such as the G-20, Financial Stability Board (FSB), Bank for International Settlements (BIS) and the International Monetary Fund (IMF). There is a greater acknowledgement that national policies cannot be taken on a stand-alone basis and that international co-operation is necessary to resolve cross-border financial crises.

6.18 The G-20 framework for strong, sustainable and balanced growth is making progress on steering co-ordinated action at the global level under its mutual assessment plan (MAP) in fiscal, financial, structural, monetary and exchange rate, trade and development policies. While there is agreement that tail risks have diminished, reflecting important policy actions in the euro area and in the US, there is a consensus that the global economy continues to underperform mainly on account of policy uncertainty, public and private deleveraging, inadequate credit intermediation and insufficient progress on rebalancing global demand.

6.19 The G-20's immediate focus would be on creating the conditions for a lasting strengthening of global demand, while at the same time developing and implementing credible and robust medium-term fiscal plans in advanced countries where these do not yet exist. Structural reforms, while in some cases politically difficult, would also be necessary to ensure sustainable growth.

6.20 The IMF has strengthened its financial sector assessment programme, particularly for the 25 systemically important countries. Further, to avoid new systemic risks, the leaders of the G-20 countries in the February 2013 meeting held at Moscow reaffirmed their commitment to full, timely and consistent implementation of financial sector reform agenda through the Co-ordination Framework for Implementation Monitoring (CFIM) of the FSB. This agenda includes Basel III, II.5[1] and II, the reforms on over-the-counter (OTC) derivatives markets, systemically important financial institutions and shadow banking. Going forward, the activism of these international bodies is expected to continue, as spillover from national policies on international macroeconomic stability need to be minimised through coherent and consistent adjustment efforts across major economies.

Indian experience suggests that fiscal rules, though necessary, are not sufficient in optimising the outcomes of fiscal-monetary co-ordination

6.21 The assessment of fiscal-monetary co-ordination practised in India over the years, against the backdrop of various reform measures undertaken to align the institutional set-up and practices with the evolving policy objectives, shows a move towards reducing the fiscal dominance of monetary policy after the Fiscal Responsibility and Budget Management (FRBM) Act, 2003 was implemented. However, at times, fiscal dominance through high deficits has taken a new form with deficits and inflation feeding on one another and debt-deficit dynamics impacting reserve money creation. Large open market operation (OMO) have been largely in line with the monetary programme, but at times large market borrowings of the government impact liquidity and monetary conditions and can consequently impact the size and timing of OMOs. This can lead to attenuation of monetary policy. Fiscal deficits arising from large subsidies would suppress inflation in the short-run but could turn out to be inflationary in the medium-term. In the Indian context, despite significant countercyclical stimulus imparted during 2008-09 in the wake of global financial crisis, government spending has been found to be pro-cyclical over a long period. This impacts the availability of fiscal space for providing stimulus in cyclical downturn.

1 The BCBS regulations requiring banks to hold capital against market risks in their trading operations.

Further, the combined debt of the centre and states causes changes in reserve money to the extent it is financed by the Reserve Bank and thus has monetary implications.

6.22 The Indian experience brings forth several key lessons. The evolution from an era of pure fiscal dominance to that of rule-based fiscal discipline clearly depicts the impact of changes in institutional arrangements on the nature and degree of fiscal-monetary co-ordination. Notably, the phasing out of automatic monetisation of fiscal deficits and discontinuation of the Reserve Bank's participation in the primary government securities market have somewhat reduced the degree of fiscal dominance of monetary policy. However, the Reserve Bank has continued to provide temporary accommodation to the government through ways and means advances. Further, the Reserve Bank often purchases government paper in the secondary market, though these operations are generally guided by the objective of providing liquidity support to the financial system. Fiscal deficits in India have, in general, widened since 2008-09. While the government has returned to the path of fiscal consolidation since the second half of 2012-13, it is important to reinforce this trend by taking policy initiatives aimed at addressing the structural constraints in government finances in a durable manner so that the rule-based fiscal discipline becomes effective and credible in the medium-term.

6.23 The persistence of structural imbalances, as seen after 2008-09, necessitates greater recourse to debt resources, thereby constraining monetary policy operations. With fiscal policy having the first-mover advantage and monetary policy being constrained by fiscal dominance, the monetary authorities are left with little option but to react to fiscal policies to avert macroeconomic outcomes that are inferior to ones that would be achieved if they do not take fiscal policies into account. As monetary policy operating procedures evolve towards greater reliance on indirect instruments of monetary control, and fiscal policies become more rule-bound, it is possible to reduce fiscal dominance of monetary policy, though the rules may not be sufficient to ensure monetary independence. In essence, weak institutional arrangements governing co-ordination between the fiscal and monetary authorities may continue to impact the efficacy of both fiscal and monetary policies.

6.24 Structural impediments also constrain the role of fiscal policy as a counter-cyclical tool. Large fiscal deficits raise inflation in the economy directly if they are financed through reserve money expansion. Otherwise, they impact supply responses through suppressed prices and constrain the effectiveness of monetary policy as a demand management tool. While fiscal policy is intended to be counter-cyclical, in practice it often turns pro-cyclical, thus losing its ability to provide stimulus in situations of economic slowdown and compress aggregate demand in times of boom. Finally, the Indian experience shows that government debt has a long-run relationship with money creation, and debt-financed fiscal expansions, at times, cause pressures on monetary management.

6.25 These lessons assume significance, because challenges for fiscal and monetary management are large in the backdrop of high fiscal deficits and high inflation in India. Going forward, it is important to address these challenges through a series of institutional reforms. On the fiscal side, there is a need for an improved regime of fiscal rules with a focus on structural deficits. The rules could be made flexible to allow adjustment for cyclical factors while ensuring that the embedded flexibility in fiscal rules does not lead to fiscal imprudence in the name of cyclical considerations.

