

**Report of  
the Expert Committee  
to Revise and Strengthen  
the Monetary Policy Framework**



**January 2014**

**RESERVE BANK OF INDIA**

**Mumbai**





भारतीय रिज़र्व बैंक

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Letter of Transmittal

January 21, 2014

The Governor  
Reserve Bank of India  
Mumbai

Dear Sir,

We herewith submit the Report of the Expert Committee to Revise and Strengthen the Monetary Policy Framework.

Yours faithfully,

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(P. I. Nayak)  
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(Chetan Ghate)  
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हिंदी आसान है, इसका प्रयोग बढ़ाइए



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## Abbreviations

AEs	Advanced Economies	ECB	European Central Bank
AUM	Assets Under Management	EMDEs	Emerging and Developing Economies
BI	Bank Indonesia	EMEs	Emerging Market Economies
BIS	Bank for International Settlements	EPFO	Employees' Provident Fund Organisation
Bps	Basis Points	FIT	Flexible Inflation Targeting
BRICS	Brazil, Russia, India, China and South Africa	FLS	Funding for Lending Scheme
CAD	Current Account Deficit	FMPs	Fixed Maturity Plans
CBRT	Central Bank of the Republic of Turkey	FOMC	Federal Open Market Committee
CCBS	Centre for Central Banking Studies	FRBM	Fiscal Responsibility and Budget Management
CCIL	Clearing Corporation of India Ltd.	FSLRC	Financial Sector Legislative Reforms Commission
CDs	Certificate of Deposits	GDP	Gross Domestic Product
CEPR	Centre for Economic Policy Research	GoI	Government of India
CEPS	Centre for European Policy Studies	G-secs	Government Securities
CF	Christiano-Fitzgerald	GST	Goods and Services Tax
CFM	Capital Flow Management	HICP	Harmonised Index of Consumer Prices
CMBs	Cash Management Bills	HP	Hodrick–Prescott
CNB	Czech National Bank	IMF	International Monetary Fund
COICOP	Classification of Individual Consumption by Purpose	IOF	Imposto de Operacoes Financeiras
CPI	Consumer Price Index	IRF	Interest Rate Futures
CPI-AL	Consumer Price Index-Agricultural Labourers	IRS	Interest Rate Swap
CPI-IW	Consumer Price Index-Industrial Workers	IT	Inflation Targeting
CPI-RL	Consumer Price Index-Rural Labourers	ITL	Inflation Targeting Light
CRR	Cash Reserve Ratio	LAF	Liquidity Adjustment Facility
DICGC	Deposit Insurance and Credit Guarantee Corporation	LCR	Liquidity Coverage Ratio
DMO	Debt Management Office	LIBOR	London Inter Bank Offered Rate
DSGE	Dynamic Stochastic General Equilibrium	LPG	Liquefied Petroleum Gas
		LTV	Loan-to-Value
		MFIs	Micro-Finance Institutions

MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act	PF	Provident Fund
MIBOR	Mumbai Inter Bank Offered Rate	PPI	Producer Price Index
MPC	Monetary Policy Committee	QE	Quantitative Easing
MPD	Monetary Policy Department	RBI	Reserve Bank of India
MPMs	Monetary Policy Meetings	REER	Real Effective Exchange Rate
MSF	Marginal Standing Facility	RIBs	Resurgent India Bonds
MSPs	Minimum Support Prices	ROSCs	Reports on the Observance of Standards and Codes
MSS	Market Stabilisation Scheme	SDLs	State Development Loans
NBP	National Bank of Poland	SFs	Standing Facilities
NCAER	National Council of Applied Economic Research	SHGs	Self-Help Groups
NDS - OM	Negotiated Dealing System- Order Matching	SLR	Statutory Liquidity Ratio
NDTL	Net Demand and Time Liabilities	SNB	Swiss National Bank
NEER	Nominal Effective Exchange Rate	TAC	Technical Advisory Committee
NKPC	New Keynesian Phillips Curve	TACMP	Technical Advisory Committee on Monetary Policy
NMB	Net Market Borrowing	TBs	Treasury Bills
NSEIL	National Stock Exchange of India Limited	TDS	Tax Deducted at Source
NSSO	National Sample Survey Office	UCM	Unobserved Components Model
OMOs	Open Market Operations	UMPs	Unconventional Monetary Policies
PDO	Public Debt Office	WALR	Weighted Average Lending Rate
PDs	Primary Dealers	WEO	World Economic Outlook
		WPI	Wholesale Price Index





# Chapter I

## Introduction

I.1 The conduct of monetary policy has undergone fundamental changes and regime shifts all over the world, mainly in response to the challenges and opportunities thrown up by structural changes in economic activity as well as by financial liberalisation and its outcomes. A clearer focus on price stability as a principal – though not necessarily the sole – objective of monetary policy has evolved through a broad consensus. With the deregulation of financial markets and globalisation, the process of monetary policy formulation has acquired a much greater market orientation than ever before. This has been accompanied by institutional changes even as central banks have strived for operational autonomy in pursuit of their goals.

I.2 The global financial crisis and its aftermath have posed formidable challenges for central banks and subjected their mandates to close scrutiny and re-evaluation in the face of unprecedented financial instability. In advanced economies (AEs), this has necessitated use of unconventional monetary policy tools including asset purchases and forward guidance. In the case of emerging market economies (EMEs), the conduct of monetary policy has been complicated by, *inter alia*, systemic externalities associated with monetary policies of advanced economies. Consequently monetary policy in emerging countries has been required to contend not only with supply shocks but also to manage external shocks emanating from surges and ebbs in capital flows, volatility in exchange rates and asset prices, and exit from their own (overly) accommodative policies.

I.3 India's monetary policy framework has undergone several transformations reflecting underlying macroeconomic and financial conditions. In the post global financial crisis years particularly,

there has been considerable debate around the monetary policy framework, especially due to the coexistence of persistent high inflation and sluggish growth.

I.4 Against this backdrop, Governor Dr. Raghuram G. Rajan, in a statement after assuming office on September 4, 2013 observed that:

*The primary role of the central bank, as the RBI Act suggests, is monetary stability, that is, to sustain confidence in the value of the country's money. Ultimately, this means low and stable expectations of inflation, whether that inflation stems from domestic sources or from changes in the value of the currency, from supply constraints or demand pressures. I have asked Deputy Governor Urjit Patel, together with a panel he will constitute of outside experts and RBI staff, to come up with suggestions in three months on what needs to be done to revise and strengthen our monetary policy framework. A number of past committees, including the FSLRC, have opined on this, and their views will also be considered carefully.*

I.5 Accordingly, an Expert Committee to Revise and Strengthen the Monetary Policy Framework was appointed on September 12, 2013. The main objective of the Committee is to recommend what needs to be done to revise and strengthen the current monetary policy framework with a view to, *inter alia*, making it transparent and predictable.

I.6 The Committee comprised of:

**Chairman:**

1. Dr. Urjit R. Patel, Deputy Governor, Reserve Bank of India

**Members:**

2. Dr. P.J. Nayak
3. Professor Chetan Ghate, Associate Professor, Economics and Planning Unit, Indian Statistical Institute, New Delhi
4. Professor Peter J. Montiel, Professor of Economics, Williams College, USA
5. Dr. Sajjid Z. Chinoy, Chief Economist and Executive Director, J.P. Morgan
6. Dr. Rupa Nitsure, Chief Economist, Bank of Baroda
7. Dr. Gangadhar Darbha, Executive Director, Nomura Securities
8. Shri Deepak Mohanty, Executive Director, Reserve Bank of India

**Member Secretary:**

9. Dr. Michael Debabrata Patra, Principal Adviser, Monetary Policy Department, Reserve Bank of India

The Secretariat of the Committee comprised Dr. Mridul Sagar, Director, Department of Economic and Policy Research, Shri Sitikantha Pattanaik, Director, Monetary Policy Department, Dr. Praggya Das, Director, Monetary Policy Department and Dr. Abhiman Das, Director, Department of Statistics and Information Management.

I.7 The terms of reference of the Committee were:

1. To review the objectives and conduct of monetary policy in a globalised and highly inter-connected environment.
2. To recommend an appropriate nominal anchor for the conduct of monetary policy.
3. To review the organisational structure, operating framework and instruments of monetary policy, particularly the multiple

indicator approach and the liquidity management framework, with a view to ensuring compatibility with macroeconomic and financial stability, as well as market development.

4. To identify regulatory, fiscal and other impediments to monetary policy transmission, and recommend measures and institutional pre-conditions to improve transmission across financial market segments and to the broader economy.
5. To carefully consider the recommendations of previous Committees/Groups in respect of all of the above.

The Committee commenced its work from September 26, 2013. The Memorandum appointing the Committee is at Annex A.

I.8 The Committee gained immensely from deliberations with experts/economists/analysts (Annex B). Helpful comments and suggestions were received from Professor Anil Kashyap, University of Chicago and Dr. Sujit Kapadia, Bank of England, which are greatly appreciated. The Committee also benefited from discussions with various officials in the Reserve Bank of India (RBI) including Shri Chandan Sinha, Principal Chief General Manager, Department of Banking Operations and Development; Shri G. Mahalingam, Principal Chief General Manager, Financial Markets Department; Dr. B. K. Bhoi, Adviser, Monetary Policy Department; Shri Jeevan Kumar Khundrakpam, Director, Monetary Policy Department; Shri A.K. Mitra, Director, Monetary Policy Department and Shri J. B. Singh, Assistant Adviser, Monetary Policy Department.

I.9 The Committee wishes to place on record appreciation for the team of resource persons who supported the Committee's work. Drawn from the Monetary Policy Department, the Department of Economic and Policy Research and the Department

of Statistics and Information Management, the contributions of resource persons, *i.e.*, Dr. Saibal Ghosh, Shri Sanjib Bordoloi, Dr. Saurabh Ghosh, Dr. Snehal Herwadkar, Shri S. M. Lokare, Shri Asish Thomas George, Shri Rajesh Kavediya, Shri G. V. Nadhanael, Smt. Abhilasha and Shri Joice John are gratefully acknowledged. The Committee is appreciative of the administrative support from Smt. Indrani Banerjee, Shri P. B. Kulkarni and Shri M. Z. Rahman of the Monetary Policy Department and technical support from the Department of Information Technology.

I.10 The Committee had six formal meetings and a number of informal meetings.

I.11 The Report is organised in six chapters: Chapter II revisits the choice of nominal anchor for India's monetary policy. Chapter III evaluates the effectiveness and transparency of organisational structure, operating framework and instruments of monetary policy. Chapter IV addresses various impediments to transmission of monetary policy. Chapter V discusses the conduct of monetary policy in a globalised environment and Chapter VI provides a summary of the Committee's recommendations.

## Chapter II

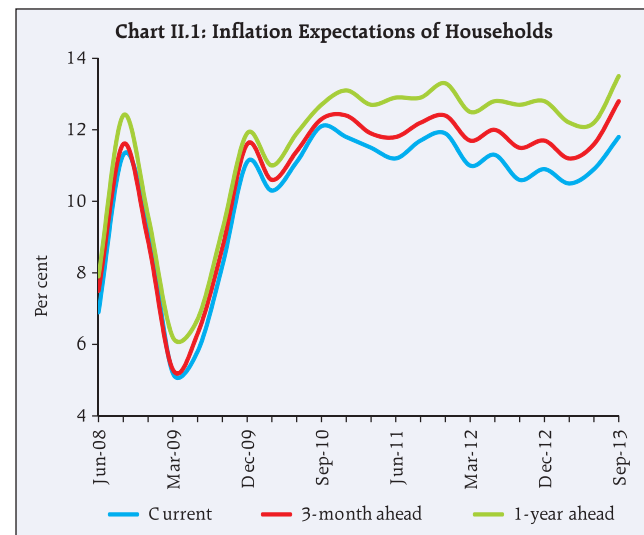
### Revisiting the Choice of Nominal Anchor for India's Monetary Policy

#### 1. Introduction

II.1. In recent years, inflation in India has been amongst the highest within the G-20. Household inflation expectations have risen sharply and have remained at elevated levels, unhinged from the low inflation experience of 2000-07 as also from the global inflation record (Table II.1). Professional forecasters' surveys show that the long-term inflation expectations have risen by about 150 basis points during this period (Charts II.1 and II.2).

II.2. The consequences can be far reaching. First, with high and persistent inflation, real interest rates have remained negative for savers during most of the post-global crisis period leading to a decline in domestic financial saving. Second, since India's inflation has persisted at a level higher than that of trading partners, external competitiveness is getting eroded. If the nominal exchange rate adjusts to offset the inflation differential it can set off a depreciation-inflation spiral, thereby undermining macroeconomic

stability<sup>1</sup>. Third, as the recent experience demonstrated, the large demand for gold as a hedge against inflation exacerbated the decline in financial savings and contributed to a widening of the current account deficit (CAD), rendering the economy vulnerable to external shocks. Fourth, the consequent weakening of the exchange rate has imposed balance



**Table II.1: Cross-Country Inflation Comparison**

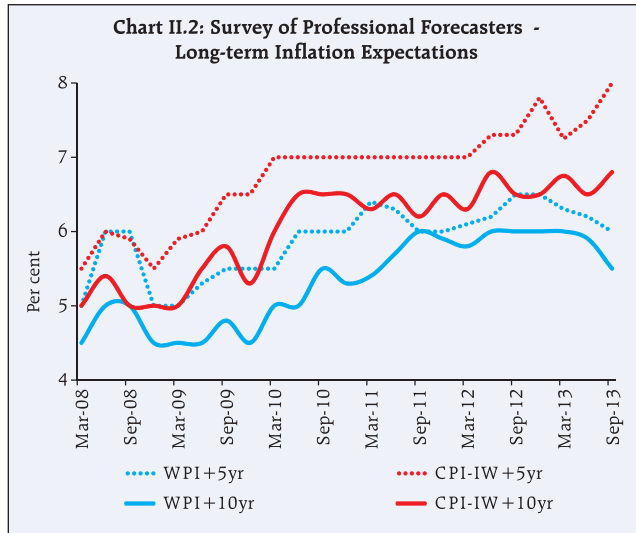
(Per cent y-o-y)

	2000-07	2008	2009	2010	2011	2012	2008-12
<b>I. Global Inflation (CPI)</b>							
World	3.9	6.0	2.5	3.6	4.8	4.0	4.2
EMEs	6.7	9.2	5.3	5.9	7.1	6.1	6.7
BRICS (excluding India)							
Brazil	7.3	5.7	4.9	5.0	6.6	5.4	5.5
Russia	14.2	14.1	11.7	6.9	8.4	5.1	9.2
China	1.7	5.9	-0.7	3.3	5.4	2.7	3.3
South Africa	5.3	11.5	7.1	4.3	5.0	5.7	6.7
<b>II. Inflation in India</b>							
Consumer Price Index – Industrial Workers	4.5	9.1	12.4	10.4	8.4	10.4	10.1
Wholesale Price Index	5.2	8.1	3.8	9.6	8.9	7.4	7.5
Wholesale Price Index -Food	3.8	8.9	14.6	11.1	7.2	9.3	10.2
Wholesale Price Index –Non Food Manufactured Products	4.3	5.7	0.2	6.1	7.3	4.9	4.8

**Note:** Indian inflation pertains to financial year (April-March).

**Source:** World Economic Outlook, IMF; RBI (for India).

<sup>1</sup> The Balassa-Samuelson effect implies that this offset need not be one-for-one if India's productivity growth is higher than other countries.



sheet risks on borrowers in foreign currency with the potential for financial instability. Fifth, persistently high inflation adversely impacts the economy's allocative efficiency and impedes growth<sup>2</sup>. Sixth, high and persistent inflation contributes to a worsening of income distribution as the poor use disproportionately higher cash-in-hand as part of their savings.

II.3. Drawing from the lessons of the global financial crisis, there is a consensus gathering internationally that monetary policy should move away from its narrow focus on inflation towards a multiple target-multiple instrument approach without swerving from a commitment to price stability over the medium term. This emerging consensus, however, is reflected primarily in the form of institutionalising

greater flexibility in the prevailing monetary policy frameworks rather than an explicit regime overhaul. The Committee recognises the evolving global thinking on the subject. Yet, given the initial conditions facing India at the current juncture, bringing down inflation must be accorded primacy. Anchored inflation expectations will then provide the latitude to address other objectives without compromising on price stability.

## 2. Choice of Nominal Anchor

II.4. A transparent and predictable policy framework is, almost by definition, rule-based. Central to a credible framework is a nominal anchor. Whether fixed or moving, it ties down the final goal of monetary policy and/or its path in the medium-to long-term, and the expectations of economic agents adjust accordingly. By acting as a constraint on policy discretion, a nominal anchor disincentivises time inconsistency<sup>3</sup>, including due to pressures from interest groups.

II.5. Broadly, three types of nominal anchors have been recorded, at least in recent history (Appendix Table II.1). The exchange rate, arguably the oldest one and an example of a fixed anchor in its original form, faces diminishing practitioner appeal today as it entails a loss of independence of monetary policy in the pursuit of national objectives, and exposes the economy to external shocks, particularly those emanating from the anchor economy. Furthermore,

<sup>2</sup> "Growing volatility of inflation and the growing departure of relative prices from the values that market prices alone would set combine to render the economic system less efficient, to introduce frictions in all markets and very likely to raise the recorded rate of unemployment" (Friedman 1977). There exists a non-zero rate of inflation where unemployment is the lowest and "operating with inflation either higher or lower leads to a higher rate of unemployment in the long-run" (Akerlof *et al.*, 2000). Empirical estimates from a growth accounting framework suggest that "inflation reduces growth by reducing investment and productivity growth" (Fischer 1993). This is also found to hold in a cross-country framework (Barro 1995).

George, A. A., Dickens, W. T., and G. L. Perry (2000): "Near-Rational Wage and Price Setting and the Long Run Phillips Curve", *Brookings Papers on Economic Activity*, 1, 1- 60.

Barro, R. J. (1995): "Inflation and Economic Growth", *NBER Working Paper 5326*, October.

Fischer, S. (1993): "The role of macroeconomic factors in growth", *Journal of Monetary Economics*, 32(3), 485-512.

Friedman, M. (1977): "Nobel Lecture: Inflation and Unemployment", *Journal of Political Economy*, 85(3), 451-472.

<sup>3</sup> The problem of time inconsistency pertains to an agent (say a central bank) announcing a certain action for a future time point and not implementing the action when that time point is reached due to a preference for a different action. Hence, there is lack of consistency in the preferred course of action at various points of time. Also, other rational economic agents expect this renege on promise from the first agent.

as currency crises have repeatedly shown, an exchange rate anchor makes the monetary policy framework vulnerable to speculative attacks and consequent financial instability.