6.26 Cross-country experiences underline the need to frame fiscal rules by taking into account country-specific circumstances. For example, in Singapore, budget deficit rules are based on the principle that the government must have a balanced budget over the term of its office, meaning that any deficit in one year must be balanced by surpluses accumulated in earlier years during the term of its office. The appropriateness of such hard rules for Indian conditions is open to debate, especially as they can also come in the way of counter-cyclical stimulus. First, in the Indian case, it may be difficult to think of

achieving a balanced budget situation in any given year. Second, in a polity that depends on coalitions, defining a term of office can become difficult. Third, there is the problem of how the rule can be implemented if the government requires an expansionary response in the first year it comes into power.

6.27 Against the backdrop of an imminent need to revert to rule-based fiscal discipline, it is important to examine what rules can work in India. A notable lacuna in the FRBM regime has been that there are often deviations from the fiscal rules. FRBM Act explicitly provides for breach of targets in the case of national security need, national calamities and other exceptional circumstances. This leaves a lot of leeway in interpretation. The amendment to the FRBM Act in 2012-13 has re-established the regime of fiscal rules, and introduced a medium-term expenditure framework. Going forward, there is a need to remove a large part of ambiguity about any exceptions to be made, by adding expenditure rules to deficit rules and by adopting broader definition of deficit to cover quasi-fiscal activities.

6.28 The issue regarding the impact of large fiscal deficits on inflation and monetisation of deficits can only be addressed through enduring fiscal consolidation that can withstand the cyclicality test. This would, however, be possible subject to the implementation of far-reaching fiscal reforms that cover both revenue-enhancing and expenditure-cutting measures. On the expenditure side, the move towards reduction in subsidy expenditure in a phased manner would help rebalance public expenditure, from current to capital, to achieve and sustain a higher rate of growth in the medium-term. An improvement in the quality of public expenditures can raise the acceptability of greater tax mobilisation, as is the case with Scandinavian countries. The government's non-tax revenues also need to be stepped up in a more enduring manner through proper public utility pricing and reforms in public sector undertakings.

6.29 On the monetary side, institutional reforms should focus on a better alignment of OMOs with monetary policy objectives. OMOs need to primarily occur through outright purchase/sales of securities by the Reserve Bank. Liquidity adjustment facility (LAF) should generally be used in line with its intended objective of addressing frictional liquidity mismatches. Outright OMO purchases have increased in recent years. While at the present juncture when capital inflows are moderate, OMOs are not conflicting with overall monetary management as reserve money expansion is below the projected levels; episodically, however, they can impinge upon interest rates and market functioning. In fact, during 2008-09, the sizeable additional market borrowing by the government did create upward pressure on yields at a time when monetary policy supported softer interest rate regime. This could have been market disruptive in the absence of large OMO purchases. With the possibility that the money creation impact of OMOs, at times, come in the way of the conduct of monetary policy operations, the objectives and operational procedures for OMOs need to be better defined and constrained by a meaningful central bank reaction function.

6.30 There is also a need to re-examine the high held-to-maturity (HTM) provision that support public debt financing and *de facto* leads to crowding out of private credit. Further, financial sector reforms to reduce dependence on the statutory liquidity ratio (SLR) need to be carried forward once an improved rule-based fiscal and monetary regime is put in place. Overall, the new regime could be supported through a better co-ordination mechanism for the formulation and implementation of fiscal and monetary policies.

Need for continuance of effective fiscal-monetary coordination and strengthening the Reserve Bank balance sheet in the light of various risks as witnessed during global financial crisis.

6.31 The Reserve Bank's balance sheet has undergone substantial transformation over the years in line with the shifts in the regimes of monetary policy operations and different phases of fiscal-monetary

co-ordination. Some lessons emanate from the analysis of the evolution of the Reserve Bank's balance sheet, particularly in the post-reforms period.

6.32 First, during the post-reform period, the move from *ad hoc* treasury bills to ways and means advances (WMA) and the adoption of the FRBM framework has freed monetary policy and hence, the central bank balance sheet from fiscal deficit's straitjacket. The share of net RBI credit to the Central Government in the overall monetary base declined progressively from 1980s up until the crisis, after which it has seen some rise. In the 2000s, while the dominant role of fiscal expansion in monetary expansion gradually faded, capital flows took centre-stage, keeping the deviations between the projected and actual M_3 growth significant, *albeit* lower than that of the monetary targeting regime of 1980s and 1990s.

6.33 Second, effective fiscal-monetary co-ordination in managing sterilisation issues during the high capital flow regime of early 2000s and liquidity problems during the crisis period have had significant impact on the Reserve Bank's balance sheet. Capital flows to India increased significantly from the mid-2000s until 2007-08. The large excess of capital flows over and above that required to finance the current account deficit had resulted in the accumulation of foreign currency assets. The large build-up of foreign currency assets led to a significant increase in the size of the Reserve Bank's balance sheet between 2001 and 2007. The composition of the balance sheet also underwent transformation in favour of larger net foreign assets in relation to net domestic assets. The introduction of the market stabilisation scheme (MSS) in April 2004, however, had some moderating impact on the increase in the ratio of foreign assets to domestic assets. The introduction of MSS, under which government securities were issued for sterilisation purposes, was an important milestone in the interface between the fiscal and monetary authorities, with the fisc also sharing the cost of sterilisation. During the crisis period also, fiscal-monetary co-ordination was at its best to manage the liquidity problems. Going forward, such fiscal-monetary co-operation in a framework where central bank autonomy is not compromised is desirable, particularly in increasing the strength and credibility of the central bank balance sheet.

6.34 Third, to hedge against variability in prices of domestic and foreign assets, possible losses on account of policy intervention, external shocks and other unforeseen systemic risk, the Reserve Bank, in line with the suggestion of statutory auditors, has been pursuing a proactive policy of strengthening the reserve and revaluation accounts and accordingly has set an indicative target of 12 per cent of its total assets to be set aside under contingency and asset development reserves. In light of the increasing valuation and systemic risks in today's market-oriented and globalised environment, there is a need to further strengthen the balance sheet of the Reserve Bank which has implications for its surplus transfers to Government. There is a need to enhance some of the revaluation accounts like exchange equalisation account (EEA) keeping in view the likely impact of forward commitments and related exchange rate risks on the balance sheet. This is particularly relevant in the post-crisis scenario that saw several central banks facing problems on the capital front. While interest and credit risks have assumed significance in the central bank balance sheets of advanced countries, the central banks in EMDEs, including India, which hold large foreign currency assets, face the exchange rate risk and the risk of return on foreign assets falling short of the cost of short-term sterilisation bonds, if issued by the central bank or the interest income foregone on domestic assets.

Careful calibration towards reverting to fiscal consolidation and proper assessment of any likely institutional changes in public debt management constitute key imperatives for the outlook of fiscal-monetary debt management co-ordination in India

6.35 The previous chapter set out the outlook for fiscal-monetary co-ordination over the medium-term in India. The empirical exercise described in the

chapter over the post-reforms period indicates that fiscal deficit tends to put upward pressure on the call rate (which is used as a proxy for the monetary policy rate) after a lag, even after controlling for the output gap and inflation gap. This underscores the need for greater co-ordination of fiscal and monetary policies in order to attain the overarching objectives of growth, price stability and financial stability. Indeed, the co-ordination of fiscal and monetary policies taken in the aftermath of the global financial crisis during 2008-09 and 2009-10 met with considerable success in reviving growth and maintaining financial market stability. Developments in the more recent period when both fiscal deficit and inflation remained high and investment and growth slackened also reflected the imperative of co-ordinated policy action. With inflation now showing signs of moderation and the output gap remaining negative, the need to stimulate investment as a means to revert to the trend rate of growth of the economy, is indeed pressing. The revival of investment activity, of course, depends on various structural factors as well as interest rates. Looking ahead, the Twelfth Plan document highlights the significance of an improvement in public sector savings for generating the required resources in order to attain the targeted average rate of growth of 8.0 per cent. The document has also estimated total infrastructure investment during the Plan period at US$ one trillion, with the share of the public sector placed at over 50 per cent. In this context, an orderly and qualitative fiscal adjustment process, as corroborated by the experience and empirical exercise, would not only facilitate the attainment of the Twelfth Plan objectives but also provide more headroom to monetary policy to address macroeconomic and financial stability, in general, and the growth objective, in particular.

6.36 As far as institutional arrangements for government debt management are concerned, the Paul Fisher Study Group (2011), commissioned by the Committee on the Global Financial System, has underscored the need for closer co-ordination between debt management and monetary management, with each agency maintaining independence and accountability for its respective role. The Group has also cautioned against changes in the extant arrangements, including those in some developing economies where the central bank is responsible for some sovereign debt management (SDM) functions or involved in SDM oversight. The views of the Group have been shaped by the experience from the recent global financial crisis, which revealed that debt management impacts not only monetary management but also the maintenance of financial stability. In India, even as the long record of debt management conducted by the central bank has been impressive, the successful staving off of the indirect adverse effects of the global financial crisis, in the recent period, has been attributed to the close co-ordination between debt, liquidity/ monetary and exchange rate management. The processes in this regard were greatly facilitated because these functions, though separate, remained housed within the same organisation. The persistence of very large borrowings by the government has significant macroeconomic, monetary and financial stability implications – areas where the central bank has an undeniably important, if not unique, role to play. The debt management of all the state governments casts an added and distinct dimension to the issue. Against this backdrop, there is a need to review the content and pace of the proposed shift of the debt management function from the central bank to the government.

SELECT REFERENCES

II. FISCAL-MONETARY CO-ORDINATION – THEORY AND INTERNATIONAL EXPERIENCE

Auerbach, A., and M. Obstfeld (2005),"The Case for Open-Market Purchases in a Liquidity Trap," *American Economic Review*, Vol.95(1).

Bank of England, "Monetary Policy Roundtable", *Quarterly Bulletin* 2010 Q3.

Bank of International Settlements (2011), Annual Report 2010-11, June.

Bean, Charles (2003), "Asset Prices, Financial Imbalances and Monetary Policy: Are Inflation Targets Enough?" *BIS Working Paper No. 140*.

Bernanke, B. S. (2003), "Constrained Discretion and Monetary Policy", *BIS Review*, 5/2003.

Bernanke, B. S. and M. Gertler (2001), "Should Central Banks Respond to Movements in Asset Prices?" *American Economic Review*, Vol.91(2), 253-257.

Bernanke, B. S. (2012), "Five Questions about the Federal Reserve and Monetary Policy" Remarks at the Economic Club of Indiana Indianapolis, Indiana October 1,

Blanchard O.J. and F. Giavazzi (2004), "Improving the SGP Through a Proper Accounting of Public Investment", *CEPR Discussion Paper Series* No. 4220.

Blinder, A. S. (1983), "Issues in the Coordination of Monetary and Fiscal Policy", Monetary Policy Issues in the 1980s, Federal Reserve Bank of Kansas City.

Borio, Caludio and P. Lowe (2002), "Asset Prices, Financial and Monetary Stability: Exploring the Nexus". *BIS Working Paper* No. 114.

Buiter, W. H. (2000), "The Fiscal Theory of the Price Level: A critique", *Economic Journal*, Vol.112(481), 459–480.

Buiter, W.H and and Nikolaos Panigirtzoglou (1999), "Liquidity Traps: How to Avoid Them and How to Escape Them," *CEPR Discussion Papers* 2203.