II.6 Monetary aggregates have also served as nominal anchors, but they have been undermined by instability and loss of predictability of the demand for money, discrediting accountability and communication when targets are missed.

II.7. Since the late 1980s, several countries have adopted inflation as a nominal anchor for monetary policy, drawing upon the strong theoretical and empirical support for low and stable inflation as a necessary precondition for sustainable high growth.

II.8. The explicit domestic orientation of inflation is seen as a clear advantage over other candidates for the nominal anchor. It tasks monetary policy to achieve price stability as an unambiguous and sustainable goal upon which the private sector can anchor its expectations about future inflation. The other positives associated with inflation as an anchor are that it is simple, easily communicated and hence, well understood by the public at large. By promoting low and stable inflation expectations, it contributes to producing a desirable macroeconomic outcome. The varied country experience with inflation targeting (IT) suggests that it has yielded significant benefits in terms of reduced inflation volatility (Svensson, 1997), reduced impact of shocks (Mishkin, 2004) and anchoring of inflation expectations (Kohn 2007,

Swanson, 2006, Levin *et al.*, 2004)<sup>4</sup>. Accordingly, IT frameworks have gained widening acceptance among advanced and emerging economies alike (Appendix Tables II.2A and II.3). This has catalysed the deepening of the institutional architecture around them.

II.9. IT has disadvantages in that (a) some part of inflation, such as from food and fuel, is not easily controlled by monetary policy; (b) it is inherently a medium-term framework because of the long and variable lags in monetary policy transmission. The lack of immediate demonstrability of outcomes can result in ambiguous perceptions of the policy stance. Yet another concern has been the instability imparted to output and employment due to the overarching emphasis on achieving the inflation target, and the observed increase in output losses associated with disinflation.

II.10. Starting with Chile in 1991, the number of EMEs (23) adopting inflation targeting as a monetary policy framework has outstripped that of AEs (9). Most EMEs used inflation targeting initially as a price stabilising device, with a sequence of annually declining inflation targets measured by headline consumer price index (CPI) which is perceived as well understood by the public and quickly available. These EMEs tended to move away from a one-year ahead inflation target to either multi-year targets or a medium-term target. Several countries in this category refer to their monetary policy framework as "inflation targeting light" (ITL)<sup>5</sup>. There are some 38 countries that have not committed to any specific target; among

<sup>4</sup> Kohn, D. (2007): "Success and Failure of Monetary Policy since the 1950s". Speech at Monetary Policy over Fifty Years, a conference to mark the fiftieth anniversary of the Deutsche Bundesbank, Frankfurt, Germany.

Levin, A. T., Natalucci, F. M., and J. M. Piger (2004): "The Macroeconomic Effects of Inflation Targeting", *Federal Reserve Bank of St. Louis Review*, 86(4), 51-80.

Mishkin, F. (2004): "Why the Federal Reserve Should Adopt Inflation Targeting", *International Finance*, 7(1), 117-27.

Svensson, L. E.O (1997): "Inflation Forecast Targeting: Implementing and Monitoring Inflation Targets", *European Economic Review*, 41(6), 1111-1146.

Swanson, E. (2006): "Would an Inflation Target Help Anchor U.S. Inflation Expectations?", *FRBSF Economic Letter*, (Aug 11).

<sup>5</sup> "The ITL countries choose not to adopt a fixed exchange rate because it would leave them vulnerable to a speculative attack. Yet they do not become full-fledged inflation targeters because of constraints, such as the absence of a sufficiently strong fiscal position. Often, ITL is used as a transitional approach—aiming at maintaining monetary stability until the implementation of structural reforms in support of a single nominal anchor. Poland, for example, switched from monetary targeting to ITL before making the full transition to inflation targeting." <http://www.imf.org/external/pubs/ft/fandd/basics/target.htm>

EMEs, important examples in this category are Russia (to complete transition to an IT regime by 2015) and India.

II.11. Finally, some monetary policy frameworks do not operate under an explicit nominal anchor, but such an anchor is implicit and the track record has been creditable<sup>6</sup> (e.g., the US), with forward-looking behaviour triggering pre-emptive strikes against target warnings (Appendix Table II.2B). The main criticisms are the uncertainty in financial markets on policy actions and herding of expectations; strong dependence on individual skills and charisma of the monetary policy wielder; and susceptibility to outside pressures.

II.12. In spite of strong theoretical positions that monetary policy can only hope to affect nominal variables, and that in the long run, there is no trade-off between inflation and employment, policy makers in some parts of the world have shown interest in bypassing nominal anchors and choosing targets from among real variables that have a direct bearing on growth and consumption. Real exchange rate targeting has been the most popular, but the experience has been that while monetary policy may be able to temporarily influence the real exchange rate, this can come at the cost of a combination of higher inflation and higher real interest rates. Additionally, this runs the risk of losing the nominal anchor completely – in the case of the real exchange rate target for instance, the rate of nominal appreciation/ depreciation becomes undetermined. The real interest rate has served as an anchor as well<sup>7</sup>. Here too, the experience

has shown that inflation can easily come unhinged since there is nothing to tie it down<sup>8</sup>.

### 3. The Indian Experience

II.13. India's monetary policy framework has undergone several transformations, reflecting underlying macroeconomic and financial conditions as also the dominant socio-politico-economic paradigm. Drawing from the colonial past, the initial years following independence were characterised by an exchange rate anchor set by the proportional reserve system prescribed by the RBI Act where under at least 40 per cent of the total note issue was to be backed by gold bullion and sterling. The proportional reserve system gave way to the minimum reserve system in 1957 (only ₹2 billion worth of foreign securities and bullion needed to be maintained as a backing for currency issue, of which ₹1.15 billion had to be in gold) and the use of credit aggregates as the nominal anchor for monetary policy. Changes in the Bank Rate and the cash reserve ratio (CRR) were the main instruments of monetary policy supporting its explicit credit allocation role embodied in selective credit control, credit authorisation and 'social control' measures to enhance the flow of credit to priority sectors. Setting the tone of monetary policy, the First Five Year Plan envisaged "...judicious credit creation somewhat in anticipation of the increase in production and availability of genuine savings".

II.14. During 1971-1985, the monetisation of the fiscal deficit exerted a dominant influence on the conduct of monetary policy. The pre-emption of resources by the public sector and the resultant

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<sup>6</sup> "The Federal Open Market Committee (FOMC) judges that inflation at the rate of 2 per cent (as measured by the annual change in the price index for personal consumption expenditures) is most consistent over the longer run with the Federal Reserve's mandate for price stability and maximum employment.....The FOMC implements monetary policy to help maintain an inflation rate of 2 per cent over the medium term." [http://www.federalreserve.gov/faqs/money\\_12848.htm](http://www.federalreserve.gov/faqs/money_12848.htm)

<sup>7</sup> In Chile, the interest rate on indexed bonds served as the real anchor during 1985 to 2001.

<sup>8</sup> Other real variables such as output growth or unemployment cannot serve the purpose of credible real anchors since it is well established that monetary policy is neutral in the long run. The US, however, recently announced an explicit unemployment target – to keep interest rates low till unemployment falls below 6.5 per cent. This is consistent with what monetary policy can do, i.e., to bring actual unemployment closer to the natural unemployment level or actual growth closer to the potential growth level.

inflationary consequences of high public expenditure necessitated frequent recourse to the CRR to neutralise the secondary effects of the expansion. Financial repression in the form of interest rate prescriptions, statutory pre-emptions and directed credit partly crowded out the private sector from the credit market. Against this backdrop, the Committee to Review the Working of the Monetary System (Chairman: Dr. Sukhamoy Chakravarty) recommended in 1985 a new monetary policy framework based on monetary targeting with feedback, drawing on empirical evidence of a stable demand function for money. Thus, broad money became the intermediate target while reserve money was one of the main operating instruments for achieving control on broad money growth. The Committee had also emphasized that "short-term interest rates could reinforce the anti-inflationary impact of monetary targeting if they are also used as a monetary management tool in fighting inflation".

II.15. Analysis of the money growth outcomes during the monetary targeting regime indicates that targets were rarely met<sup>9</sup>. The biggest impediment to monetary targeting was lack of control over RBI's credit to the central government, which accounted for the bulk of reserve money creation<sup>10</sup>. Even with the CRR and the statutory liquidity ratio (SLR) raised to close to their statutory ceilings, money supply growth remained high and fuelled inflation persistence at elevated levels. With the reforms introduced in 1991, capital flows became another factor that

rendered control over monetary aggregates difficult. As the pace of trade and financial liberalisation gained momentum in the 1990s, the efficacy of broad money as an intermediate target was re-assessed. Financial innovations and external shocks emanating from swings in capital flows, volatility in the exchange rate and global business cycles imparted instability to the demand for money. There was also increasing evidence of changes in the underlying transmission mechanism of monetary policy with interest rate and the exchange rate gaining importance *vis-à-vis* quantity variables.

II.16. The structural reforms and financial liberalisation in the 1990s also led to a shift in the financing pattern for the government and commercial sectors, with interest rates and the exchange rate, increasingly market-determined. The RBI was able to move away from direct instruments to indirect market-based instruments. The CRR and SLR were brought down to 9.5 per cent and 25 per cent of NDTL of banks, respectively, by 1997. The RBI adopted a 'multiple indicator approach' in April 1998 with a greater emphasis on rate channels for monetary policy formulation relative to quantity instruments<sup>11</sup>. Under this approach, which is currently in use, a number of quantity variables such as money, credit, output, trade, capital flows and fiscal position as well as rate variables such as rates of return in different markets, inflation rate and exchange rate are analyzed for drawing monetary policy perspectives. The multiple indicator approach is informed by forward looking

<sup>9</sup> Report on Currency and Finance, 2009-12, Reserve Bank of India. <http://www.rbi.org.in/scripts/AnnualPublications.aspx?head=Report%20on%20Currency%20and%20Finance>

<sup>10</sup> The facility of *ad hoc* treasury bills led to automatic monetisation of the government's deficit. Whenever the Government of India was in need of cash, it would issue non-marketable 91-day Treasury bills (TBs) to the RBI. This facility was phased out from April 1997. Besides, the Government of India also issued 91-day TBs "on tap" at a fixed discount of 4.6 per cent per annum, that were mostly taken up by banks. Since the RBI rediscounted the tap TBs, it added to monetisation of fiscal deficits and attenuation of monetary policy.

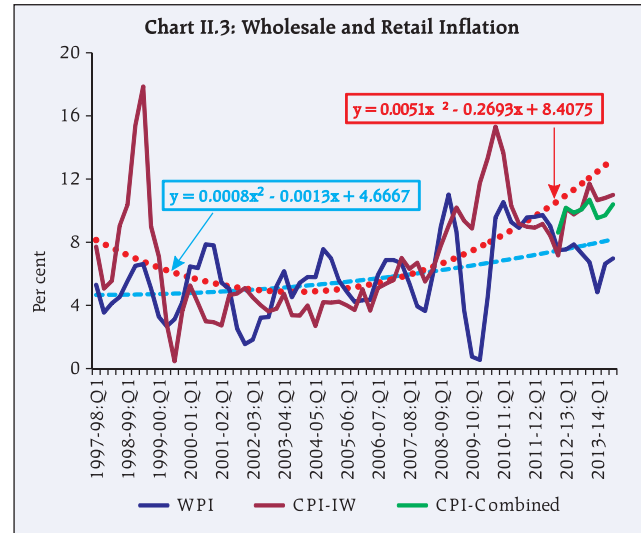
<sup>11</sup> The RBI Annual Monetary Policy Statement (April 1998), while proposing the adoption of a multiple indicator approach, highlighted the challenges associated with the use of a single (a few) indicator(s), in particular monetary aggregates, monetary conditions index and interest rates. While financial innovations were increasingly becoming a source of uncertainty for the assessment of money demand, information on price movements in financial markets were not enough to construct a reliable measure of monetary conditions index, and the interest channel of transmission of monetary policy was still evolving. Against this backdrop, it was felt appropriate that a few key indicators may be used in conjunction with other indicators for purposes of policy making.



indicators since the early 2000s drawn from the RBI's surveys of industrial outlook, credit conditions, capacity utilization, professional forecasters, inflation expectations and consumer confidence. The RBI continues to give indicative projections of key monetary aggregates.

II.17. The multiple indicator approach seemed to work fairly well from 1998-99 to 2008-09, as reflected in an average real gross domestic product (GDP) growth rate of 7.1 per cent associated with average inflation of about 5.5 per cent in terms of both the wholesale price index (WPI) and the CPI. In recent years, however, there has been mounting public censure of the efficacy and even the credibility of this framework as persistently high inflation and weakening growth have come to co-exist. Using a large panel of indicators has been criticised as not providing a clearly defined nominal anchor for monetary policy<sup>12</sup>. It also leaves policy analysts unclear about what the RBI looks at while taking policy decisions.

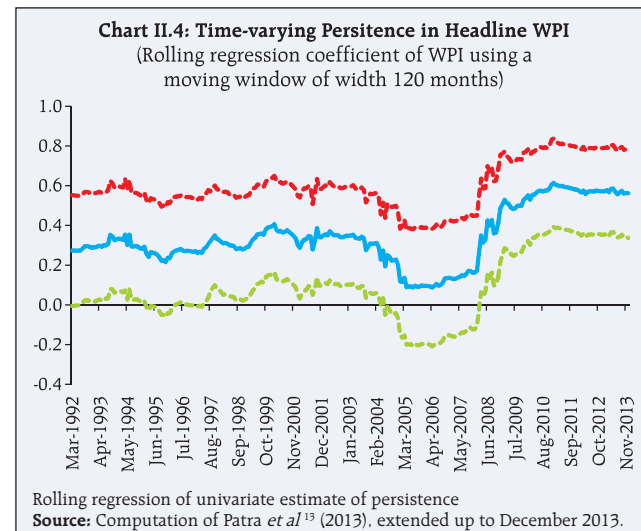
II.18. WPI and Consumer Price Index-Industrial Workers (CPI-IW) inflation declined from 8.0 per cent and 8.8 per cent, respectively, in the monetary targeting regime (1985-86 to 1997-98), to 5.4 per cent and 5.6 per cent, respectively, during the first decade of the multiple indicator regime (1998-99 to 2008-09). Thereafter, it rose to 7.2 per cent and 10.5 per cent, respectively, between April 2009 and November 2013. Since 2008, retail inflation has trended up and has persisted at double digit levels over the last six years (Charts II.3 and II.4). In addition to supply side bottlenecks, there have been sharp increases in the minimum support prices (MSPs) since 2007-08 (Tables II.2 and II.3).



### 3.1. Recommendations of Earlier Committees

II.19. Since 2007 several high level Committees in India have highlighted that the RBI must consider switching over to IT.

#### II.20. The Report of the High Powered Expert Committee on Making Mumbai an International



<sup>12</sup> Mishra, A. and V. Mishra (2011): "Inflation Targeting in India: A Comparison with the Multiple Indicator Approach", *Journal of Asian Economics*, 23(1), 86-98.

<sup>13</sup> Patra, M. D, Khundrakpam, J. and A. T. George (2013): "Post-global Crisis Inflation Dynamics in India", *The Brookings Institution-NCAER, India Policy Forum*, July.

**Table II.2: Minimum Support Price for Foodgrains according to Crop Year**

(Y-o-y growth in per cent)

Year	Paddy Common	Coarse Cereals	Wheat	Gram	Arhar (Tur)	Moong	Urad
2000-01	4.1	7.2	5.2	8.4	8.6	8.6	8.6
2001-02	3.9	9.0	1.6	9.1	10.0	10.0	10.0
2002-03	0.0	0.0	0.0	1.7	0.0	0.8	0.8
2003-04	3.8	4.1	1.6	14.8	3.0	3.0	3.0
2004-05	1.8	2.0	1.6	1.8	2.2	2.9	2.9
2005-06	1.8	1.9	1.6	0.7	0.7	7.8	7.8
2006-07	1.8	2.9	15.4	0.7	0.7	0.0	0.0
2007-08	11.2	11.1	33.3	10.7	9.9	11.8	11.8
2008-09	39.5	40.0	8.0	8.1	29.0	48.2	48.2
2009-10	11.1	0.0	1.9	1.7	15.0	9.5	0.0
2010-11	0.0	4.8	6.4	19.3	52.2	33.0	34.9
2011-12	8.0	11.4	9.8	33.3	5.7	9.0	11.8
2012-13	15.7	19.9	5.1	7.1	4.1	10.0	13.2
2013-14	4.8	11.5	3.7	3.3	11.7	2.3	0.0

**Source:** Handbook of Statistics on Indian Economy, RBI; Ministry of Agriculture, Government of India.

**Financial Centre, 2007 (Chairman: Percy S. Mistry)** emphasised that the gold standard for a monetary policy framework is a transparent, independent, inflation-targeting central bank. With such an arrangement the Indian State would be: (a) underlining its commitment to delivering low and predictable inflation; and (b) inducing greater confidence in the Rupee in the eyes of domestic and global investors.

II.21. **The Report of the Committee on Financial Sector Reforms, 2009 (Chairman: Raghuram G. Rajan)** reiterated that the RBI can best serve the cause of growth by focusing on controlling inflation, and intervening in currency markets only to limit excessive volatility. This focus can also best serve the cause of inclusion because the poorer sections are least hedged against inflation. The RBI should formally have a single objective to stay close to a low inflation number, or within a range, in the medium term, and move steadily to a single instrument, the short-term interest rate (repo and reverse repo) to achieve it.