Buiter, W.H. and Anne C. Sibert (2001), " Designing a Monetary Authority", in Anthony M. Santomero, Staffan Viotti, and Anders Vredin (Eds.), "*Challenges for Central Banking"*, Kluwer Academic Publishers, Boston.

Canzoneri, M, R. Cumby and B. Diba (2001), "Is the Price Level determined by the Needs of Fiscal Solvency?"*American Economic Review,* Vol.91 (5),1221–38.

Caruana, Jaime (2011), "Financial and Real Sector Interactions: Enter the Sovereign Ex Machina", Speech at the First CAFRAL-BIS International Conference on Financial Sector Regulation for Growth, Equity and Stability in the Post-Crisis World, November.

Cecchetti, S.G. (2002), "The Problem with Fiscal Policy", Occasional Essays on Current Policy Issues No. 18, January.

Cecchetti, S.G, H. Genberg, J. Lipsky and S. Wadhwani (2000). "Asset Prices and Monetary Policy". ICMBCEPR Report No.2.

Cecchetti, Stephen G, M. S. Mohanty and Fabrizio Zampolli (2011), "The real effects of debt", *BIS Working Paper* No. 352.

Christiano, Lawrence, Martin Eichenbaum, and Sergio Rebelo (2009), When is the Government Spending Multiplier Large, Northwestern University, August 2009.

Cochrane, J. (1998), "A frictionless view of US inflation", in B. Bernanke and J. Rotemberg (Eds), *NBER Macroeconomics Annual*, pp 323–84.

Cochrane, John. H. (2011), "Understanding Policy in the Great Recession: Some Unpleasant Fiscal Arithmetic", *European Economic Review*, Vol.55, 2–30.

Cogan, John F., Tobias Cwik, John B. Taylor, and Volker Wieland (2010), "New Keynesian versus Old Keynesian Government Spending Multipliers," *Journal of Economic Dynamics and Control,* 34(3), 281-295. Revised version of NBER Working Paper No. 14782, March 2009.

Committee on the Global Financial System (2011), "The impact of Sovereign Credit Risk on Bank Funding Conditions. *CGFS Papers* No. 43, July.

Cottarelli, Carlo (2009), "Fiscal Rules—Anchoring Expectations for Sustainable Public Finances", December 16. IMF.

Crockett, Andrew (2001), "Monetary Policy and Financial Stability", BIS Speeches, February 13.

Cukierman, A. (1992), "Central Bank Strategies, Credibility and Independence", The MIT Press.

Davig, Troy and Eric M. Leeper (2009), "Monetary-Fiscal Policy Interactions and Fiscal Stimulus", *NBER Working Paper* No. 15133.

Dixit, A. and L. Lambertini (2000), "Fiscal Discretion Destroys Monetary Commitment", http://dipeco.economia.unimib.it/workemu/workingpapers/pdf/lambertinifiscdisc.pdf

Dragutinovic, Diana. (2009), "Monetary and Fiscal Policy Mix in Serbia: 2002-2007" in Gill Hammond, Ravi Kanbur and Eswar Prasad (Eds.) Monetary Policy Frameworks for Emerging Markets, Cheltenham, UK: Edward Elgar Publishing.

European Central Bank (2012), "Monetary and Fiscal Policy Interactions in a Monetary Union", *ECB Bulletin* July 2012.

Filardo, A. (2004), "Monetary Policy and Asset Price Bubbles: Calibrating the Monetary Policy Trade-offs". *BIS Working Papers* No. 155, June 2004.

Friedman, M. (1968), "The Role of Monetary Policy", *American Economic Review*, Vol.58 (1).

Gagnon, Joseph E. and Marc Hinterschweiger (2011), "The Global Outlook for Government Debt over the Next 25 Years: Implications for the Economy and Public Policy", Policy Analyses in International Economics 94, Peterson Institute for International Economics, Washington, D.C (June).

Gaidar, Yegor (1999), "Lessons of the Russian Crisis for Transition Economies", *Finance and Development*, Vol. 36, No.2, International Monetary Fund.

Gameiro, Isabel Marques, Carla Soares and João Sousa (2011), "Monetary Policy and Financial Stability: An Open Debate", Issue of Discussion 7, available at http://www.bportugal.pt/en-US/BdP%20Publications%20Research/AB201100_e.pdf

Giannone, D., M. Lenza and L. Reichlin (2010), "Non-Standard Monetary Policy Measures and Monetary Developments", Centre for Economic Policy Research, *Discussion Paper Series* No. 8125, November.

Goodfriend, M. (2000). "Overcoming the Zero Bound on Interest Rate Policy," *Journal of Money, Credit and Banking*, Vol.32(4), 1007-35.

Goodfriend, Marvin (2004), "Understanding the Transmission of Monetary Policy," manuscript, Federal Reserve Bank of Richmond. Presented at Joint China-IMF High Level Seminar on China's Monetary Policy Transmission Mechanism, Beijing, May 2004.

Goodfriend, Marvin and Eswar Prasad (2005), "Monetary Policy Implementation in China", *BIS Papers* No. 31.

Goodfriend, Marvin and Eswar Prasad (2006), "A Framework for Independent Monetary Policy in China", *IMF Working Paper 06/111*.

Goodhart, C.A.E. (2010), "The Changing Role of Central Banks", *BIS Working Papers No. 326*, November.

Gordon, David B. and Eric M. Leeper (2005), "Are Countercyclical Fiscal Policies Counterproductive?," *NBER Working Papers* 11869, National Bureau of Economic Research, Inc.

Hagen, Jürgen von and Susanne Mundschenk (2002), "Fiscal and Monetary Policy Coordination in EMU", *Central Bank of Chile Working Paper* No. 194, December.

International Monetary Fund (2009a), "Fiscal Implications of the Global Economic and Financial Crisis", *IMF Staff Position Note SPN/09/13,* June 9.

International Monetary Fund (2009b), Article IV Consultation with the People's Republic of China, Public Information Notice, PIN No.09/87, July 22.

International Monetary Fund (2011), Russian Federation—Concluding Statement for the 2011, Article IV Consultation Mission.

Issing, O. (2005), "The Role of Fiscal and Monetary Policies in the Stabilisation of the Economic Cycle". Speech at the International Conference on "Stability and Economic Growth: The Role of the Central Bank" at Mexico City, 14 November.

Issing, O. (2003), "Monetary and Financial Stability: Is There a Trade-Off?" *BIS Paper No.18*, September 2003.

Khatiwada, S. (2009), "Stimulus Packages to Counter Global Economic Crisis: A Review", International Institute for Labour Studies, *Discussion Paper* No.DP/196/2009.

Krugman, Paul (1998), "*Japan's Trap*", at http://web.mit.edu/krugman/www/japtrap.html

Leeper, E. (1991), "Equilibria under 'Active' and 'Passive' Monetary Policies", *Journal of Monetary Economics* 27(1), 129–147.

Levy, Joaquim Vieira (2010), "The First Time You Never Forget: The Success of Brazil in the 2009 Crisis and the Need for Third-generation Reforms", Paper presented at Banca d'Italia workshop held in Perugia, 25-27 March, 2010.

Lipsky, John (2011), "US Fiscal Policy and the Global Outlook", Speech by the First Deputy Managing Director, International Monetary Fund at the American Economic Association Annual Meetings, Roundtable on "The United States in the World Economy" Denver, January 8, 2011.

Lombardo, G and A. Sutherland (2004), "Monetary and Fiscal Interactions in Open Economies", *Journal of Macroeconomics*, Vol.26, 319-347.

MacFarlane, Helen and Paul Mortimer-Lee (1994), "Inflation over 300 years", *Quarterly Bulletin,* Bank of England, May.

Mishkin, F. (1996), "Understanding Financial Crises: A Developing Country's Perspective". *NBER Working Paper* No. 5600.

Mohanty, M. and Turner, P. (2011), "Monetary Policy in Over-indebted Economies", http://www.hkimr.org/cms/upload/seminar_app/sem_paper_0_424_Paper_2011%2011%2021.pdf

Mohanty, M.S. and Klau, M. (2004), "Monetary Policy Rules in Emerging Market Economies: Issues and Evidence", *BIS Working Paper*, No.149, March.

Nordhaus, W. D., C. L., Schultze, and S. Fischer (1994), "Policy Games: Coordination and Independence in Monetary and Fiscal Policies", Brookings Papers on Economic Activity, 1994 (2)

Ornellas, R. and M. S. Portugal (2011), "Fiscal and Monetary Interaction in Brazil", at http://www.bcu.gub.uy/Comunicaciones/Jornadas%20de%20Economa/t_portugal_marcelo_2011_.pdf

Pigou, A.C. (1943), "The Classical Stationary State", *Economic Journal*, Vol.53 (212), pp. 343–351

Plosser, Charles I. (2011), "Some Observations on Fiscal Imbalances and Monetary Policy", The Philadelphia Fed Policy Forum on "Budgets on the Brink: Perspectives on Debt and Monetary Policy", Federal Reserve Bank of Philadelphia, December 2.

Reddy, Y.V. (2009), India and the Global Financial Crisis: Managing Money and Finance, Orient Blackswan Publication.

Romer, C. and J Bernstein (2009), "The Job Impact of the American Recovery and Reinvestment Plan," January 8, 2009.

Sargent, Thomas J. and Neil Wallace (1981), "Some Unpleasant Monetarist Arithmetic,'' *Quarterly Review*, Federal Reserve Bank of Minneapolis, 5 (Fall).

Schwartz, Anna J. (1995), "Why Financial Stability Depends on Price Stability". *Economic Affairs*, Autumn.

Sims, C. A. (1994), "A Simple Model for Study of the Determination of the Price Level and the Interaction of Monetary and Fiscal Policy". *Economic Theory,* Vol.4(3), 381–399.

Stark, Jürgen (2009), "Monetary and Fiscal Policy: Criteria and Timing for the Phasing Out of Crisis Measures", Speech at 80th Kieler Konjunkturgespräch in Berlin, 15 September.

Subbarao, D. (2009), "Global Financial Crisis Questioning the Questions", JRD Tata Memorial Lecture delivered at the meeting of The Associated Chambers of Commerce and Industry of India, New Delhi, *RBI Bulletin*, August.

Taylor, John B. (2009), "The Financial Crisis and the Policy Responses: An Empirical Analysis of What Went Wrong", *NBER Working Paper* No.14631.

Taylor, John B. (1982a), "Establishing Credibility: A Rational Expectations Viewpoint,'' *American Economic Review*, Vol.72 (May).

Woodford, M. (1994), "Monetary Policy and Price Level Determinacy in a Cash-in-Advance Economy", *Economic Theory*, Vol.4, No.3.

Woodford, Michael (2003). "Comment on 'Multiple-Solution Indeterminacies in Monetary Policy Analysis,'" *Journal of Monetary Economics*, Vol.50(6), 1177–1188.

World Bank (1990), Financial Sector Policies and Institutional Development: China. A World Bank Country Study.

Yellen, Janet L. (2011), "The Federal Reserve's Asset Purchase Program", BIS Central Bankers' Speeches, January 8.

Zoli, E. (2005), "How Does Fiscal Policy Affect Monetary Policy in Emerging Market Countries?" *BIS Working Papers* No 174.

III. FISCAL-MONETARY CO-ORDINATION IN INDIA: AN ASSESSMENT

Aghevli and Khan (1978), "Government Deficits and the Inflationary Process in Developing Countries", *IMF Staff Papers*, Vol.25, 383–416

Ashra, Sunil, Saumen Chattopadhyay and Kousik Chaudhuri (2004), "Deficit, Money and Price: The Indian Experience", *Journal of Policy Modelling*, Vol. 26, 289-299.