II.22. **The Financial Sector Legislative Reforms Commission (FSLRC), 2013 (Chairman: B.N.**

**Table II.3 : Mean Inflation Rates and Contribution to Overall Inflation**

Year	WPI	Contribution to Inflation in percentage points			
		Food Items	Non-food Articles	Fuel Group and Minerals	Non-food Manufacturing
1983-84	7.6	3.1	0.5	0.4	3.3
1984-85	6.4	1.2	0.5	0.5	4.6
1985-86	4.5	0.5	-0.1	0.9	4.2
1986-87	5.8	2.5	0.5	0.5	1.6
1987-88	8.2	2.3	0.9	0.2	4.3
1988-89	7.5	2.1	-0.1	0.4	6.4
1989-90	7.4	1.2	0.2	0.4	7.0
1990-91	10.3	2.8	0.7	1.1	5.3
1991-92	13.7	4.5	0.8	1.2	6.9
1992-93	10.0	2.9	0.0	1.2	7.1
1993-94	8.3	1.8	0.4	1.6	4.6
1994-95	12.6	3.7	1.0	1.0	7.5
1995-96	8.0	1.1	0.4	0.5	6.1
1996-97	4.6	2.0	0.0	1.1	0.8
1997-98	4.4	1.5	0.1	1.4	1.1
1998-99	5.9	2.8	0.5	0.4	1.7
1999-00	3.3	1.6	-0.3	1.0	1.8
2000-01	7.2	-0.8	0.1	3.4	2.9
2001-02	3.6	-0.1	0.2	1.3	1.3
2002-03	3.4	0.9	0.3	0.8	1.1
2003-04	5.5	1.6	0.5	1.0	2.7
2004-05	6.5	0.9	0.0	1.8	3.6
2005-06	4.4	0.9	-0.1	2.2	1.5
2006-07	6.6	1.9	0.2	1.4	3.1
2007-08	4.7	1.4	0.5	0.2	2.7
2008-09	8.1	2.2	0.5	2.2	3.1
2009-10	3.8	3.6	0.2	-0.1	0.1
2010-11	9.6	3.0	1.0	2.4	3.1
2011-12	8.9	2.0	0.5	2.9	3.6
2012-13	7.4	2.5	0.5	1.9	2.4
2013-14	6.2	2.9	0.3	1.7	1.2
(up to December)					

**Source:** Patra, M.D. *et al.* (2013), extended up to December 2013-14.

**Srikrishna)** also recommended that price stability is a desirable goal in its own right, particularly in India where inflation is known to hurt the poor and therefore the central bank must be given a quantitative monitorable objective by the Central Government for its monetary policy function. According to the Committee, the Ministry of Finance should put out

a statement defining a quantitative monitorable 'predominant' target. Additional/subsidiary targets could also be specified, which would be pursued when there are no difficulties in meeting the predominant target.

### **3.2. Rationale for Flexible Inflation Targeting in India**

II.23. Major central banks, in both advanced and emerging economies, have adopted flexible inflation targeting (FIT) under which the inflation target is aimed to be achieved on average over the business cycle, while accommodating growth concerns in the short run (Ito, 2013).<sup>14</sup> While FIT recognises the existence of the growth-inflation trade-off in the short run, it is designed around the critical importance of price stability for sustainable growth in the medium run. The flexibility under FIT, however, is not relevant for conditions where the inflation target is not achieved even over a full business cycle – whether at any point of time or on an average *i.e.*, high inflation expectations exhibit far greater stickiness than inflation – despite sustained slowdown in growth; and persistently high inflation in itself becomes a risk to growth (please see footnote no. 2), which limits the space for accommodating growth concerns even in the short run. India, arguably, faces similar conditions in recent years and visible signs of stagflation – *i.e.*, high inflation co-existing with sluggish growth – warrants a refocusing on the critical importance of price stability for improving overall macroeconomic stability in the near term, and for securing growth prospects in the medium run. As set out in Paragraph II.3, India is faced with the unique challenge of experiencing one of the highest inflation rates among G-20 countries, with the level of inflation expectations having doubled over the last four years.

As enunciated earlier, elevated inflation is creating macroeconomic vulnerabilities. In the light of these unique circumstances, the foremost and dominant objective of monetary policy must be to anchor inflation expectations. A monetary policy framework with inflation as the nominal anchor is also consistent with flexibility in exchange rate management<sup>15</sup>.

II.24. Stabilising and anchoring inflation expectations – whether they are rational or adaptive – is critical for ensuring price stability on an enduring basis, so that monetary policy re-establishes credibility visibly and transparently, that deviations from desirable levels of inflation on a persistent basis will not be tolerated. In doing so, monetary policy provides a common set of expectations to all economic agents which, in turn, influences their behaviour and thereby aggregate demand. These dynamics can be captured within the framework of the New Keynesian macroeconomic model that is widely employed by modern central banks (Box II.1).

### **Recommendations**

II.25. *Drawing from the review of cross-country experience, the appraisal of India's monetary policy against the test of outcomes and the recommendations made by previous committees, the Committee recommends that inflation should be the nominal anchor for the monetary policy framework. This nominal anchor should be set by the RBI as its predominant objective of monetary policy in its policy statements. The nominal anchor should be communicated without ambiguity, so as to ensure a monetary policy regime shift away from the current approach to one that is centered around the nominal anchor. Subject to the establishment and achievement of the nominal anchor, monetary policy conduct should be consistent with a sustainable growth trajectory and financial stability.*

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<sup>14</sup> Ito, T (2013): "We are All FIT-ers Now: Is Flexible Inflation Targeting Fit to a New Financial Environment?". *Bank of Thailand and IMF Conference*, November 1-2.

<sup>15</sup> The RBI does not target a specific rate or level for the exchange rate. The RBI intervenes in the market only to smooth exchange rate volatility and prevent disruptions to macroeconomic stability.

**Box II.1: A Theoretical Framework as a Guide for Monetary Policy**

The New Keynesian (NK) research programme is one of the most influential and prolific areas of research in monetary policy analysis. The framework provides the foundations of the NK DSGE (dynamic stochastic general equilibrium) model which is the workhorse model for the analysis of monetary policy at major central banks. DSGE models are based on optimising behaviour of households and firms, rational expectations, and market clearing, *i.e.*, it adopts many of the tools associated with research on real business cycles. However, firms are modeled as monopolistic competitors, and nominal rigidities a key element of the model bring the main source of monetary policy non-neutrality (Gali, 2008a, 2008b; Walsh, 2010; Sbordone *et al.*, 2010).

The simple NK model comprises three equations. The first equation is called the New Keynesian Philips Curve (NKPC). This is the supply block of the model. This can be derived from the aggregation of price-setting decisions by firms, combined with an equation describing the relationship between marginal cost and the level of activity (see Gali 2008a, 2008b). It is given by:

$$\pi_t = \beta E_t \{\pi_{t+1}\} + \lambda x_t + \mu_t \quad (1)$$

where  $\pi_t$  is inflation,  $x_t$  is the output gap,  $E_t$  is the expectation at time period  $t$ , and  $\mu_t$  is a cost-push shock.

The second block relates the output gap positively to its expected one period value  $E_t \{x_{t+1}\}$ , and negatively to the interest rate gap (the difference between the real interest rate,  $i_t - E_t \{ \pi_{t+1} \}$  and the natural rate of interest ( $r_t^n$ )). The equation is given by:

$$x_t = -\frac{1}{\sigma} (i_t - E_t \{ \pi_{t+1} \} - r_t^n) + E_t \{ x_{t+1} \} \quad (2)$$

Equation (2) is called the dynamic IS equation (DIS). The demand block exhibits a negative relationship between the real interest rate and real activity, since a rise in the real interest rate increases savings and lowers consumption (and investment). Both the NKPC and the DIS constitute the non-policy block of the New Keynesian model.

Finally, the model is closed by a monetary policy rule. Monetary policy itself is often described by a central bank, which sets the short-term nominal interest rate according to a Taylor-type policy:

$$i_t = \rho + \phi_\pi \pi_t + \phi_y y_t^* + v_t \quad (3)$$

where  $i_t$  is the short-term nominal interest rate,  $v_t$  is a shock (an exogenous policy disturbance), and  $y_t^*$  represents deviations of log output from its steady state value. The

policy reaction function of the monetary authority closes the model allowing for a complete description of the relationship between the key variables: output, inflation, and the nominal interest rate.

**Optimal Monetary Policy**

Woodford (2003) showed that the objectives of inflation targeting can be approximated by a quadratic loss function consisting of the sum of the squares of inflation deviations from target and a weight times the square of the output gap. The loss function associated with inflation targeting is given by:

$$\sum_{t=0}^{\infty} (\lambda x_t^2 + \pi_t^2), \quad (4)$$

where  $\lambda = 0$  denotes a central bank that is a strict inflation targeter, and  $\lambda > 0$  denotes a central bank that is a flexible inflation targeter (*i.e.*, also concerned about the stability of the economy).

Flexible inflation targeting refers to an optimal monetary policy that minimizes the central bank's loss function (subject to equation (1)) by attaching a penalty to output gap fluctuations. It can be shown that there are potential welfare gains to be made if the central bank conveys *credibly* the extent of its anti-inflationary stance (Svensson, 1997). Further, in the context of the simple NK model in equations (1), (2) and (3), the welfare comparisons will vary depending on the weight given to output stabilization. The general result is that the smallest welfare losses are obtained when monetary policy responds to changes in inflation only.

As Gali (2008b) points out, there are two direct costs of inflation in this framework which justify why central banks should pursue a policy aimed at price stability. In the absence of cost-push shocks, inflation becomes an indicator of an inefficient level of economic activity, because of the deviation of output from its natural level due to the presence of nominal rigidities. Inflation also generates a more inefficient allocation of resources across firms and sectors, because not all firms can adjust their prices, which makes relative prices vary in accordance with firm or sectoral level shocks. This leads to sub-optimal goods being consumed and produced. Both considerations, and other practical considerations (such as the risk of hitting the zero lower bound on the nominal interest rate), suggest that a desirable policy is the attainment of a positive target for inflation over a medium-term horizon. Also, because inflation and the output gap are forward-

(Contd...)

(Concl.)

looking variables, the analysis of monetary policy in the context of models with forward-looking variables points to the importance of a credible commitment to improve the central banks trade-offs.

The NK framework can be used to evaluate the desirability of alternative monetary policy rules. It can also be used to determine the optimal monetary policy rule using welfare-based criterion. Because of its flexibility, it is able to incorporate a wide variety of country-specific characteristics of emerging market economies (commodity price shocks, formal-informal sector linkages), as well as other extensions (open economy features, credit frictions, etc.) for monetary policy analysis.

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II.26. This recommendation is intended to better ground inflation expectations by making clear that inflation is the RBI's primary objective and that it expects to be held accountable for its performance in this regard.

## 4. The Choice of Inflation Metric in India

### 4.1 Range of Options

II.27. Until recently, the RBI communicated indicative inflation projections in terms of the WPI alone, essentially because it is the only measure of prices at a national level and CPIs have traditionally addressed prices facing specific sections of society. The three legacy consumer price indices – CPI-IW, Consumer Price Index-Agricultural Labourers (CPI-AL) and Consumer Price Index-Rural Labourers (CPI-RL) – capture the heterogeneity of the economic structure and the differences in the consumption basket across different population segments. Since October 2013, the RBI has started providing indicative projections of inflation in terms of the broader CPI-Combined. While WPI weights are

primarily based on production and traded values, the CPI-Combined weighting diagram is based on the National Sample Survey Office (NSSO)'s 2004-05 consumer expenditure survey. The RBI internally conducts inflation analysis on the basis of a number of other indicators besides WPI/CPIs – inflation expectations; yield spreads; input and output prices in business expectations surveys and purchasing managers' indices; rural wages and corporate staff costs; house prices and the like.

II.28. The WPI is an imperfect substitute for a producer price index (PPI). Furthermore, it does not capture price movements in non-commodity producing sectors like services, which constitute close to two-thirds of economic activity in India. It also does not generally reflect price movements in all wholesale markets as the price quotes of some of the important commodities like milk, LPG and the like are basically taken from retail markets. Movements in WPI often reflect large external shocks. Moreover, it is often subject to large revisions; for instance, between January 2010 and October 2013, WPI inflation was

revised 43 times out of which 36 times were in the upward direction. These revisions are made two months after the first announcement, generating large uncertainty in the assessment of inflation conditions. Conducting monetary policy based on provisional numbers generally entails the risk of under-estimating inflationary pressures, especially when inflation is rising.

II.29. The true inflation that consumers face is in the retail market. Although price indices that relate to consumer expenditures are at best imperfect, they are still close indicators of the cost of living. Almost all central banks in AEs and EMEs use CPI as their primary price indicator. Other price indicators like the national income price deflator are used as a secondary indicator<sup>16</sup>. The choice of CPI establishes 'trust' *viz.*, economic agents note that the monetary policy maker is targeting an index that is relevant for households and businesses<sup>17</sup>. The widespread use of the CPI as the major price indicator reflects its advantages – it is familiar to large segments of the population and often used in both public and private sectors as a reference in the provision of government benefits or in wage contracts and negotiations. Importantly in India, unlike the WPI, the CPI is not subject to large revisions, which enhances its utility to the public and its usefulness for monetary policy purposes<sup>18</sup>. There is no revision in CPI-IW and in case of the CPI-Combined, revisions have so far been marginal.

II.30. It is observed that the CPI-Combined has a strong and statistically significant correlation with the CPI-IW, allowing the superimposition of the weighting pattern of the former on the price trends of the latter so as to generate a sufficiently long time

series for empirical assessment. The lag in the data release of the CPI-Combined is only 12 days as against one month for CPI-IW. The CPI-Combined and the CPI-IW also show similar inflation momentum. Also, the CPI-Combined is empirically found to be robust in comparison with CPI-IW as far as price reporting is concerned. Accordingly, the argument that the CPI-Combined does not have adequate history to support data analysis is not by itself a limiting consideration.

II.31. In India, food has 48 per cent weight in the CPI-Combined. If 'food' and 'fuel and light' are excluded in order to arrive at a core inflation measure, 57.1 per cent of the consumption basket will be discarded. Also, two major energy components, *viz.*, petrol and diesel, are part of transport and communication, which cannot be further segregated (as item level disaggregated price index is not available for the CPI-Combined). This also limits the estimation of CPI core inflation based on statistical techniques other than exclusion. Furthermore, high inflation in food and energy items is generally reflected in elevated inflation expectations. With a lag, this gets manifested in the inflation of other items, particularly services. Shocks to food inflation and fuel inflation also have a much larger and more persistent impact on inflation expectations than shocks to non-food non-fuel inflation. As such, any attempt to anchor inflation expectations cannot ignore shocks to food and fuel. Furthermore, it is the headline CPI that households use to deflate nominal returns and therefore headline CPI informs their portfolio choice of financial assets *vis-a-vis* other categories (like gold and real estate). Therefore, in spite of the argument made that a substantial part of CPI inflation may not be in the ambit of monetary policy to control, the

<sup>16</sup> Moreno, R. (2009): "Some Issues in Measuring and Tracking Prices in Emerging Market Economies", Chapter in "Monetary Policy and the Measurement of Inflation: Prices, Wages and Expectations", *BIS Papers*, 49, December, 13-51.

<sup>17</sup> Bank of England (2013): "Monetary Policy Trade-offs and Forward Guidance", available at <http://www.bankofengland.co.uk/publications/Documents/inflationreport/2013/ir13augforwardguidance.pdf>

<sup>18</sup> See Annex 1 for causal relation between CPI and WPI for food and core components.

exclusion of food and energy may not yield 'true' measure of inflation for conducting monetary policy. In these conditions, the CPI-Combined based headline inflation measure appears to be the most feasible and appropriate measure of inflation – as the closest proxy

of a true cost of living index – for the conduct of monetary policy. Going forward, improvements in the index will be helpful to make the CPI-Combined a more robust and comprehensive measure of inflation conditions (Box II.2).

### Box II.2: CPI-Combined as a Representative Measure of Inflation

The introduction of new CPIs in 2011, *i.e.*, all India CPI-Combined, CPI-Rural and CPI-Urban provides for the first time a nationwide retail price index in India that captures the inflation faced by households, *i.e.*, cost of living inflation. The new CPIs have a comprehensive coverage across regions as well as commodity groups including services. With a base year of 2010, the new CPIs have a weighting pattern that reflects more recent consumption patterns as compared with the other CPIs, as it is based on NSSO's 61<sup>st</sup> Round of Consumer Expenditure Survey data (2004-05). The CPI consumption basket will become up to date with its forthcoming revision based on weights from the NSS 68<sup>th</sup> round Consumer Expenditure Survey (2011-12). As per the latest NSSO survey, the weight of food in the consumption basket has gone down (from 55.0 per cent and 42.5 per cent respectively in the 2004-05 Round to 48.6 per cent and 38.5 per cent in the 2010-11 Round for rural and urban areas, as per the uniform reference period (URP) of last 30 days).

The prices data collected from across India on a monthly basis by NSSO, Department of Posts as well as through web portals maintained by the National Informatics Centre, has contributed to improving the quality of data. At times, other measures of CPI have yielded similar inflation as the new CPIs; however, due to large differences in coverage and the weighting diagram (Table 1), comparison of new CPI and old CPIs (*i.e.* CPI-IW, CPI-AL and CPI-RL) at item level, is not directly feasible.

While inflation measured by CPI-Combined is the most representative among available measures of inflation for households and therefore monetary policy, disaggregated information on weights and prices at the commodity level is not yet available. Public dissemination of disaggregated information is important for analysis and as a 'public good' in itself. Availability of data on item level indices will also help in understanding the nature of price flexibility/stickiness. Moreover, if the disaggregated information is also made available for sub-groups based on Classification of Individual Consumption by Purpose (COICOP), it would facilitate cross-country comparison of price movements.

Currently, the housing index for CPI-Urban includes different sub-samples for different months and the samples are

repeated only once in six months. Information on centres included in each sub-sample would be required to get a clearer idea of region specific movements in house prices and rent.

The CPI-Combined is compiled based on aggregation of State-level CPIs using state-based weights to derive the all India Index. Considering the heterogeneous nature of price movements across different regions, the CPI-Combined inflation could be susceptible to localised price pressures and volatility. Having indices based on national level weights at commodity level, to an extent, could mitigate this. More detailed information at the state level should also be made available in the public domain.

Given that CPI captures end-user prices which include both central and state taxes, there could be price fluctuations imparted by different tax structures across States. Currently, in the absence of a uniform GST, state level variations in tax policies and their contribution to the national inflation would have to be carefully analysed to understand the inflation dynamics. Some information on the tax component of prices at retail level, if compiled separately, could help in disentangling the effects of market driven price movements from the impact of changes in taxes on CPI.

Currently services are largely captured within the Miscellaneous group. Even within the sub-group of miscellaneous, the baskets constitute a mix of goods and services. A separate service price index as a memo item would be desirable for analytical purposes.