Barro, R, (1978), 'Unanticipated Money, Output, and the Price Level in the United States." Journal of Political Economy, Vol.86, Issue 14.

Bevilaqua, Afonso S. and Marcio G.P. Garcia (2002), "Debt Management in Brazil: Evaluation of the Real Plan and Challenges Ahead", *International Journal of Finance and Economics*, Vol.7,15-35.

Bohn, Henning (1998), "The Behaviour of U.S. Public Debt and Deficits", *The Quarterly Journal of Economics*, Vol.113, No.3, 949-963.

Cagan P. (1965): *Determination and Effects of Changes in the Stock of Money*, NBER, New York.

Dholakia, Ravindra H., Jeevan K. Khundrakpam and Dhirendra Gajbhiye (2009), "An Outline of Post 2009 FRBM Fiscal Architecture of the Union Government in the Medium Term", *DRG Study No. 31*, Reserve Bank of India.

Eaton, Jonathan (1981), "Fiscal Policy, Inflation and the Accumulation of Risky Capital", *The Review of Economic Studies*, Vol.48, No.3, 435-445.

Fosu, Oteng-Abayie Eric and Frimpong Joseph Magnus (2006), "Bounds Testing Approach to Cointegration: An Examination of Foreign Direct Investment, Trade and Growth Relationships", *American Journal of Applied Sciences*, Vol. 3, No.11, 2079-2085.

Giannaros, D.S. and B.R.Kolluri, (1985), 'Deficit Spending, Money and Inflation: Some International Empirical Evidence', Journal of Macro Economics, Vol.7, Issue 3.

Grilli, Vittorio, Donato Masciandaro, Guido Tabellini, Edmond Malinvaud and Marcopagano (1991), "Political and Monetary Institutions and Public Financial Policies in the Industrial Countries", *Economic Policy*, Vol.6, No.13, 341-392.

Government of India (2010), 'Report of the Expert Group on a Viable and Sustainable System of Pricing of Petroleum Products' Chairman: Kirit S. Parikh, New Delhi.

Government of India (GoI) (2011), 'Economic Survey 2010-11' New Delhi.

Hamburger, M.J and B Zwick, (1981), 'Deficit, Money and Inflation', Journal of Monetary Economics, Vol. 7, Issue 1.

Jadhav, Narendra and B. Singh (1990), "Fiscal Monetary Dynamic Nexus in India: An Econometric Model", *Economic and Political Weekly*, January 20: 159-165.

Joines, DH, (1985),'Deficits and Money Growth in the United States: 1872-1983', Journal of Monetary Economics, Vol.16, Issue 3.

Karras, G. (1994). Macroeconomic Effects of Budget Deficit: Further International Evidence. *Journal of International Money and Finance*. Vo. 13, Issue 2.

Kia, A, (2006),'Deficits, Debt Financing, Monetary Policy and Inflation in Developing Countries – Internal or External Factors: Evidences from Iran', Journal of Asian Economics, Volume 17, Issue 5.

King, RG and Plosser, CI (1985) Money, deficit and inflation, in Understanding Monetary Regimes, Carnegie-Rochester Confer- ence Series on Public Policy, 22,

King, Robert G. (1985), "Money, Deficits and Inflation", *Carnegie-Rochester Conference Series on Public Policy,* Vol. 22, 147- 196.

Kirsanova, T, C. Leith and S Wren-Lewis, (2009), "Monetary and Fiscal Policy Interaction: The Current Consensus Assignment in the Light of Recent Developments", *The Economic Journal*, Vol. 119: 482-496

Khundrakpam, Jeevan K. and Rajan Goyal (2008), "Is the Government Deficit in India still Relevant for Stabilisation?", *Reserve Bank of India Occasional Papers*, Vol. 29, No. 3: 1-21.

Lombardo, Giovanni and Alan Sutherland (2004), "Monetary and Fiscal Interactions in Open Economies", *Journal of Macroeconomics*, Vol. 26, 319-347.

Metin, K (1998),' Relationship between Inflation and Budget Deficit in Turkey', Journal of Business and Economic Statistics, Vol.16, Issue 4.

Mishra, P.K., U.S. Mishra and S.K. Mishra (2010), "Money, Price and Output: A Causality Test for India", *International Research Journal of Finance and Economics*, Issue 53, 26-36.

Mitra, Pritha (2006), "Has Government Investment Crowded out Private Investment in India?", *The American Economic Review*, Vol. 96, No. 2, 337-341.

Mohanty, D. (2010), "Perspectives on Inflation in India", Speech delivered at the Bankers Club, Chennai, *RBI Bulletin*, October.

Niskanen, W.A., (1978), 'Deficits, Government Spending and Inflation: What is Evidence', Journal of Monetary Economics, Vol.4.

Nordhaus, William D., Charles L. Schultze, and Stanley Fischer (1994), "Policy Games: Coordination and Independence in Monetary and Fiscal Policies", *Brookings Papers on Economic Activity*, Vol. 1994, No.2, 139-216.

Parida, Purna Chandra, Hrushikesh Mallick and Maathai K. Mathiyazhagan (2001), "Fiscal Deficits, Money Supply and Price Level: Empirical Evidence from India", *Journal of Indian School of Political Economy*, Vol.13, No.4, 583-593.

Reserve Bank of India (2010), *Annual Report 2009-10*, Mumbai.

Rother, P. (2004), "Fiscal Policy and Inflation Volatility" *ECB Working Paper Series* No.317/2004, March accessed from <<*www.ecb.int/pub/pdf/scpwps/ecbwp317.pdf* >>

Sargent, T. and N. Wallace (1981), "Some Unpleasant Monetarist Arithmetic", *Federal Reserve Bank of Minneapolis Quarterly Review*, Fall, 1–17.

Shanmugam, Bala, Mahendhiran Nair and Ong Wee Li (2003), "The Endogenous Money Hypothesis: Empirical Evidence from Malaysia (1985-2000)", *Journal of Post Keynesian Economics*, Vol. 25, No. 4, 599-611.

Sharma R. (1984), "Causality Between Money and Prices in India", *Indian Economic Review*, Vol.19(2):213-221.

Sikken, BJ and J De Haan, (1998), 'Budget Deficits, Monetisation and Central Banks' Independence in Developing Countries', Oxford Economic Papers, Vol.50, Issue 3.

Spaventa, Luigi (1987), "The Growth of Public Debt: Sustainability, Fiscal Rules and Monetary Rules", *IMF Staff Papers*, Vol. 34, No. 2, 374-399.

Tekin-Koru, Ayca and Erdal Ozmen (2003), "Budget Deficits, Money Growth and Inflation: The Turkish Evidence", *Applied Economics*, Vol. 35, No. 5, 591-596.

Tobin, J (1963): "An essay on principles of debt management", in *Essays in Economics – Volume 1: Macroeconomics*, North Holland.

IV. FISCAL OPERATIONS AND THE RESERVE BANK'S BALANCE SHEET

Adler Gustavo, Pedro Vastro and Camilo E.Tovar (2012), "Does Central Bank Capital Matter for Monetary policy?, *IMF Working paper*, February.

Al-Jasser, M. and A. Banafe (2002), "The Development of Debt Markets in Emerging Economies: The Saudi Arabian experience", *BIS Papers*, no 11, 178-82.

Baltensperger, Ernst and Thomas J. Jordan (1998), "Seigniorage and the Transfer of Central Bank Profits to the Government", *Kyklos*, Vol.51, 73-88.

Bank for International Settlements (2009), Issues in the Governance of Central Banks, Basel.

Cottarrelli (1993), "Limiting Central Bank Credit to Government – Theory and Practise", *IMF Occasional Paper* (110), December.

Drazen A. (1985), "A General Measure of Inflation Tax Revenues", *Economics Letters*, 17, 327-330.

European Central Bank (2011), Convergence Report 2011, available at http://www.ecb.int.

Hannoun, H (2010), "The Expanding Role of Central Banks Since the Crisis: What are the Limits?" Speech at the 150th Anniversary of the Central Bank of the Russian Federation, Moscow, 18 June, available at http://www.bis.org/speeches

Hawkins, John (2003), "Central Bank Balance Sheets and Fiscal Operations", *BIS Working papers, No. 20.*

Horakova, Martina (2011), "Central Bank Capital Levels: Do They matter and What can be Done?",*Central Banking Journal*, June 2.

Hochreiter, Eduard and Riccardo Rovelli (2002), "The Generation and Distribution of Central Bank Seigniorage in the Czech Republic, Hungary and Poland", Banca Nazionale del Lavaro, *Quarterly Review* No. 223, December, pp. 391-415

Jadhav, Narendra, Partha Ray, Dhritidyuti Bose and Indranil Sengupta (2003), The Reserve Bank of India's Balance sheet, Analytics and Dynamics of Evolution, *RBI Occasional Papers*.

Jadhav, Narendra, Partha Ray, Dhritidyuti Bose and Indranil Sengupta (2005), "Financial Sector Reforms and the Balance Sheet of the Reserve Bank of India", *Economic and Political Weekly*, Vol. 40, No.12, March 19-25.

Kurtzig, J. and B. Mander (2003), "Survey of Central Bank Accounting Practices", in N. Courtis and B

Mander (Eds.), Accounting Standards for Central Banks, London: Central Banking Publications.

Mohanty, Deepak (2011), "Lessons for Monetary Policy from the Global Financial Crisis: An Emerging Market Perspective", paper presented in the Central Banks Conference of the Bank of Israel, Jerusalem, April 1.

Mohanty Deepak and A. K. Mitra (1999), "Experience with Monetary Targeting in India", *Economic and Political Weekly*, January 16-23.

Mohanty, Deepak (2010)**, "**Monetary Policy Framework in India: Experience with Multiple Indicators Approach", *RBI Bulletin*, February.

Quirk, P., G. Hacche, V. Schoofs and L. Weniger (1988), "Policies for Developing Forward Foreign Exchange markets", *IMF Occasional Papers*, no. 60, June.

Reddy, Y.V. (1997), *Financial Sector Reforms and RBI's Balance Sheet Management,* Speech given at the Vysya Bank 11th Annual Lecture on Banking at Bangalore, November 14.

Reserve Bank of India (2004), Report of the Working Group on Instruments of Sterilisation.

Reserve Bank of India *Annual Report*, Various Issues.

Reserve Bank of India (2006), *Report on Currency and Finance, 2004-05*, Mumbai.

Reserve Bank of India (2010), *Report on Currency and Finance,* 2008-09, Mumbai.

Singh, A., S.L. Shetty and T.R. Venkatachalam (1982), "Monetary Policy in India: Issues and Evidence", Supplement to the *RBI Occasional Papers*, 3.

Schaechter Andrea, Tidiane Kinda, Nina Budina and Anke Weber (2012), "Fiscal Rules in Response to the Crisis—Toward the "Next-Generation" Rules. A New Dataset, *IMF Working Paper*, WP/12/187.

Subbarao, Duvvuri (2011), "Implications of the Expansion of Central Bank Balance Sheets", Comments by Governor of the Reserve Bank of India at the Special Governors' Meeting, Kyoto, January 31.

Sweidan, Osama D. (2011), "Central Bank Losses: Causes and Consequences", *Asian-Pacific Economic Literature,* Volume 25, May.