**Table 1: Weight of Different Groups in the CPIs**

Items	CPI-Urban	CPI-IW	CPI-Rural	CPI-RL	CPI-Combined
Food and beverages	35.80	46.19	56.58	66.77	47.58
Pan, tobacco and intoxicants	1.35	2.27	2.73	3.7	2.13
Fuel and light	8.40	6.43	10.42	7.9	9.49
Housing	22.53	15.27	-	-	9.77
Clothing, bedding and footwear	3.91	6.57	5.36	9.76	4.73
Miscellaneous	28.00	23.27	24.91	11.87	26.31

**Note:** CPI-Urban and CPI-Rural are the components of the new CPI-Combined

#### 4.2 Rationale for the Choice of CPI

II.32. In view of the long and variable lags characterising monetary policy, an appropriate inflation indicator has to be forward-looking, tracking inflation expectations. A wide consensus in the theoretical and empirical literature has settled around the position that inflation is driven by the output gap and by inflation expectations (either backward or forward-looking) which influence wage and price setting behavior (as typified in the "New Keynesian Phillips Curve (NKPC)"). The evidence forming in the post-2008 global financial crisis period suggest that the role of inflation expectations in shaping inflation dynamics has become even more important. Illustratively, the level of slack in advanced economies should have imparted sustained deflationary pressures in this period; instead, inflation has remained in the 2-3 per cent range because inflation expectations were anchored at those levels by advanced economy central banks (IMF, 2013)<sup>19</sup>. More generally, over the last few decades the role of output gaps *vis-à-vis* inflation expectations in influencing inflation dynamics is observed to be secularly falling.

II.33. A similar dynamic, *albeit* undesirable, may be currently playing out in India. Even as the Indian economy has experienced negative output gaps in 2013, CPI inflation excluding food and fuel has remained sticky at an elevated level, averaging above 8 per cent, and playing a growing role in determining wage and price behavior in India. The crucial question, therefore, is: what is driving household inflation expectations in India? An examination of the quantitative inflation expectations of households in the RBI's survey shows that inflation expectations tended to follow WPI inflation during 2008-09. Post-2011, however, they seem to be following CPI inflation. Panel data analysis based on the RBI's urban households' inflation expectations survey shows that both three-month ahead and one-year ahead expectations are significantly influenced by food as well as fuel inflation measured from CPI-IW (Annex

2). This indicates the need to target headline CPI and not CPI excluding food and fuel to anchor inflation expectations. Empirical evidence also suggests that: (a) changes in CPI-headline as well as CPI-food and fuel inflation drive changes in inflation expectations, and (b) increases in policy rates respond to rising inflation expectations (details in Chapter-IV).

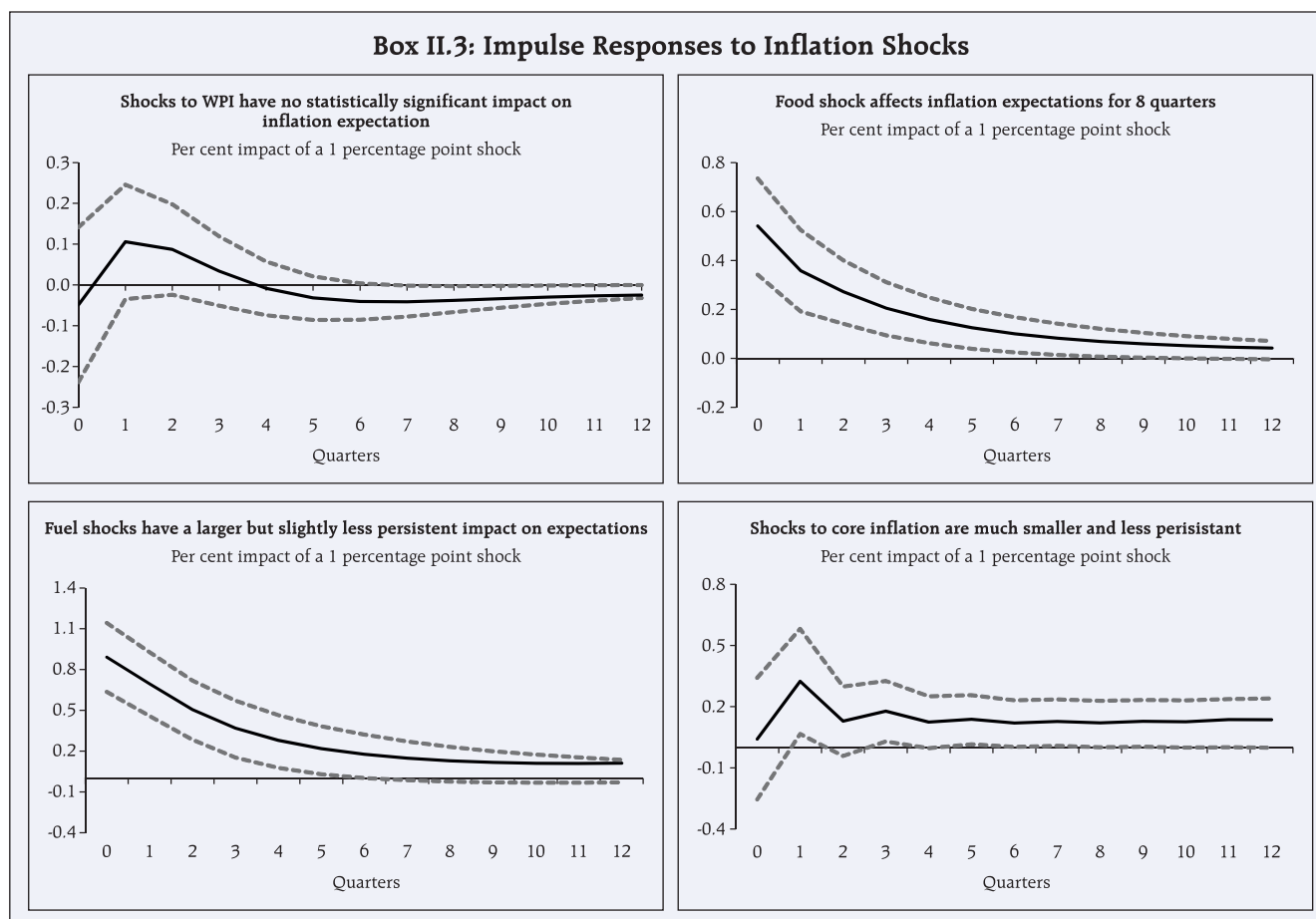
II.34. Modeling inflation as a function of its lag and forward-looking inflation expectations along with the output gap in a Bayesian Vector Auto Regression (VAR) framework – to account for the dynamic properties of each variable and the simultaneity properties – shows that shocks to food and fuel inflation within the CPI basket have the largest and most persistent impact on overall inflation expectations. Specifically, a 100 basis points (bps) shock to food inflation immediately affects one-year forward expectations by as much as 50 bps and persists for 8 quarters. The persistence of the food inflation shock on expectations reveals that either households perceive food shocks to be sustained and/or they expect food shocks will inevitably translate into a more generalized inflation with a lag. Shocks to fuel inflation also result in large changes in expectations but are less persistent, impacting one-year-ahead expectations up to four quarters. Interestingly, shocks to inflation excluding food and fuel have a far more muted quantitative impact on expectations and persist for only two-three quarters. Shocks to WPI inflation have no statistically significant impact on inflation expectations, indicating that targeting the WPI would do little to anchor inflation expectations. This analysis is robust to different estimations of output gaps and to the use of both three-month and one-year-ahead inflation expectations (Box II.3).

II.35. The results are intuitive because households experience food and fuel price changes on a daily basis but other prices change infrequently. The role of inflation expectations cannot be ignored in the price formation process and, in fact, may have assumed greater importance than before. In particular,

<sup>19</sup> IMF (2013): "The Dog that Didn't Bark: Has Inflation been Muzzled or was it Just Sleeping?", Chapter 3, *World Economic Outlook*, April.



### Box II.3: Impulse Responses to Inflation Shocks



the elevated and entrenched nature of expectations in India – as measured by the RBI’s households’ surveys – is likely a key reason why elevated inflation currently co-exists with negative output gaps. Consequently, the choice of the inflation metric cannot ignore food and fuel shocks and must, in fact, react to them to avoid a more generalized inflation spiral that influences household expectations lastingly. Not a single EME inflation-targeting central bank targets core CPI – other than Thailand – all of them target headline CPI. It is often argued that India

is unique, with food and fuel inflation constituting 57.1 per cent of the CPI basket and therefore outside the direct control of the RBI. In this context, however, it needs to be recognized that there are other EMEs that also have a relatively significant fraction of food and fuel in the CPI basket (close to 40 per cent in the case of Indonesia and Brazil) but still choose to target headline CPI<sup>20</sup>. Accordingly, the Committee is of the view that in the current context, targeting headline CPI would be a critical prerequisite for reducing and then anchoring inflation expectations.

<sup>20</sup> The experience of both AEs and EMEs, in particular the UK, Israel, Brazil, Korea, and Indonesia suggests that food inflation often deviates from the headline inflation over a sustained period before converging to headline inflation. Cross-country assessment suggests that food price shocks tend to have larger effects on headline inflation in EMEs than in AEs. Moreover, since inflation expectations are weakly anchored in EMEs, food price shocks have larger effects on inflation expectations also. A striking finding is that EMEs operating with IT often exhibit better performance in managing medium-term inflation expectations in response to food price shocks, almost mirroring the performance of AEs operating with IT, whereas EMEs that do not have IT seem to experience inflation expectations five years ahead rising in response to an adverse food price shock (IMF, WEO September 2011).

**Recommendation**

II.36. *The Committee recommends that the RBI should adopt the new CPI (combined) as the measure of the nominal anchor for policy communication. The nominal anchor should be defined in terms of headline CPI inflation, which closely reflects the cost of living and influences inflation expectations relative to other available metrics.*

**5. Numerical Target and Precision**

II.37. A numerical inflation target reflects, explicitly or implicitly, the meaning of price stability in a country specific context. An explicit interpretation of inflation as an objective of monetary policy is exemplified by the ECB which defines price stability as "...a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area of below 2 per cent". An illustration of an implicit inflation goal is that of China: "Government announced to hold CPI inflation in 2013 at 3.5 per cent, 0.5 percentage point lower than the target of last year". The cross country experience suggests that the numerical target should be a low but non-zero positive number.

II.38. What should be the non-zero positive number for India? Estimates using multivariate methods on quarterly data indicate that the level of CPI-Combined inflation (all India back-casted using the CPI-IW) above which it is inimically harmful to growth is 6.2 per cent (Annex 3). Alternative methods of estimating the output gap (univariate and multivariate) suggest that the output gap was fairly close to zero during the period from Q3 of 2003-04 and Q1 of 2006-07 (Annex 4). During the same period, average CPI inflation was

at around 4 per cent. Admittedly, these estimates may not hold for a future regime that is centered around a clear nominal anchor (in other words, the past may not be a robust guide to the future – a form of Lucas critique at play). Notwithstanding the limitations, these estimates provide, as a possible starting point, empirical support to a range of 4 to 6 per cent for the inflation target.

II.39. The choice of the exact numerical range or target for a country is also informed by inflation in comparator EMEs and trading partners, consistent with its broader integration with the global economy. Country practices suggest that the target should be either less than or equal to the level of inflation that may be consistent with minimum attainable non-inflationary rate of unemployment or maximum non-inflationary rate of growth<sup>21</sup>. In the literature, there is a convergence of views that an inflation rate of 1 to 3 per cent corresponds to price stability in AEs (since the Balassa-Samuelson effect would suggest higher inflation in emerging markets), while in transition economies inflation in the range of 4 to 5 per cent would correspond to price stability<sup>22</sup> (Appendix Table II.4A and B). Thus, the 1 to 3 per cent AE inflation range sets a lower bound, while an inflation rate for India at around 6 per cent<sup>23</sup> can be regarded as an upper bound. The key advantage of a range/band is that it allows monetary policy to do best what it can do, *i.e.*, it remains sensitive to short run trade-offs between inflation and growth, but pursues the inflation target on average over the course of a business cycle. Data limitations (ranging from

<sup>21</sup> "...For policy makers, our main message is that holding inflation below 2 per cent or above 3.5 per cent likely entails significant permanent losses in employment in either country (US and Canada) and that permanent unemployment will probably be minimized at some inflation rate in the 2 to 3.5 per cent range. ...Taking into account the usual statistical uncertainty, we conclude that monetary policy can have a major lasting impact on prosperity, not by achieving full price stability, but by searching for the unemployment-minimizing inflation rate in the range of 2 to 3.5 per cent. (Fortin, P., Akerlof, G. A., Dickens, W. T. and G. L. Perry (2002): "Inflation and Unemployment in the U.S. and Canada: A Common Framework", *Brookings Institution UQAM Working Paper*, 20/16, July).

<sup>22</sup> Jonas, J. and F. S. Mishkin (2003): "Inflation targeting in transition countries: Experience and prospects", *NBER Working Papers*, w9667, <http://www.nber.org/papers/w9667>.

<sup>23</sup> The estimate of 6 per cent inflation as an upper bound is subject to the Lucas critique; under an IT regime inflation expectations can well be anchored at a lower level.

large revisions to low quality of final revised data), projection errors, and short run developments having a large impact on the near-term inflation path – such as failure of agricultural crops, high commodity prices, sharp depreciation in the exchange rate, higher taxes – also warrant flexibility through adoption of ranges/bands. A band also provides lead information on maximum tolerance levels of monetary policy to accommodate unanticipated shocks, which enhances transparency and predictability.

### **5.1. Time Horizon for Attaining Price Stability**

II.40. Speed of disinflation is important for arriving at the appropriate time horizon over which the inflation target may have to be attained, but particularly important for a country aiming at adoption of flexible inflation targeting from a very high and persistent level of CPI inflation. Speed also has to take into account the fact that prolonged high inflation itself imposes costs – in the recent experience in India, these costs have entailed appreciating real effective exchange rate (REER), high CAD, financial disintermediation (into gold), and resultant decline in financial saving and investment that may have contributed to low growth.

II.41. It is difficult to identify the optimal speed of disinflation. The time horizon should ideally reflect the trade off long and variable lags (which may justify two to three years) *versus* credibility of the target (which may demand a shorter time horizon of about one year, since large deviations in the short run, despite the best communication, may not help in anchoring inflation expectations)<sup>24</sup> (Appendix Table II.5). While the Committee recognises that setting a relatively short time horizon can pose controllability problems (*i.e.*, ability of a central bank to achieve the targets without large costs) and lead to loss of credibility if the target is missed, a time horizon of

two years for achieving the inflation target is necessitated by the initial conditions in India and the serious macroeconomic consequences that they have entailed. A two-year time horizon should enable the performance of monetary policy to be easily verified by the public, enhancing credibility. Recognising, however, that large output variations in a short time horizon should generally be avoided by monetary policy, it is pragmatic, on balance, to set multi-year targets that provide a lower medium-term target along with somewhat higher targets for the intermediate years (Box II.4).

### **Recommendations**

II.42. *The Committee recommends that the nominal anchor or target should be set at 4 per cent with a band of +/- 2 per cent around it (a) in view of the vulnerability of the Indian economy to supply/external shocks and the relatively large weight of food in the CPI; and (b) the need to avoid a deflation bias in the conduct of monetary policy. This target should be set in the frame of a two-year horizon that is consistent with the need to balance the output costs of disinflation against the speed of entrenchment of credibility in policy commitment.*

II.43. *In view of the elevated level of current CPI inflation and hardened inflation expectations, supply constraints and weak output performance, the transition path to the target zone should be graduated to bringing down inflation from the current level of 10 per cent to 8 per cent over a period not exceeding the next 12 months and 6 per cent over a period not exceeding the next 24 month period before formally adopting the recommended target of 4 per cent inflation with a band of +/- 2 per cent. The Committee is also of the view that this transition path should be clearly communicated to the public.*

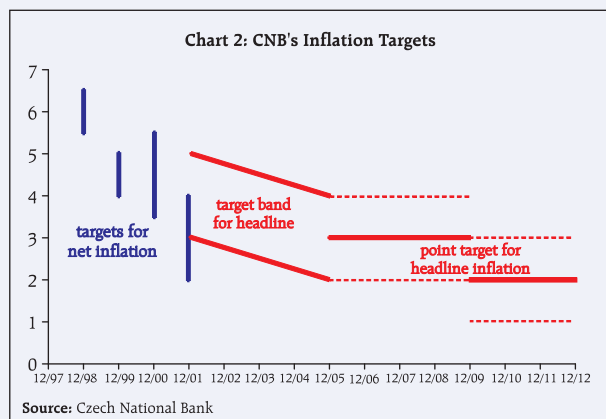
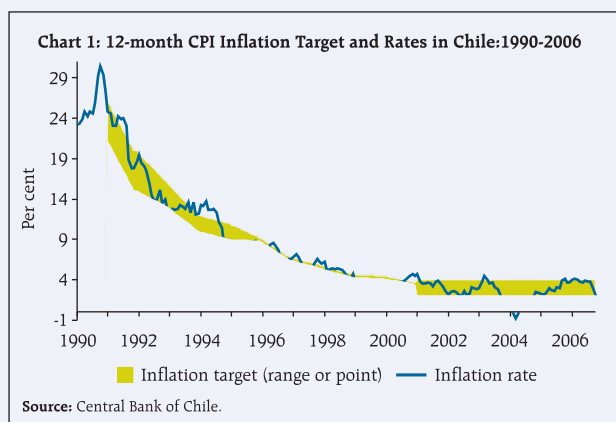
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<sup>24</sup> The control of inflation is also imperfect because it is affected by unobservable shocks. Some deviation of inflation from the target is unavoidable and does not mean that the price stability objective has been disregarded.

**Box II.4: Glide Path for Inflation Targets: Case Studies of Chile and Czech Republic**

Since India's CPI inflation has persisted at a high level over successive years, the experience of countries such as Chile and Czechoslovakia could be particularly useful.

The Central Bank of Chile adopted inflation targeting in September 1990 when the country's level of inflation was over 25 per cent. It announced its first annual inflation target in a range of 15-20 per cent for 1991. The inflation target for each successive year was set at a somewhat lower level than in the previous year. For example, the inflation target range was revised down to 13-16 per cent for 1992. In 1995, however, it adopted a point target. The point target was also gradually lowered from 8 per cent in 1995 to 3.5 per cent in 2000. After reaching a reasonably steady-state inflation rate in 1999, the Central Bank of Chile announced its inflation target as 2 per cent with a tolerance band of 1 per cent point in either direction, to be achieved over the time horizon of 2 years. Chart 1 shows the cautious and gradual approach to adoption of a low inflation target; almost one decade of transition to explicit inflation targeting.



The approach of CNB (Czech National Bank) is a classic example of how all range of options could be tried by a single country over time, recognising the challenge of adopting inflation targeting from a high level of inflation (Chart 2). The CNB switched to inflation targeting in December 1997, by announcing a medium-term inflation target for end-2000 (of 3.5 - 5.5 per cent), but with higher targets of 5.5-6.5 per cent for end-1998, and 4-5 per cent for end-1999. In April 1999, it announced a long-term objective of 1-3 per cent range for end-2005. A band was announced, starting in January 2002, at 3-5 per cent and ending in December 2005 at 2-4 per cent. An inflation target of 3 per cent with a tolerance band of one percentage point in either direction was announced for the period from January 2006. In March 2007, a new inflation target of 2 per cent was announced (to become effective from January 2010). Currently the CNB strives to ensure that actual inflation does not differ from the target by more than one percentage point on either side.

II.44 *Since food and fuel account for more than 57 per cent of the CPI on which the direct influence of monetary policy is limited, the commitment to the nominal anchor would need to be demonstrated by timely monetary policy response to risks from second round effects and inflation expectations in response to shocks to food and fuel.*

**5.2. Institutional Requirements**

II.45. While inflation is clearly a monetary phenomenon in the medium run, several non-monetary factors – both domestic and external;

supply side and demand side – can lead to significant deviations from the target in the short run, which may also impact the medium-term path through persistence and unanchored inflation expectations. It is necessary, therefore, that the adoption of flexible inflation targeting is based on reasonably clear identification of the pre-conditions. In India, building on the reputational bonus from adherence to fiscal targets in 2012-13, the Government must commit on a priority basis to a re-invigoration of the medium-term fiscal consolidation, as was pursued under the Fiscal Responsibility and Budget Management

(FRRBM) Act, 2003<sup>25</sup>. The Committee is of the view that the goal of reducing the central government deficit to 3 per cent of GDP by 2016-17 is necessary and achievable. Towards this objective, the Government must set a path of fiscal consolidation with zero or few escape clauses; ideally this should be legislated and publicly communicated. The Report of the Committee on Roadmap for Fiscal Consolidation, 2012 (Chairman: Vijay L. Kelkar) already provides a path for the period up to 2014-15<sup>26</sup>. Furthermore, it may be important to identify and address other fiscal/administrative sources of pressure on inflation/drivers of inflation persistence. For instance, the design of programmes like Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) provide a sustained upward push to nominal wages unrelated to productivity growth, and the National Food Security Act which could increase demand for foodgrains without corresponding efforts to augment supply. A policy induced wage-price/cost-price spiral can be damaging for the credibility of an inflation targeting framework. The burden on monetary policy to compensate for these sources of inflation pressure is correspondingly higher.

II.46. The Committee recognises that excessive emphasis on pre-conditions may delay the adoption of flexible inflation targeting, and in fact, very few inflation targeting countries achieved all the pre-conditions before formal adoption of the framework. Many inflation targeting countries got instrument independence, achieved more transparency in terms of publication of inflation target/reports, and continued to manage the exchange rate after the switch over to inflation targeting. Fiscal discipline generally turned out to be the biggest immediate advantage of formal adoption of inflation targeting (Table II.4).

**Table II.4: Fiscal Balances of Countries in the Year of Adopting Inflation Targeting and in 2007**

Country	Year of Adopting Inflation Targeting	Fiscal Balance in the Year of Adopting Inflation Targeting (Per cent of GDP)	Fiscal Balance in 2007 (Per cent of GDP)
Chile	1990	3.5	8.4
Israel	1990	-4.4	-0.2
Australia	1993	-3.9	1.5
Canada	1990	-4.9	1.6
Finland	1992	-8.1	5.2
New Zealand	1990	-1.7	2.5
Spain	1994	-4.9	1.9
Sweden	1992	-9.8	3.7
UK	1992	-7.2	-2.7
Brazil	1999	-6.9	-2.6
Czech Republic	1998	-1.6	-0.7
Poland	1999	-5.0	-1.9
South Africa	2000	-2.7	1.2
Thailand	2000	-2.2	0.2

**Source:** 1. IMF (2001) "The Decline of Inflation in Emerging Markets: Can it be Maintained?", *World Economic Outlook*, Chapter 4, Table 4.5, May.  
2. IMF (2010) "Fiscal Exit: From Strategy to Implementation", *Fiscal Monitor*, Statistical Table 1, November.

### Recommendations

II.47. *Consistent with the Fiscal Responsibility and Budget Management (Amendment) Rules, 2013, the Central Government needs to ensure that its fiscal deficit as a ratio to GDP is brought down to 3.0 per cent by 2016-17.*

II.48. *Administered setting of prices, wages and interest rates are significant impediments to monetary policy transmission and achievement of the price stability objective, requiring a commitment from the Government towards their elimination .*

II.49. Finally, communication and transparency is important for any monetary policy framework, but more so for flexible inflation targeting (Appendix

<sup>25</sup> The Parliament, in August 2003, voted for the FRBM Act (the bill was first introduced in Parliament in December 2000). The Act was amended in July 2004, with the terminal date for achieving the numerical targets pertaining to fiscal indicators extended by one year to 2008-09; the annual targets for fiscal correction were specified by Rules formed under the Act.

<sup>26</sup> Report of the Committee on Roadmap for Fiscal Consolidation, 2012 (Chairman: Vijay L. Kelkar), Ministry of Finance, Government of India, September.

## Chapter II

### Revisiting the Choice of Nominal Anchor for India's Monetary Policy

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Tables II.6A and B). There are several factors that demand clearer communication on monetary policy. First, every democratic society requires public institutions that are accountable. The central bank must explain how it uses its monopoly power over money to attain the goals assigned to it by the elected government. Secondly, in a market economy, a central bank has to rely on financial markets for transmission of its policies. It must, therefore, provide frequent assessments on macro-financial conditions (credible

information for the markets) and clarify the intent of the policy stance. This is necessary for enhancing policy effectiveness and containing destabilising expectations. Frameworks with inflation as a nominal anchor emphasise transparency in the form of public release of inflation reports, monetary policy committee minutes, projected inflation path with fan charts and open letters to explain deviations from the inflation target<sup>27</sup>. These aspects are addressed in Chapter III.

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<sup>27</sup> Cavoli, T., and Rajan, R. S. (2008): "Open Economy Inflation Targeting Arrangements and Monetary Policy Rules: Application to India", *Indian Growth and Development Review*, 1(2), 237-251.

# Chapter III

## Organisational Structure, Operating Framework and Instruments of Monetary Policy

### 1. Introduction

III.1. A central bank's success depends on the quality of its decisions. Even with a clear target, suitable instruments and full insulation from outside pressures, a central bank cannot possibly foresee all contingencies. Eventually, its decision has to depend on judgment and, therefore, some discretion, which is best bounded by credible and transparent institutional accountability, is unavoidable. It is in this context that monetary policy decision-making has undergone a silent transformation<sup>1</sup>. The practice of Governor as the single decision-maker is being replaced by committees and no country has yet replaced a committee with a single decision-maker. The benefits attributed to a committee-based approach are: gathering more and better information; pooling different conclusions, potentially reducing errors; insurance against strong individual preferences; and peer reviews promoting openness of interaction and independence. On the other hand, several costs have also been identified: free riding (not contributing fully to decision-making); inertia (could be easily embedded in decisions tending to *status quo* even as a default option); and groupthink. Key to the implementation of the monetary policy decision, irrespective of whether it is taken collegially or by a single decision-maker, are: (a) an operating framework that enables the alignment of suitable instruments to final goals; (b) benchmarking the path set for policy instruments against rules developed through rigorous analysis of complex and fast changing macro dynamics, including structural macro models, dynamic stochastic general

equilibrium (DSGE) models and Taylor rule type formulations; (c) avoidance of perverse incentives, such as seeking to influence the gilt yield curve, inhibiting price discovery, impeding monetary transmission, and potentially creating a conflict with the monetary authority's primary objective; and (d) sensitivity to financial stability concerns.

### 2. Organisational Structure for Decision-making: The International Experience

III.2. The organisational structure of the decision-making process in monetary policy varies across countries. Most central banks have adopted a committee approach for monetary policy decisions. Among major non-inflation targeting central banks is the US, where the Board of Governors of the Fed is responsible for the discount rate and reserve requirements, while the Federal Open Market Committee (FOMC) is responsible for announcing the Fed Funds target rate. In Japan, the stance of monetary policy is decided by the Policy Board at Monetary Policy Meetings (MPMs). In China, the Monetary Policy Committee (MPC) is a consultative body, which has an advisory role in the context of comprehensive research on the macroeconomic situation and the macro targets set by the State Council, which is also entrusted with the monetary policy decision.

III.3. The monetary policy decision-making process in inflation targeting countries can be broadly summarised as follows<sup>2</sup>:

- Most inflation targeting central banks have an MPC which is involved with decision-making.

<sup>1</sup> Blinder, A. (2004): "The Quiet Revolution", *Central Banking Goes Modern*, Yale University Press.

<sup>2</sup> This section draws heavily from "State of the Art of Inflation Targeting – 2012" CCBS Handbook No.29, Bank of England available at <http://www.bankofengland.co.uk/education/Documents/ccbs/handbooks/pdf/ccbshb29.pdf> accessed on October 24, 2013. This handbook reviewed practices prevailing in 27 inflation targeting central banks.

- The final decision on monetary policy is taken by the board of central banks in many countries (thirteen) while in other (eleven) countries the decision is made by the MPC. There are also countries where the MPC makes recommendations to the board, which then takes the final decision.
- The size and composition of committees vary across countries. The number of members range from five to ten. Among inflation targeting countries, about half have no external members in their MPCs.
- The Government does not have representation in the MPC in most countries (except in Colombia, Guatemala and the Philippines).
- Appointment of the members of the MPC is decided by the board of central banks or the central bank Governor in some countries (Israel, Serbia, South Africa); in others, they are appointed by the Government (UK, Poland, Mexico, Indonesia).
- Decision-making in MPCs is mostly by voting while about eight countries arrive at monetary policy decisions through a consensus.
- In 12 countries, the MPC meets every month, and most countries have MPC meetings at least bi-monthly.

III.4. The major rationale for entrusting the task of monetary policy decision to a specialised committee appears to be that monetary policy formulation requires considerable knowledge and expertise on the subject domain. A committee also brings in

participation from different stakeholders as well as diverse opinion which could help in improving the representativeness in the overall decision-making process. Collective wisdom of a group makes the whole somewhat greater than the sum of its parts because it does not simply mimic the views of (a) the average voter, (b) the median voter, and (c) the most skillful member (Blinder, 2008)<sup>3</sup>. This view is supported by experimental evidence (Blinder and Morgan, 2005)<sup>4</sup> and a cross country assessment of performance of MPCs in about 40 countries (Maier, 2010)<sup>5</sup>.

### 2.1 Accountability

III.5. Central bank accountability is the mechanism through which a system of checks and balances is established for the central bank in a democratic set-up. Formally, central banks are accountable to the Government or the Parliament, from where they derive their statutory authority. In practice, they are typically made accountable to legislative committees, ministers of finance, or supervisory boards. The choice of accountability mechanisms generally depends on the nature of the central bank's responsibilities. The mechanisms used for easily observable and quantifiable objectives, such as price stability, are different from those for objectives that are hard to measure, such as financial stability, or not easy to observe, such as the stewardship of resources (BIS, 2009)<sup>6</sup>.

III.6. In some countries (*e.g.*, New Zealand), the central bank Governor is legally the sole decision-maker, which makes it especially clear whom to hold

<sup>3</sup> Blinder, A. (2008): "Making Monetary Policy by Committee". *CEPS Working paper* No. 167, June.

<sup>4</sup> Blinder A. and J. Morgan (2005): "Are Two Heads Better than One? An Experimental Analysis of Group versus Individual Decision-making". *Journal of Money, Credit and Banking*, 37(5).

<sup>5</sup> Maier, P. (2010): "How Central Banks Take Decisions: An Analysis of Monetary Policy Meetings" in P.L. Siklos, M. T. Bohl & M. E. Woher (eds), *Challenges in Central Banking: The Current Institutional Environment and Forces Affecting Monetary Policy*, Cambridge University Press, Cambridge.

<sup>6</sup> BIS (2009): "Issues in the Governance of Central Banks", *A Report by the Central Bank Governance Group*, May (Chap 7). Available on <http://www.bis.org/publ/othp04.htm>.



responsible. In most other central banks, however, decisions are made by a board, committee or council, which gives rise to the issue of collective *versus* individual responsibility. There are several formal mechanisms through which central banks are held accountable for their activities: (i) monitoring by the government or legislature, (ii) publication of regular central bank reports, and (iii) tacit endorsement (the government or Parliament in about one-fifth of countries has explicit power to provide formal directives to the central bank, to override decisions or otherwise change the course of policy) (BIS, 2009).

III.7. The vast majority of central banks have published targets (in particular, for monetary policy), but only a limited number – about 20 per cent and mostly in industrialised countries – are subject to formal procedures when targets are missed. Typically this involves additional reporting requirements to explain the reasons for missing the target as well as the measures and time frame needed to meet the target. Another potential remedial action is no reappointment or even dismissal. But, often, central bank officials can be dismissed only in cases of serious misconduct or incapacity and rarely because of poor performance. Most central banks, and nearly all in EMEs, are regularly monitored by their legislatures. In some countries, the relevant legislative bodies have addressed the problem of expertise by formally consulting external experts on monetary policy matters<sup>7</sup> (BIS, 2009).

### 3. Organisational Structure for Monetary Policy Decisions in the RBI

III.8. The responsibility, accountability and timing of decision-making relating to monetary policy remains with the Governor who is directly accountable to the Government of India. The RBI Act states that the Central Government shall appoint and remove the Governor and may give the RBI directions in the public interest<sup>8</sup>.

III.9. Thus, in India, monetary policy decisions are made by the Governor alone. Indeed, quarterly policy statements are issued in the Governor's name<sup>9</sup>. The process of monetary policy formulation in the RBI has, therefore, been traditionally internal. For policy formulation, the Governor is assisted by Deputy Governors, with one Deputy Governor specifically entrusted with the responsibility for monetary policy setting and conduct, and is guided by the inputs received from the Committee of the Central Board of Directors that meets every week to review monetary, economic and financial conditions.

III.10. Over time, the monetary policy formulation process has become more consultative and participative with an external orientation. Following the introduction of quarterly policy reviews (April/May, July, October and January) in 2005, the RBI set up a Technical Advisory Committee on Monetary Policy (TACMP) in July of the same year with external experts in the areas of monetary economics, central banking, financial markets and public finance. The Committee is chaired by the Governor, with the Deputy Governor

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<sup>7</sup> An example of such an external agency is the International Monetary Fund (IMF), which usually comments on monetary policy in its regular Article IV consultations. The IMF also publishes Reports on the Observance of Standards and Codes (ROSCs) that summarise the extent to which certain internationally recognised standards and codes are observed in areas such as monetary and financial policy transparency, banking supervision and payment systems.

<sup>8</sup> " the Reserve Bank of India is a statutory corporation constituted by the Act of 1934, which is wholly under the control of the Government of India...." (G.P. Wahal *versus* Reserve Bank of India 1983, Lab.I.C.738 (All) (D.B); Reserve Bank of India *versus* S. Jayarajan (1996) 2 Lab.L.J.735 (SC).

<sup>9</sup> Since 2010, the RBI instituted mid-quarter reviews (4 in number in June, September, December and March) in addition to quarterly policy reviews. The mid-quarter reviews are issued on the RBI's website as press releases.

in charge of monetary policy as the vice-chairman and the other Deputy Governors of the RBI as internal members. The Committee meets at least once in a quarter, reviews macroeconomic and monetary developments and advises the RBI on the appropriate stance of monetary policy. It also provides policy recommendations for mid-quarter reviews, which were introduced in 2010. The role of the TACMP is purely advisory in nature. Beginning with the meeting held in January 2011, the main points of discussions of the TACMP are placed in the public domain, with a lag of roughly four weeks after the meeting of the Committee. Members of TACMP have agreed not to speak in public on issues relating to monetary policy from ten days before the TACMP meeting up to one day after the policy announcement though members may express their views in public in other periods in their individual capacity. This shut period is a self-imposed discipline.

III.11. With effect from October 2005, the RBI introduced pre-policy consultation meetings with representatives of different segments of the banking sector, trade and industry bodies, financial market participants, credit rating agencies and other institutions. Since 2009, the RBI has also been holding consultations with senior economists and market analysts twice a year in the run up to the annual policy and the second quarter review.

III.12. To bring in transparency in the process of policy formation, the RBI places in public domain all data/inputs that go into the formulation of monetary policy – its internal macroeconomic assessment and results of surveys<sup>10</sup> in the form of a report entitled 'Macroeconomic and Monetary Developments'.

### 3.1 RBI's Accountability

III.13. The Reserve Bank of India Act does not prescribe any formal mechanism for accountability. Over the years, however, certain practices for accountability have evolved. The RBI sets the rationale of its policies and indicates possible expected outcomes. The Governor holds a regular media conference after every quarterly policy review which is an open house for questions, not just related to monetary policy, but the entire domain of activities of the RBI. The RBI also assists the Finance Minister in answering Parliament questions relating to its domain. Most importantly, the Governor appears before the Parliament's Standing Committee on Finance whenever summoned, which happens on an average three to four times a year (Subbarao, 2013)<sup>11</sup>.

III.14. The Financial Sector Legislative Reforms Commission (FSLRC) makes a strong case for monetary policy independence with accountability and recommends that independence needs to be accompanied by legal and administrative processes that clearly delineate the functioning of the regulator from the rest of the Government. Outlining the parameters of accountability, the FSLRC specifies that in the event of a failure (to be defined clearly), the head of the central bank would have to: (a) write a document explaining the reasons for these failures; (b) propose a programme of action; (c) demonstrate how this programme addresses the problems that have hindered the achievement of the target(s); and (d) specify a time horizon over which the MPC expects the target to be achieved. A further check is envisaged in the form of a reserve power granted to the Central Government to issue directions to the central bank on issues of monetary policy under certain extreme

<sup>10</sup> Industrial outlook; order book, inventory and capacity utilization; inflation expectations; credit conditions; consumer confidence; corporate performance; and professional forecasters' assessments.

<sup>11</sup> Subbarao, D (2013): "Five Years of Leading the Reserve Bank - Looking Ahead by Looking Back", Tenth Nani A. Palkhivala Memorial Lecture delivered in Mumbai on August 29. Available on <http://www.rbi.org.in>

circumstances. Given the drastic nature of this power, any direction under this power must be approved by both Houses of Parliament and can be in force only for a period of three months. Such direction may be issued in consultation with the head of the central bank.