Van't dack, J. (1999), "Implementing Monetary Policy in Emerging Market Economies: An Overview of Issues", in *BIS Policy Papers* no 5, pp 3–72.

V. FISCAL-MONETARY POLICY CO-ORDINATION AND INSTITUTIONAL ARRANGEMENTS FOR GOVERNMENT DEBT AND CASH MANAGEMENT – A MEDIUM-TERM OUTLOOK

Aisen, A. And D. Hauner (2008), "Budget Deficits and Interest Rates: A Fresh Perspective", *IMF Working Paper* WP/08/42.

Blommenstein, H. and P. Turner (2011), "Interactions Between Sovereign Debt Management and Monetary Policy Under Fiscal Dominance and Financial Instability", *OECD Working Papers* on Sovereign Borrowing and Public Debt Management No. 3.

Cochrane, J. (1999), "Long term Debt and Optimal Policy in the Fiscal Theory of the Price Level", *Econometrica*.

Committee on the Global Financial System (2011), "Interactions of Sovereign Debt Management with Monetary Conditions and Financial Stability", *CGFS Papers* No. 42, BIS, May.

Cross, M., P. Fischer and O. Weeken (2010), "The Bank's Balance Sheet during the Crisis", *Bank of England Quarterly Bulletin*, Q1.

Goodhart, C. (2010), "The Changing Role of Central Banks", *BIS Working Papers* 326, November.

Government of India (2008), "Report of the Internal Working Group on Debt Management", October 31.

Hoogduin, L., B. Öztürk and P. Wierts (2010), "Public Debt Managers' Behaviour: Interactions with Macro Policies", *DNB Working Papers*, 273.

International Monetary Fund (2012), Fiscal Monitor, October.

Melitz, J. (1997), "Some cross-country evidence about debt, deficit and the behaviour of monetary and fiscal authorities", *CEPR Discussion paper no. 1653*.

Melitz, J. (2002), "Debt, deficits and the behaviour of monetary and fiscal authorities", in M.Buti, J. von Hagen and C. Martinez-Mongay, *"The behaviour of fiscal authorities - Stabilization, growth and institutions", Palgrave*.

Mohanty, D. (2012), "Evidence on Interest Rate Channel of Monetary Policy Transmission in India", Paper presented at the Second International Research Conference organised by the RBI on February 1-2, 2012, at Mumbai.

Mohanty, M.S. and M. Scatigna (2003), "Countercyclical Fiscal Policy and Central Banks" in "Fiscal Issues and Central Banking in Emerging Countries", *BIS Paper* No.20, October

Mu, Y. (2006), "Government Cash Management: Good Practice & Capacity-Building Framework", *Financial Sector Discussion Series*, World Bank, May.

Muscatelli, V.A., P. Tirelli and C. Trecroci (2002), "Monetary and Fiscal Policy Interactions over the Cycle: Some Empirical Evidence", *CESifo Working Paper* No.817, December.

Raj, J., J. K. Khundrakpam and D. Das (2011), "An Empirical Analysis of Monetary and Fiscal Policy Interaction in India", *RBI Working Paper* No.15.

Reserve Bank of India (2005), *Report on Currency and Finance*, Mumbai: Reserve Bank of India.

Reserve Bank of India (2009), *Report of the Committee on Financial Sector Assessment*.

Sargent T.J. and N. Wallace (1981), "Some Unpleasant Monetarist Arithmetic", *Quarterly Review* No.531, Federal Reserve Bank of Minneapolis.

Singh, B. (2010), "Monetary Policy Behaviour in India: Evidence from Taylor-Type Policy Frameworks", *RBI Staff Studies* No.2.

Subbarao, D. (2011), "Central Bank Governance Issues – Some RBI Perspectives", Comments at the meeting of the Central Bank Governance Group, Bank for International Settlements, Basel, 9 May 2011.

Subbarao, D. (2012), "Price Stability, Financial Stability and Sovereign Debt Sustainability – Policy Challenges from the New Trilemma", Inaugural Speech at the Second International Research Conference of the Reserve Bank of India at Mumbai on February 1, 2012.

Taylor, J. (1993) "Discretion versus policy rules in practice", *Carnegie-Rochester Conference Series on Public Policy* 39, November.

The World Bank and the International Monetary Fund (2001), "Developing Government Bond Markets: A Handbook"

Tillmann, P. (2011), "Parameter Uncertainty and Nonlinear Monetary Policy Rules", *Macroeconomic Dynamics*, 15.

Togo, E. (2007), "Coordinating Public Debt Management with Fiscal and Monetary Policies: An Analytical Framework", *Policy Research Working Paper* No.4369, The World Bank.

Williams, M. (2010), "Government Cash Management: Its Interaction with Other Financial Policies," *International Monetary Fund, Technical Note and Manuals*, July.

Woodford, M. (1995), "Price level determinacy without control of a monetary aggregate", *Carnegie-Rochester Conference Series on Public Policy*.

Wyplosz, C. (1999), "Economic policy coordination in EMU: Strategies and institutions", in *"Financial Supervision and Policy Coordination in the EMU", ZEI (Centre for European Integration Studies), Working Paper No. B11-1999.*

Zoli, E. (2005), "How Does Fiscal Policy Affect Monetary Policy in Emerging Market Countries?" *BIS Working Paper* No.174, April.

VI. LESSONS AND FUTURE CHALLENGES

Blommenstein, H. and P. Turner (2011), "Interactions Between Sovereign Debt Management and Monetary Policy Under Fiscal Dominance and Financial Instability", *OECD Working Papers* on Sovereign Borrowing and Public Debt Management No. 3.

Jordan, Thomas J. (2012), "Some Lessons for Monetary Policy from the Recent Financial Crisis", *International Journal of Central Banking*, Vol. No. 8. Supplement 1, January.