### **3.2 Recommendations of Earlier Committees on MPC**

III.15. Several committees have recommended formation of a full-fledged monetary policy committee (MPC). The Standing Committee on International Standards and Codes, 2002 (Chairman: Dr. Y.V. Reddy) recommended legislative changes in the RBI Act so as to facilitate a mechanism for effective monetary policy. It recommended setting up of a Monetary Policy Committee on the lines of the Board of Financial Supervision.

III.16. The Committee on Fuller Capital Account Convertibility, 2006 (Chairman: Shri S.S. Tarapore) recommended that there should be a formal Monetary Policy Committee. It also recommended that at some appropriate stage, a summary of the minutes of the Monetary Policy Committee should be put in the public domain with a suitable lag.

III.17. The Committee on Financial Sector Reforms, 2009 (Chairman: Dr. Raghuram G. Rajan) recommended that a Monetary Policy Committee should take a more active role in guiding monetary policy actions. It should meet more regularly; its recommendations and policy judgments should be made public with minimal delays.

III.18. The Committee on Financial Sector Assessment, 2009 (Chairman: Dr. Rakesh Mohan) counseled on the need for strengthening the role of the TACMP and recommended that practices/procedures towards this goal be considered as it gains more experience.

III.19. The FSLRC, 2013 (Chairman: Shri B. N. Srikrishna) has recommended that :

- An executive MPC should be constituted that would meet on a fixed schedule and vote to determine the course of monetary policy.
- Once the MPC has determined the policy action, the central bank would establish an operating procedure through which the operating target would be achieved.
- There should be clear accountability mechanisms through which the central bank would be held accountable for delivering on the objectives that have been established for it.

III.20. While the FSLRC elaborated specific aspects of the decision-making process and accountability mechanisms, it was of the view that other critical elements – measurement and research, operating procedure, and monetary policy transmission – would take place through the management process of the central bank, with oversight of the board.

### **3.3 Rationale for the Committee's Recommendation**

III.21. Heightened public interest and scrutiny of monetary policy decisions and outcomes has propelled a world-wide movement towards a committee based approach to decision-making with a view to bringing in greater transparency and accountability. In India, the institution of a sole monetary policy decision-maker embodied in the Governor has served well in establishing credibility; since 2005, however, there has also been movement towards greater consultation with all stakeholders leading up to the setting up of the TACMP. With the publication of the minutes of the TACMP meetings since February 2011, there has been keen public interest in the views expressed in these meetings – particularly when the actual monetary policy decision has not reflected the majority view – attesting to greater appreciation of diversity of view points, independence of opinion and the flavour of specialized experience that TACMP members have brought to these deliberations. In order to make

monetary policy processes more transparent and predictable, the Committee is of the view that this consultative process of monetary policy making should be carried forward to its logical conclusion and formalized into a decision-making process in preference over the purely advisory role of the TACMP. This should bring in a greater sense of involvement and ownership, as well as accountability. Several committees in India have also recommended a formalized committee approach to monetary policy decision-making.

### **Recommendations**

III.22. *Drawing on international experience, the evolving organizational structure in the context of the specifics of the Indian situation and the views of earlier committees, the Committee is of the view that monetary policy decision-making should be vested in a monetary policy committee (MPC).*

III.23. *The Governor of the RBI will be the Chairman of the MPC, the Deputy Governor in charge of monetary policy will be the Vice Chairman, and the Executive Director in charge of monetary policy will be a member. Two other members will be external, to be decided by the Chairman and Vice Chairman on the basis of demonstrated expertise and experience in monetary economics, macroeconomics, central banking, financial markets, public finance and related areas.*

III.24. *External members will be full time with access to information/analysis generated within the RBI and cannot hold any office of profit, or undertake any activity that is seen as amounting to conflict of interest with the working of the MPC. The term of office of the MPC will ordinarily be three years, without prospect of renewal.*

III.25. *Each member of the MPC will have one vote with the outcome determined by majority voting, which has to be exercised without abstaining. Minutes of the proceedings of the MPC will be released with*

*a lag of two weeks from the date of the meeting.*

III.26. *In view of the frequency of data availability and the process of revisions in provisional data, the MPC will ordinarily meet once every two months, although it should retain the discretion to meet and recommend policy decisions outside the policy review cycle.*

III.27. *The RBI will also place a bi-annual inflation report in the public domain, drawing on the experience gained with the publication of the document on Macroeconomic and Monetary Developments. The Inflation Report will essentially review the analysis presented to the MPC to inform its deliberations.*

III.28. *The Chairman, or in his absence the Vice Chairman, shall exercise a casting vote in situations arising on account of unforeseen exigencies necessitating the absence of a member for the MPC meeting in which voting is equally divided.*

III.29. *The MPC will be accountable for failure to establish and achieve the nominal anchor. Failure is defined as the inability to achieve the inflation target of 4 per cent (+/- 2 per cent) for three successive quarters. Such failure will require the MPC to issue a public statement, signed by each member, stating the reason(s) for failure, remedial actions proposed and the likely period of time over which inflation will return to the centre of the inflation target zone.*

III.30. *With the establishment of the MPC, there would be a need to upgrade and expand analytical inputs into the decision-making process through pre-policy briefs for MPC members, structured presentations on key macroeconomic variables and forecasts, simulations of suites of macroeconomic models as described in Chapter II, forward looking surveys and a dedicated secretariat. This will require restructuring and scaling-up of the monetary policy department (MPD) in terms of skills, technology and management information systems, and its reorganization.*

#### **4. International Experience – Operating Targets, Instruments and Liquidity Management**

##### ***4.1 Operating Framework of Monetary policy***

III.31. The operating framework is all about implementation of monetary policy. It primarily involves three major aspects – choosing the operating target; choosing the intermediate target and choosing the policy instruments. The operating target pertains to the variable that monetary policy can directly control with its actions. The tool(s) with which the central bank seeks to impact the operating target is (are) the monetary policy instrument(s). The intermediate target is a variable which the central bank can hope to influence to a reasonable degree through the operating target and which displays a predictable and stable relationship with the goal variable(s). With growing instability in the relationship between the intermediate targets and the ultimate policy variables, intermediate targets have tended to be downgraded in monetary policy regimes of most central banks, although they are monitored as indicators/guides for their information content. The key challenge for the liquidity desk in the central bank is to use a combination of standing facilities, open market operations (OMOs) and reserve requirements to achieve the operating target on a day to day basis, and thereby ensure the first leg of monetary policy transmission. Assessment of liquidity to arrive at the OMO volume (*i.e.*, repo and outright taken together) that can ensure achievement of the operating target is therefore critical, but remains a challenge for every central bank.

III.32. The current norm across central banks of AEs and EMEs is to have a short-term interest rate as the operating target, while using liquidity management instruments to modulate the liquidity conditions suitably so as to control the operating target (Appendix Table III.1). In the US, the operating target of monetary policy is the Federal Funds rate – the rate at which

banks trade balances at the Federal Reserve. Similar to the US, Australia sets a target for the cash rate – the rate at which banks borrow from and lend to each other on an overnight, unsecured basis. Australia, however, regards the cash rate as its main instrument of monetary policy. The cash rate is determined by the demand and supply of exchange settlement balances that commercial banks hold at the Reserve Bank of Australia. Through its open market operations, the Reserve Bank of Australia alters the volume of these balances so as to keep the cash rate as close as possible to its target. Similar systems prevail in Canada, New Zealand, Norway and Indonesia. New Zealand adopted the official cash rate as an instrument of monetary policy in 1999; prior to that, the instruments used to control inflation included influencing the supply of money and signaling desired monetary conditions to the financial markets via a “Monetary Conditions Index”. These mechanisms were, however, indirect and hazy for the markets, and were eventually abandoned. In order to determine how much liquidity should be absorbed or made available to maintain supply and demand equilibrium in bank balances, Bank Indonesia sets targets for monetary operations each day. Since October 2008, it makes announcements of banking liquidity conditions twice daily, covering both total liquidity projection and excess reserves projection. In the UK, the main instrument of monetary policy is the Bank Rate (the interest rate at which money is lent to financial institutions). The main operational target for the Riksbank is the overnight rate which it influences by instruments such as standing facilities and fine-tuning operations. The repo rate is the Riksbank’s key policy signaling rate and a forecast path for the repo rate is given.

III.33. Among countries that have an operating target based on a market rate of interest, the Swiss National Bank (SNB) sets a target range for the three-month Swiss Franc Libor. There are two main monetary

policy instruments – open market operations (the SNB takes the initiative in the transactions) and standing facilities (SNB merely specifies the conditions at which counterparties can obtain liquidity).

III.34. Even though the short-term interest rate remains the main operating target for most central banks, the Bank of Japan switched its operating target from the uncollateralized overnight call rate to the monetary base in April 2013. It conducts money market operations with the explicit objective of expanding the monetary base at the rate of 60-70 trillion yen annually. China uses the growth rates of monetary aggregates as intermediate targets and typically employs several instruments in the implementation of its monetary policy—exchange rate, required reserve ratio, interest rates, and open market operations<sup>12</sup>.

III.35. An analysis of 170 economies showed that, despite the post-global financial crisis scrutiny of monetary policy regimes, there have not been too many instances of regime overhauls, and explicit nominal anchors either in the form of fixed exchange rates or inflation targets have been persevered with. The nature of operations, though, has changed from primary dependence on conventional measures to extensive use of non-conventional measures, but non-conventional measures only justify the need for flexibility in operations, rather than any change in the operating framework meant for normal times<sup>13</sup>.

#### **4.2 Liquidity Management**

III.36. Liquidity management is key to the operating framework as it (i) ensures controllability of the reserve target; (ii) ensures the first leg of monetary policy transmission by anchoring the short-term money market rates to the policy rate target; and (iii) prevents disruptions in payment and settlement, especially for liquidity deficit systems. In view of the

market frictions that could arise from institution-specific and systemic funding liquidity problems and their interdependence, all central banks attempt to institutionalise a sound liquidity management framework. The specific institutional setup, however, varies to a great deal across countries – in terms of maturity and frequency of operations, counterparty arrangements, and eligible collateral (Appendix Table III.2). Liquidity management frameworks typically involve maximum accommodation with ample discretionary provisions, particularly when short-term interest rates serve as the operating target.

III.37. Standing facilities (SFs) are transparent, available to banks and other counter parties without discretionary hurdles, and are generally considered as the safety valve of a liquidity management system. Virtually all central banks have a standing credit facility which extends funds to the deficit counterparty at a penal rate (*e.g.*, marginal lending facility of the ECB, primary and secondary credit facilities of the Fed). Eligible collaterals and tenor of borrowings, however, vary across countries. The standing deposit facility, though less in use, helps to define a floor rate in the inter-bank market, especially in liquidity surplus conditions. The main advantage of a SF is that it gives the central bank a window to intervene in both directions, when needed, to achieve the operating interest rate target, with volatility in inter-bank rates restricted to the corridor. Reducing the volatility in the inter-bank money market rate while achieving the interest rate target is both an objective and also a challenge for efficient liquidity management. There is evidence of asymmetric credit and deposit SFs in some countries.

III.38. In addition to SFs, discretionary operations of a central bank could be classified under two broad heads, *viz.*, (a) the main refinance operations and

<sup>12</sup> Morgan, Peter J. (2013): "Monetary Policy Frameworks in Asia: Experience, Lessons, and Issues", *ADBI Working Paper Series*, No. 435, September.

<sup>13</sup> Rose, Andrew (2013): "Surprising Similarities: Recent Monetary Regimes of Small Economies", *CEPR Discussion Paper Series No. 9684*, October.

(b) other discretionary operations. Under the main refinance operations, the most common instruments are OMOs, which are conducted on a pre-announced date by a central bank with voluntary participation from banks and primary dealers (PDs). Ideally, OMOs are used for both lending and borrowing, and include both outright purchase and repurchase agreements, depending upon the nature of liquidity requirements – structural or frictional. Some countries use both short term and long term repos (*e.g.*, UK) and others use central bank bills (Switzerland) and stabilisation bonds (Korea) to manage liquidity. Other discretionary operations to manage liquidity are mainly in response to unexpected short-term developments requiring non-standard, non-regular operations. Such operations include forex-swaps (Australia, Singapore), term deposits (Australia), compulsory deposits (Mexico), additional loans and deposits (Sweden) and funding for lending (UK).

III.39. Among the terms and conditions, eligibility of collateral is one of the most important aspects of liquidity management. All major central banks include public sector securities of their own country as eligible collateral. Since mid-2007, the eligibility frame has been widened in several countries to include financial entity debt (Japan, Mexico, Sweden and UK), covered bonds (Australia and UK), other asset backed securities (Australia, Canada, Mexico and UK), corporate debt and loans and other credit claims (Canada and UK) and cross-border collateral (Australia, Japan, Mexico and Singapore). With increased acceptance of diversified securities as collateral, countries have also adopted different policies relating to pricing, initial margins and haircuts.

III.40. As regards tenor of the liquidity facility, most central banks provide an overnight window, but country experiences show many instances of access to liquidity beyond overnight (for instance, the repo operation is up to one year in Australia and Japan, 65 days in the USA, one week in Korea, Switzerland and

Sweden, and 25 days in Mexico). The frequency of such operations also varies considerably across countries, with short-term repos on a daily/weekly basis, but also with longer-term operations once in a month or as per the discretion of the central bank. Other discretionary operations of both standardized and non-standardized nature vary from intra-day provision of liquidity several times a day (UK, Japan, Euro area) to long-term sterilisation operations and sporadic use of compulsory deposits (as in Mexico).

III.41. In view of the legacy influence of monetary targeting, there is often the challenge of distinguishing between liquidity management and monetary management. What is important to clarify in this context is that the same set of instruments could be used for liquidity management under an interest rate targeting rule and for monetary management under a monetary or reserve targeting rule. Thus, every instrument of liquidity management is a monetary policy instrument as well, but in an interest rate based operating framework, it is through liquidity management that the operating target is attained. Other than explicit changes in the policy interest rate or interest rate target – which alone should convey the stance of monetary policy – all other instruments may have to be seen as primarily meant for liquidity management, but consistent with the stance of monetary policy. In India, however, at least in the past few years, changes in policy rates and reserve requirements have at times conveyed divergent signals, thereby becoming a source of market confusion, which needs to be avoided by ensuring consistency between interest rate actions and liquidity management.

#### **4.3 Non-monetary Instruments**

III.42. While the use of monetary instruments in striving to achieve monetary policy objectives is quite pervasive, central banks have been employing non-monetary instruments as part of their overall policy toolkit and these instruments subserve monetary

policy considerations eventually. These instruments are tailored to deal with various exigencies: surges in capital flows; credit allocation; pro-cyclicality and interconnectedness; and the zero lower bound on the nominal interest rate, to note a few.

III.43. One set of instruments is primarily regulatory in nature: selective credit control measures ranging from improving credit culture (establishing credit bureaus; credit registry; higher risk weights for sensitive sectors), supervisory measures (on-site and off-site inspection of banks) and moral suasion. More recently, in order to halt the downward spiral of lending and borrowing that has plagued economies since the recession, central banks have activated schemes to kick-start the real economy, best exemplified by the Funding for Lending Scheme (FLS) initiated in the UK in July 2012 to allow commercial banks to borrow funds at a cheap rate from the central bank and lend to specified households and firms.

III.44. A second set of measures, primarily financial in nature, work their way through the foreign exchange market: liberalising/restricting capital flows; intervention in the foreign exchange market and sterilisation operations; reserve requirements on foreign currency instruments and variants of the Tobin tax.

III.45. A third set of measures is macroprudential in nature, designed to contain systemic risks. More specifically, such measures seek to address two specific dimensions of systemic risk – the time

**Table III.1: Use of Macro-Prudential Instruments by Country-Groupings**

Instrument	Advanced	Emerging	Total Number of Countries
Loan-to-value	9	15	24
Debt-to-income	2	5	7
Cap on credit growth	1	5	6
Limit on foreign lending	1	7	8
Reserve requirement	0	5	5
Dynamic provisioning	1	8	9
Countercyclical capital requirement	0	2	2
Restriction on profit distribution	0	6	6
Others	1	12	13

**Source:** Claessens, Stijn *et al.* (2013): "Macro-Prudential Policies to Mitigate Financial System Vulnerability", *Journal of International Money and Finance*, 39.

dimension (excessive leverage in upturns and excessive risk aversion in downturns) and the cross-sectional dimension or risk concentration (size, substitutability, interconnectedness) as collapse of large or systemically important financial institutions can destabilise the rest of the financial system<sup>14</sup> (Table III.1).

## 5. The Current Operating Framework of Monetary Policy in India

III.46. The current operating framework of monetary policy was implemented in May 2011 on the recommendations of the Working Group on Operating Procedure of Monetary Policy (RBI, 2011)<sup>15</sup>. The framework has the following distinguishing features: (a) the repo rate is the single policy rate; (b) the operating target is the weighted average overnight

<sup>14</sup> While measures addressing the time dimension are most common (capital ratios or credit growth, loan to value and debt to income ratios, liquidity requirements), several countries have recently undertaken measures aimed at the cross-section dimension, most notably in Switzerland (capital surcharge for systemically important entities), Korea (levy on non-core liabilities of banks, with the levy rate depending on maturity) and New Zealand (core funding ratio, wherein at least 75 per cent of banks' total lending will have to be funded with stickier liabilities such as retail deposits and wholesale borrowing maturing in more than a year). Indonesia, for example, raised reserve requirements on foreign currency accounts in March and June 2011; Taiwan effected similar such measures in January 2011. Chile in 1991 imposed a non-interest bearing 30 per cent reserve requirements on foreign currency liabilities. In 2008, Iceland became the first industrial country in decades to impose capital controls, to limit a flight of capital from its busted banks. Between 2009 and 2011 Brazil, South Korea, Thailand, Indonesia, among others, introduced controls to discourage inflows of hot money that they feared would drive their currencies to uncompetitive levels.

<sup>15</sup> RBI (2011): "Working Group on Operating Procedure of Monetary Policy", Chairman: Deepak Mohanty, available on <http://www.rbi.org.in>



call rate, which is aligned to the repo rate through: (i) a corridor around the repo rate of 100 basis points above the repo rate for the Marginal Standing Facility (MSF) and 100 basis points below the repo rate for the reverse repo rate, and (ii) full accommodation liquidity management *albeit* with an indicative comfort zone of +/- one per cent of net demand and time liabilities (NDTL) of the banking system; and (c) transmission of changes in the repo rate through the weighted average call rate to the ultimate goals of monetary policy without any specific intermediate target.

III.47. The transition to the current framework in which the interest rate is the operating target, from the earlier regime based on reserve targeting – *i.e.*, base money, borrowed reserves, non-borrowed reserves – was generally driven by two guiding considerations. First, financial sector reforms largely freed the interest rate from administrative prescriptions and setting (Appendix Table III.3), thereby enhancing its effectiveness as a transmission channel of monetary policy. Second, the erosion in stability and predictability in the relationship between money aggregates, output and prices with the proliferation of financial innovations, advances in technology and progressive global integration.

### 5.1 Liquidity Management Framework and Operations in India

III.48. The liquidity management framework in India stands on two broad mutually reinforcing pillars of forward looking assessment. Pillar-I is an assessment of the likely evolution of system-level liquidity demand based on near-term (four to six weeks) projections of autonomous drivers of liquidity. This forms the basis for taking decisions on use of discretionary liquidity absorbing/injecting measures to ensure that the liquidity conditions remain consistent with the goal of aligning money market rates to the policy repo rate. Pillar-II is an assessment of system-level liquidity over a relatively longer time

horizon, focusing on the likely growth in broad money, bank credit and deposits, the corresponding order of base money expansion and this assessment is then juxtaposed with a breakdown into autonomous and discretionary drivers of liquidity derived under Pillar I. Thus, Pillar II becomes the broader information set within which decisions relating to discretionary liquidity management measures are taken on the basis of Pillar I assessment.

#### Pillar-I

III.49. The core of Pillar I is near-term forecasts of autonomous drivers of liquidity, particularly demand for currency (which reflects behavior of households), demand for excess reserves (which reflects behavior of the banking system), and the central government's balances with the RBI (which depends on cash flows of the Government). Large fluctuations in the central government's balances with the RBI lead to corresponding automatic expansion/contraction in the RBI's balance sheet, which has a magnifying impact on the overall monetary conditions. For the purpose of liquidity management, forex market intervention is also an autonomous driver of liquidity, but since there cannot be any near term forecasts for these interventions, they are considered on information as available – *i.e.*, backward looking, impacting liquidity evolution on t+2 settlement basis (Table III.2). The extent of volatility seen in the major frictional drivers of liquidity has been large (Table III.3), which poses the challenge of generating

**Table III.2: Current Liquidity Management Framework**

Autonomous Drivers of Liquidity	Currency demand Bank reserves (required plus excess) Government's deposits with RBI Net forex market intervention
Liquidity Management	Net LAF (repo plus MSF plus reverse repo), Term Repos, OMOs, CRR, CMBs, MSS, Swaps, and Standing Refinance Windows

**Table III.3: Variations in Frictional Drivers of Liquidity since April 2012**

(₹ crore)

Major Autonomous Determinants of Liquidity Conditions	Weekly Changes				Daily Changes			
	Positive		Negative		Positive		Negative	
	High	Low	High	Low	High	Low	High	Low
1 Govt. cash balances with the RBI	71,692	5	62,835	621	48,504	38	49,072	2
2 Currency Demand	25,160	80	15,282	90	N.A.			
3 SCB's balances with the RBI (changes in excess CRR)	55,916	57	90,182	571	48,090*	13	59,131	20

\*: Excluding the large change of ₹1,38,800 on July 16, 2013.

credible and precise short-term forecasts of liquidity demand in the system. Nevertheless, using a combination of forward looking information and a backward looking assessment of the time series evolution of the frictional determinants of liquidity, projections are generated on a regular basis to inform the RBI's decisions on discretionary liquidity management.

III.50. The RBI's discretionary liquidity management operations (primarily in the form of OMOs and changes in CRR, and also in terms of fixing limits for term repos and overnight repo amounts)<sup>16</sup> is guided by the extent of LAF deficit that is 'reasonable' at any point of time, and the assessment of drivers of LAF deficit/surplus, *i.e.*, whether frictional or structural.

#### **Pillar-II**

III.51. Broad money growth that is consistent with inflation and growth projections at the beginning of the year and reviewed from time to time in a state-contingent manner provides leads about the growth in base money that will be required in the system during the course of the year. After accounting for autonomous drivers of liquidity and borrowed reserves (*i.e.*, access to LAF by banks), assessment of

the amount of discretionary liquidity management operations becomes possible, given the desirable evolution of the base money path as also the extent of LAF deficit/surplus relative to a norm (communicated in the form of +/- one per cent of NDTL). Rigid adherence to a base money rule is avoided due to uncertainties surrounding the relationship between monetary aggregates and the ultimate goal variables. Empirical estimates point to some improvement in the sensitivity of money demand to changes in the interest rate (Appendix Table III.4), thus providing the rationale for anchoring the operating framework with an interest rate rule. Currently, trajectories of monetary aggregates are only referred to as 'indicative'.

#### **5.2 Refinance Windows Undermine the Operating Framework**

III.52. For an operating framework that modulates liquidity consistent with the policy rate, standing sector-specific refinance facilities interfere with monetary policy transmission because of the assurance such facilities provide on additional access to liquidity at rates not determined by market forces. Accordingly, sector-specific refinance facilities have been phased out in India, though they tend to be

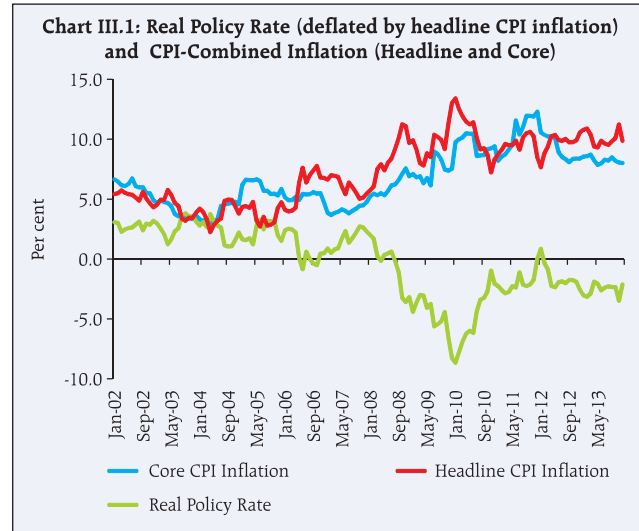
<sup>16</sup> To address exchange market volatility, since mid-July 2013 the RBI has restricted access to borrowed reserves, with caps on overnight repos and term repos. Even after normalization of the exceptional measures, limits on term repos and overnight repos have become an integral part of the liquidity management apparatus.

reopened or re-introduced in new forms on pressures by sector-specific lobbies for special monetary policy support (Appendix Table III.5). Sector-specific refinance facilities ultimately conflict with the goal of price stability. For a monetary policy framework that assigns primacy to lowering inflation through monetary policy actions, it is necessary that all sector-specific liquidity facilities be discontinued, accompanied by unambiguous communication that requests for sector specific liquidity support from any sector cannot be accommodated by the RBI.

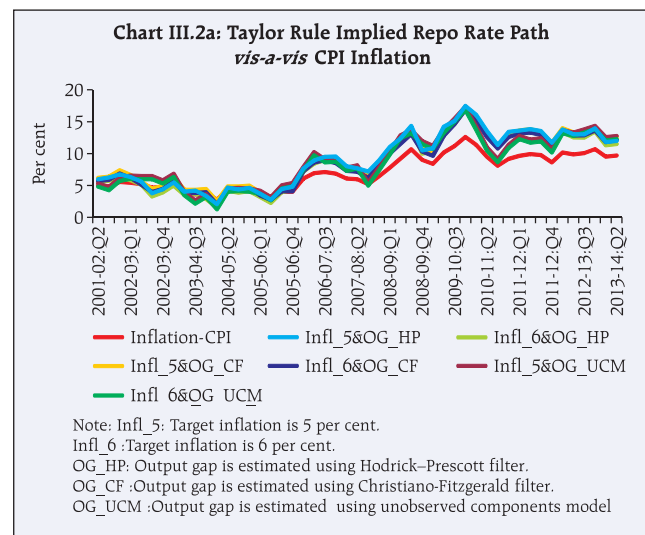
### 5.3 Recent Experience with Monetary/Liquidity Management Operating Framework and Rationale for Change

III.53. The experience since the institution of the extant operating framework, especially in terms of final macro outcomes has been disappointing – persistence of inflation well above the threshold of 5 per cent (WPI) articulated by the RBI; and *de facto* monetization of the fiscal deficit to the extent of 28 per cent of the overall borrowing programme of the Government on average *via* injections of primary liquidity through OMOs. Real policy rates have been persistently negative in high inflation episodes, as the operating framework does not follow a rule that can limit the scope for inflation tolerance (Chart III.1)<sup>17</sup>.

III.54. Following a simple rule (illustratively the thumb rule proposed by Taylor, 1993)<sup>18</sup> would have resulted in the repo rate path being much higher in the last few years than it has been, and thereby yielding positive real policy rates (Chart III.2a). On the other hand, if the output gap and inflation gap coefficients are estimated from data relating to the

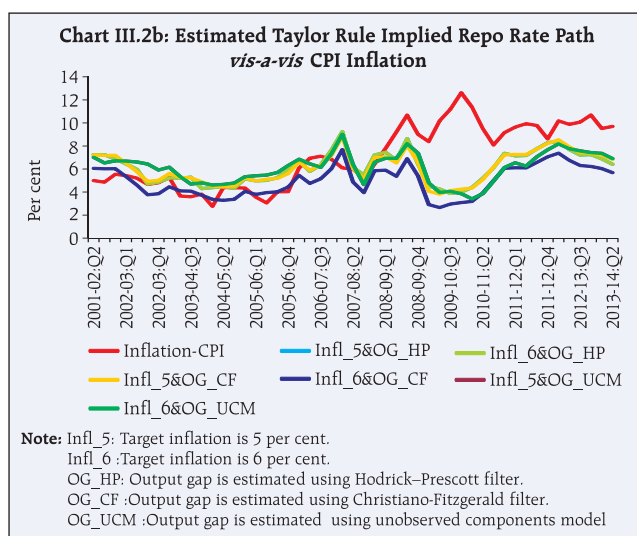


current and past monetary policy regimes for India and used in a Taylor-type formulation, the implied repo rate paths would lie lower than CPI inflation, yielding negative real policy rates (Chart III.2b). This empirical finding is validated for a range of estimates (*i.e.*, for output gaps estimated using the HP filter, Christiano-Fitzgerald filter and unobserved component



<sup>17</sup> Back-casted CPI-Combined data used in this report are given in Appendix Table III.6.

<sup>18</sup> As per the rule of thumb  $[i = \pi + r^* + 0.5(\pi - \pi^*) + 0.5(y - y^*)]$ , or  $[i = \pi^* + r^* + 1.5(\pi - \pi^*) + 0.5(y - y^*)]$ , where  $i$  = nominal interest rate,  $\pi$  = rate of inflation,  $\pi^*$  = inflation target,  $r^*$  = neutral real rate, and  $(y - y^*)$  = output gap. Applying the same coefficients for the inflation gap and output gap from the Taylor equation to estimated inflation gap and output gap for India yields an interest rate path that lies above the actual repo rate path, particularly during the high inflation phase of last few years. The rule implicitly highlights the justification for a positive real interest rate when inflation exceeds the target, and the need for positive real interest rates to manage inflationary pressures. (Taylor, J.(1993): "Discretion versus Policy Rules in Practice", *Carnegie Rochester Conference Series on Public Policy*, 39, pp. 195-214).



model, as also for CPI inflation thresholds of five per cent and six per cent). Estimated coefficients from extant interest rate rules in India suggest that: (i) inadequate weight was placed on inflation management in the past, and (ii) the WPI was the metric used to measure inflation, resulting in policy rates that were often negative in real terms *vis-à-vis* the CPI<sup>19</sup>. It may be necessary, therefore, to start with a simple policy rule in terms of a real policy rate as a context specific benchmark for the MPC<sup>20</sup>, and then gradually move to a Taylor type rule after securing price stability and anchoring inflation expectations. Under a flexible inflation targeting framework, the interest rate rule should assign a significantly greater weight to inflation management *vis-à-vis* other objectives. The outcome of such a framework is expected to result, on average, in positive real rates of return when inflation is above target.

III.55. Turning to the conduct of liquidity management operations and transmission of policy impulses, there has also been blocked transmission of policy rate cuts to support growth due to the central premise of keeping the system in a deficit mode and the call rate aligned to the repo rate, thereby suggesting the following limitations:

1. Liquidity management through the LAF (*i.e.*, up to excess SLR holdings plus additional access to liquidity from the MSF window by dipping 2 per cent below the required SLR) has made base money expansion endogenous. The policy stance, as reflected in changes in the repo rate, and the conduct of liquidity management are often mutually inconsistent and conflicting. Often, increases in policy rate have been followed up with discretionary measures to ease liquidity conditions.
2. The framework is one-sided by design, suitable only to transmission of a tightening stance through the persisting liquidity deficit mode in which the system is kept; consequently, the easing stance of policy between October 2011 and May 2013 did not transmit to arresting the growth slowdown.
3. Provision of overnight liquidity on an enduring basis at the overnight repo rate also compromised liquidity/treasury planning by banks themselves resulting in this function being in effect shifted to the RBI and thereby stunting the growth of the market spectrum to the overnight segment

<sup>19</sup> It is important to note that available published research on policy reaction functions of the Taylor-type formulation for India have not been estimated using the CPI; the estimates generally relate to either the WPI or the GDP deflator. Moreover, a policy reaction function for India, as in all other countries, employing the interest rate as the policy instrument, tend to have a high coefficient for interest rate smoothing, which is ignored in the analysis here. (see Gabriel *et al.*, 2012, in *Oxford Handbook of the Indian Economy*, C. Ghate, (Ed.), Oxford: New York). Importantly, estimated Taylor rule parameters (or any other empirical estimates) need to exhibit structural stability for a central bank to exploit the estimated relationship for the conduct of policy systematically, but as the Lucas critique suggests, the estimated parameters are often "not structural", *i.e.*, "not policy invariant".

<sup>20</sup> Given the uncertainty about the estimated neutral real interest rate, and assuming that it will be positive for India, a simple positive real policy rate rule may not be anti-inflationary when inflation persistently and sizably exceeds the inflation target. However, in view of the negative real policy rate prevailing in the recent episode of high inflation, the most immediate requirement would be to ensure that the real policy rate becomes positive, and once the regime change is in place, the standard Taylor type rule-based approach with an appropriate weight assigned to inflation could be used by the MPC.

alone, dis-incentivising the development of a term money market; the LAF to a degree has become a conduit for gaming central bank liquidity and substituting for efforts to access market liquidity.

III.56. In order to improve transmission of policy rate changes into the spectrum of interest rates in the economy, the excessive focus on the overnight segment of the money market in the existing framework has to be avoided, which will be possible only if the RBI de-emphasises overnight repos for liquidity management and progressively conducts its liquidity management primarily through term repos of different tenors. Development of a term money market through a term-repo driven liquidity management framework could help in establishing market-based benchmarks, which in turn would help improve transmission, if various financial instruments and, in particular, bank deposits and loans are priced off these benchmarks.

III.57. An overall assessment would, therefore, suggest that in order to imbue credibility and effectiveness into the operating framework of monetary policy in terms of achieving and establishing the nominal anchor (addressed in Chapter II), it is essential to address impediments to transmission (covered in Chapter IV) and deal with the challenges confronting it through design changes and refinements in the operating framework, with flexibility in the use of instruments, particularly in the context of liquidity management and its consistency with the goal(s) of monetary policy.

III.58. The recent experience with the use of exceptional monetary measures to contain exchange market volatility and their subsequent normalization represents a break from the operating framework put in place since May 2011. This experience strengthens the rationale for revamping the operating framework so as to ensure its consistency and synchronicity with monetary policy objectives and stance. The RBI's

current operating framework is pivoted around a target for borrowed reserves in relation to net demand and time liabilities. Conditional upon this operating target, it has allowed bounded movement in the call rate between the term repo rate and the MSF rate, effectively eschewing unlimited accommodation at the repo rate of the past. Increasingly, the term repo is gaining market acceptability, synchronized as it is with the reserve requirement cycle, while allowing a smooth transition away from liquidity provision at the MSF rate. The term repo rate has also proved to be a more useful indicator of underlying liquidity conditions since price discovery of the term premium is through variable rate auctions, unlike the overnight repo rate which is a fixed rate. The successful operation of the term repo rate should incentivize the development of a fuller spectrum of term money segments, thereby enabling market based benchmarks to be established for pricing bank deposits and facilitating transmission of policy impulses to credit markets. The market has also adjusted to the new liquidity management environment well. In this system, full accommodation of liquidity demand continues because of the access to the MSF. It is necessary, therefore, that the MSF rate may be set in a manner that it becomes a truly penal rate, accessed by banks under exceptional circumstances.

### **Recommendations**

III.59. *The Committee recommends that, as an overarching prerequisite, the operating framework has to subserve stance and objectives of monetary policy. Accordingly, it must be redesigned around the central premise of a policy rule. While several variants are available in the literature and in country practices, the Committee is of the view that a simple rule defined in terms of a real policy rate (that is easily communicated and understood), is suitable to Indian conditions and is consistent with the nominal anchor recommended in Chapter II. When inflation is above the nominal anchor, the real policy rate is expected, on average, to be positive. The MPC could*

decide the extent to which it is positive, with due consideration to the state of the output gap (actual output growth relative to trend/potential) and to financial stability.

III.60. Against this backdrop, the Committee recommends that a phased refinement of the operating framework is necessary to make it consistent with the conduct of monetary policy geared towards the establishment and achievement of the nominal anchor (Table III.4).

#### Phase-I

III.61. In the first or transitional phase, the weighted average call rate will remain the operating target, and the overnight LAF repo rate will continue as the

single policy rate. The reverse repo rate and the MSF rate will be calibrated off the repo rate with a spread of (+/-) 100 basis points, setting the corridor around the repo rate. The repo rate will be decided by the MPC through voting. The MPC may change the spread, which, however, should be as infrequent as possible to avoid policy induced uncertainty for markets.

III.62. Provision of liquidity by the RBI at the overnight repo rate will, however, be restricted to a specified ratio of bank-wise net demand and time liabilities (NDTL), that is consistent with the objective of price stability. As the 14-day term repo rate stabilizes, central bank liquidity should be increasingly provided at the 14-day term repo rate and through the introduction of 28-day, 56-day and 84-day variable

**Table III.4: Proposed Operating Framework for Monetary Policy**

	Phase-I	Phase-II
Policy Rate to be announced by the MPC	Repo rate (overnight).	Target policy rate for short end of the money market.
Operating target for monetary policy	Weighted average call rate.	14-day term repo rate.
Liquidity management	Full accommodation (through a mix of specified amounts of overnight repos at fixed rate, and term repos at variable rate) – ECR to be phased out.	Full accommodation (primarily through 14-day term repos at variable rate aimed at achieving the target rate, supported by fine tuning through overnight repos/reverse repos, longer term repos and open market operations). No refinance facility.
MSF – the ceiling of the corridor	As a standing facility, this will be available every day. If adequate liquidity is injected through overnight/term repos, use of MSF will be minimal.	MSF will set the ceiling of the corridor, but must be seen as a truly penal rate. If the liquidity taken during the fortnight through 14-day term repo is managed effectively, there will be rare need for accessing the MSF.
Reverse repo rate	The floor of the corridor – but transition to standing deposit facility will start.	Reverse repo will be used in fine tuning operations <i>i.e.</i> , to impound only daily surplus liquidity from the system to ensure that money market rates do not drop below the policy target rate. Standing deposit facility will replace reverse repo as the floor of the corridor, and reverse repo rates will be close to the policy rate.
Liquidity assessment	By the RBI – based on frictional and structural drivers of liquidity.	Daily reporting by banks (aggregated for the system as a whole) will complement the RBI's assessment of liquidity.

rate auctioned term repos by further calibrating the availability of liquidity at the overnight repo rate as necessary.

III.63. *The objective should be to develop a spectrum of term repos of varying maturities with the 14-day term repo as the anchor. As the term yield curve develops, it will provide external benchmarks for pricing various types of financial products, particularly bank deposits, thereby enabling more efficient transmission of policy impulses across markets.*

III.64. *During this phase, the RBI should fine-tune and sharpen its liquidity assessment with a view to be in a position to set out its own assessment of banks' reserves. This will warrant a juxtaposition of top-down approaches that estimate banks' reserves demand consistent with macroeconomic and financial conditions appropriate for establishing the nominal anchor, and bottom-up approaches that aggregate bank-wise assessments of liquidity needs submitted by banks themselves to the RBI on a daily basis. As these liquidity assessments become robust, they should be announced for market participants prior to the commencement of market operations every day and could be subjected to review and revision during the day for fine-tuning them with monetary and liquidity conditions. It is envisaged that the RBI will expand capabilities to conduct liquidity operations on an intra-day basis if needed, including by scaling up trading on the NDS-OM platform.*

III.65. *Consistent with the repo rate set by the MPC, the RBI will manage liquidity and meet the demand for liquidity of the banking system using a mix of term repos, overnight repos, outright operations and the MSF.*

#### **Phase-II**

III.66. *As term repos for managing liquidity in the transition phase gain acceptance, the "policy rate" voted on by the MPC will be a target rate for the short end of the money market, to be achieved through*

*active liquidity management. The 14-day term repo rate is superior to the overnight policy rate since it allows market participants to hold central bank liquidity for a relatively longer period, thereby enabling them to on lend/repo term money in the inter-bank market and develop market segments and yields for term transactions. More importantly, term repos can wean away market participants from the passive dependence on the RBI for cash/treasury management. Overnight repos under the LAF have effectively converted the discretionary liquidity facility into a standing facility that could be accessed as the first resort, and precludes the development of markets that price and hedge risk. Improved transmission of monetary policy thus becomes the prime objective for setting the 14-day term repo rate as the operating target.*

III.67. *Based on its assessment of liquidity, the RBI will announce the quantity of liquidity to be supplied through variable rate auctions for the 14-day term repos alongside relatively fixed amounts of liquidity provided through longer-term repos.*

III.68. *The RBI will aim at keeping 14-day term repo auction cut-off rates at or close to the target policy rate by supplementing its main policy operation (14-day term repos) with: (i) two-way outright open market operations through both auctions and trading on the NDS-OM platform; (ii) fine tuning operations involving overnight repos/reverse repos (with a fine spread between the repo and reverse repo rate) and (iii) discretionary changes in the CRR that calibrate bank reserves to shifts in the policy stance.*

III.69. *The MSF rate should be set in a manner that makes it a truly penal rate to be accessed only under exceptional circumstances.*

III.70. *An accurate assessment of borrowed and non-borrowed reserves and forward looking projections of liquidity demand would assume critical importance in the framework. So far, the government's*

*cash balances have been the prime volatile autonomous driver of liquidity, making accurate liquidity projections a difficult task. Therefore, continuing with reforms in the Government securities market, which envisage that the debt management function should be with the Government, the cash management function should concomitantly also be with the Government*<sup>21</sup>.

**New Instruments**

III.71. *To support the operating framework, the Committee recommends that some new instruments be added to the toolkit of monetary policy. Firstly, to provide a floor for the new operating framework for absorption of surplus liquidity from the system but without the need for providing collateral in exchange, a (low) remunerated standing deposit facility may be introduced, with the discretion to set the interest rate without reference to the policy target rate. The introduction of the standing deposit facility (analogous to the marginal standing facility for lending purposes)*

*will require amendment to the RBI Act for which the transitional phase may be utilised. The standing deposit facility will also be used for sterilization operations, as set out in Chapter 5, with the advantage that it will not require the provision of collateral for liquidity absorption – which had turned out to be a binding constraint on the reverse repo facility in the face of surges in capital flows during 2005-08.*

III.72. *Secondly, term repos of longer tenor may also be conducted since term repo market segments could help in establishing market based benchmarks for a variety of money market instruments and shorter-term deposits/loans.*

III.73. *Thirdly, dependence on market stabilisation scheme (MSS) and cash management bills (CMBs) may be phased out, consistent with Government debt and cash management being taken over by the Government's Debt Management Office (DMO).*

III.74. *Fourthly, all sector specific refinance should be phased out.*

<sup>21</sup> The Committee on Capital Account Convertibility (1997) recommended the separation of debt management from monetary management. The Advisory Group on Transparency in Monetary and Financial Policies (2000) recognised that separation of debt management and monetary policy is a necessary but not sufficient condition for effective monetary policy which would also require a reasonable degree of fiscal responsibility. The RBI's Annual Report 2001-02 also emphasized that the separation of debt management could greatly facilitate the performance of monetary management by the RBI. The Union Budget for 2007-08 highlighted that "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." Following this announcement, the Middle Office was established in September 2008 in the Ministry of Finance.



## Chapter IV

### Addressing Impediments to Transmission of Monetary Policy

#### 1. Introduction

IV.1 The efficacy of monetary policy actions lies in the speed and magnitude with which they achieve the final objectives. With the deepening of financial systems and growing sophistication of financial markets, most monetary authorities are increasingly using indirect instruments (such as policy interest rates and open market operations) rather than direct measures (like credit allocation). Adjustments in the policy interest rate, for instance, directly affect short-term money market rates which then transmit the policy impulse to the fuller spectrum of interest rates in the financial system, including deposit and lending rates, that in turn affect consumption, saving and investment decisions of economic agents and eventually aggregate demand, output and inflation. The interest rate channel of transmission has become the cornerstone of monetary policy in most countries. This channel may also operate through expectations of future interest rates, and thereby influence the behaviour of economic agents in an economy in a forward looking manner.

IV.2 Underdeveloped and incompletely integrated market segments inhibit the transmission of monetary policy through the interest rate channel. Accordingly, some central banks operate by directly altering reserve requirements alone or in conjunction with the policy interest rate to affect the availability and price of credit.

IV.3 The transmission mechanism is characterised by long, variable and uncertain time lags, making it

difficult to predict the precise effect of monetary policy actions on the economy. Apart from differential lags, there are also asymmetries involved in the quantitative responses of the policy impulse to the goal variables in alternate phases of the business cycle and liquidity conditions. It is generally accepted in the literature that monetary policy has limited effects on aggregate supply or productive capacity, though in the presence of credit constraints, the ability of firms to expand capacities is impacted, thus affecting aggregate supply<sup>1</sup>.

#### 2. International Experience

IV.4 Monetary transmission in advanced economies occurs through several alternative channels, and is generally found to be robust and efficient in normal times. In contrast, in emerging market economies (EMEs), it is the credit channel that dominates transmission<sup>2</sup>.

##### 2.1. Interest rate channel

IV.5 In the case of advanced economies (AEs), the interest rate channel works by impacting the cost of capital. It has been found to be strong and has exhibited good information content about future movement of real macroeconomic variables (Bernanke and Blinder, 1992)<sup>3</sup>. In the case of EMEs, which do not have well-functioning capital markets for debt and equities, and in which real estate markets are fragmented and illiquid, monetary transmission through the interest rate has been found to be weak. Furthermore, the interest rate channel is also dulled

<sup>1</sup> Against the backdrop of the recent financial crisis, some preliminary evidence suggests that the damage to productive capacity in the US was an endogenous response to weak aggregate demand (Reifschneider, D., W. L. Wascher and D. Wilcox. (2013): "Aggregate Supply in the United States: Recent Developments and Implications for the Conduct of Monetary Policy", *14<sup>th</sup> Jacques Polak Annual Research Conference, IMF, Washington*).

<sup>2</sup> Mishra, P. and P. Montiel (2012), "How Effective is Monetary Transmission in Low Income Countries? A Survey of Empirical Evidence", *IMF Working Paper*, No. WP/12/143, June.

<sup>3</sup> Bernanke, B., S. and A. S. Blinder (1992), "The Federal Funds Rate and the Channel of Monetary Transmission", *The American Economic Review*, 82(4): 901-21.

during surges in capital inflows. On an average across Asian economies, the pass-through coefficients for transmission from policy rates to lending rates declined by about 30-40 basis points during episodes of capital inflows, but were still about 0.3-0.6 (Jain-Chandra and Unsal, 2012)<sup>4</sup>. Transmission from policy rates to money market rates and retail lending rates is found to be strong in transition economies of Europe, but the transmission to longer maturity rates is rather weak (Égert and MacDonald, 2009)<sup>5</sup>. However, recent evidence suggests that the interest rate channel is strengthening in many EMEs, including India<sup>6</sup>. This is attributed, *inter alia*, to reduced fiscal dominance, more flexible exchange rates and development of market segments (Gumata *et al.*, 2013)<sup>7</sup>.

## 2.2. Credit Channel

IV.6 Empirical evidence supports the existence of the credit channel of transmission. This operates by affecting the external finance premium through both the bank lending channel (by decreasing the supply of bank loans in response to contractionary monetary policy) and the balance sheet channel (contractionary monetary policy decreases collateral valuation and net worth of firms, raises agency costs and affects firms' activity levels through the financial accelerator). Recent evidence from the euro area suggests that the bank lending channel was more pronounced than the balance sheet channel in the case of firms, while for households, it was the other way round (Cicarrelli, *et al.*, 2010)<sup>8</sup>. The bank lending channel is also found to have a larger impact on banks that are small, less

capitalised and less liquid. Some evidence suggests that firms substitute trade credit for bank loans at times of monetary contraction, thus weakening the credit channel. This is particularly the case for EMEs. In the case of Sub-Saharan Africa, excluding South Africa, the bank lending channel has been found to work feebly, given that informal finance dominates credit markets and the penetration of institutional finance is limited, given the low competition from the banking sector. However, in the case of many EMEs, especially where bank-oriented financial systems exist, the credit channel is strong. While informal finance weakens monetary transmission, experience suggests that transmission through the credit channel is strong in the case of micro-finance institutions (MFIs).

## 2.3. Exchange Rate Channel

IV.7 An important channel of monetary transmission has been the exchange rate that is either directly influenced by the central bank or gets impacted by its actions. Typically, the exchange rate channel works through expenditure switching between domestic and foreign goods. For instance, an appreciation of the domestic currency makes foreign goods cheaper causing demand for domestic goods and net exports to fall. However, this may also reduce external debt in domestic currency terms. Both effects transmit to aggregate demand and the price level. Empirical evidence suggests that the exchange rate channel is strong in economies with freely floating exchange rates, but its impact is dampened with central bank intervention. For instance, in the case

<sup>4</sup> Jain-Chandra, S. and D. F. Unsal (2012): "The Effectiveness of Monetary Policy Transmission Under Capital Inflows: Evidence from Asia", *IMF Working Paper* No. WP/12/265.

<sup>5</sup> Égert, B. and R. MacDonald (2009): "Monetary Transmission Mechanism in Central and Eastern Europe: Surveying the Surveyable", *Journal of Economic Surveys*, 23(2): 277-327.

<sup>6</sup> Mohanty, M.S. and P. Turner (2008): "Monetary Policy Transmission in Emerging Market Economies: What is New?", *BIS Policy Paper* No.3, January.

<sup>7</sup> Gumata, N., A. Kabundi and E. Ndou (2013): "Important channels of transmission of monetary policy shock in South Africa", *ERSA Working Paper* No. 375, Cape Town.

<sup>8</sup> Cicarelli, M., A. Maddaloni and J. L. Peydro (2010): "Trusting the Bankers: A New Look at the Credit Channel of Monetary Policy", *ECB Working Paper* No.1228.

of Latin American countries, lower exchange rate flexibility relative to peers in Asia seems to have resulted in weaker transmission of policy rates.

#### **2.4. Asset Price Channel**

IV.8 Apart from exchange rates, changes in other asset prices such as equities and house prices also impact inflation and growth. Equity prices are dampened in response to contractionary monetary policy and the resultant wealth effects and collateral valuation changes feed through to consumption and investment. The asset price channel is quite weak in many EMEs where equity markets are small and illiquid, but relatively strong in countries that have open equity markets. Transmission is also found to be limited in countries with weak property price regimes and poorly developed and illiquid real estate markets. In countries like the US and Australia, where the mortgage market is well integrated with capital markets, the asset price channel turns out to be quite strong. In general, stock prices respond faster to contractionary monetary policy, though the intensity and lags of transmission are impacted by the liquidity in the stock markets.

#### **2.5. Transmission Lags**

IV.9 Time lags in transmission are usually long, variable and tend to differ from one country to another owing to differences in economic and market structures. They also vary over time due to dynamically

changing macroeconomic and financial conditions. For instance, these lags are found to vary from 1-14 quarters for transmission of policy rates to output across a gamut of advanced and emerging economies with varied monetary arrangements. While transmission is weaker in case of EMEs, it is not clear if the transmission lags are longer. In fact, some recent evidence suggests longer lags for AEs relative to EMEs – for instance, average lag of 33.5 months for all countries; 42 months in the case of the US, 48 months for the euro area, and in the range of 10-19 months for transition economies that became new EU members (Havránek and Rusnák, 2012)<sup>9</sup>. For Brazil, the monetary policy transmission through the aggregate demand channel takes between 6 and 9 months: the interest rate affects consumer durables and investment in between 3 to 6 months and the output gap takes an additional 3 months to have a significant impact on inflation (Bogdanski *et.al.*, 2000)<sup>10,11</sup>.

### **3. Sensitivity of Inflation and Output to Monetary Policy in India**

IV.10 Empirical evidence indicates that monetary transmission in India has been taking place through several channels (RBI, 2005; Patra and Kapur, 2010; Mohanty, 2012; Khundrakapam and Jain, 2012; Khundrakapam, 2011; Kapur and Behera, 2012; Singh, 2011 and Keltzer, 2012)<sup>12</sup>. The broad consensus emerging from these studies is that monetary policy

<sup>9</sup> Havránek, T. and M. Rusnák (2012): "Transmission Lags in Monetary Policy: A Meta Analysis", *Czech National Bank Working Paper Series*, No.10.

<sup>10</sup> Bogdanski, J., A. A. Tombini and S. R. C. Werlang (2000): "Implementing Inflation Targeting in Brazil", *Working Paper Series No.1*, Banco Central do Brasil.

<sup>11</sup> However, transmission lags in cross-country studies may not be strictly comparable as they depend on the size and timing of the policy actions.

<sup>12</sup> Kapur, M. and H. Behera (2012): "Monetary Transmission Mechanism in India: A Quarterly Model", *RBI Working Paper No. 9*.

Khundrakapam, J. K. (2011): "Credit Channel of Monetary Transmission in India - How Effective and Long is the Lag?", *RBI Working Paper No. 20*.

Khundrakapam, J. K. and R. Jain (2012): "Monetary Policy Transmission in India: A Peep Inside the Black Box", *RBI Working Paper No. 11*.

Mohanty, D. (2012): "Evidence on Interest Rate Channel of Monetary Policy Transmission in India", *RBI Working Paper No. 6*.

Patra, M. D. and M. Kapur (2010): "A monetary policy model without money for India", *IMF Working Paper No.10/183*, International Monetary Fund.

Kletzer, K. (2012): "Financial Frictions and Monetary Policy Transmission in India", *The Oxford Handbook of the Indian Economy*, Ed. by Chetan Ghate Reserve Bank of India (2005): Report on Currency and Finance, 2003-04.

Singh, B. (2011): "How Asymmetric is the Monetary Policy Transmission to Financial Markets in India?", *RBI Occasional Papers*, Vol.32/2.

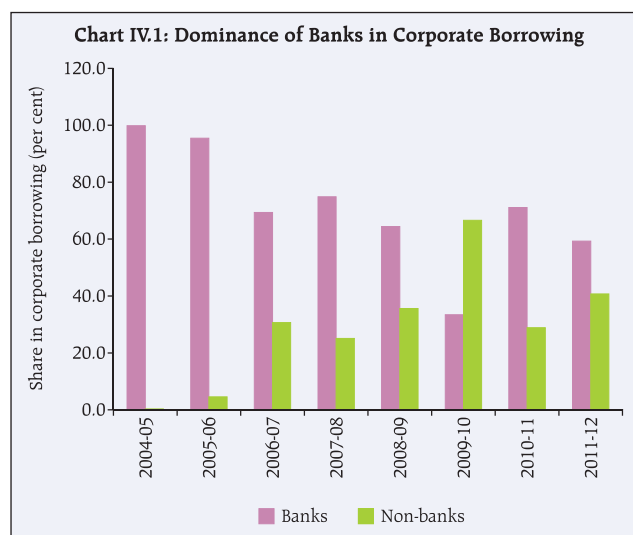
in India impacts output with a lag of about 2-3 quarters and WPI headline inflation with a lag of about 3-4 quarters and the impact persists for 8-12 quarters. Among the channels of transmission, the interest rate has been found to be the strongest. In view of the Committee's choice of inflation as the nominal anchor for monetary policy in India, this section primarily focuses on empirical evaluation of the transmission of monetary policy signals to inflation.

### 3.1. Interest Rate Channel

IV.11 Monetary policy interest rate movements have been found to share a co-integrating relationship with rates across different segments of financial markets. Results of block exogeneity tests show that there exists bi-directional causality between call money rates and interest rates in other segments such as the government debt market, credit market or returns on equity market and the forex market<sup>13</sup>. Medium to long term rates such as bank deposit and lending rates exhibit asymmetrical responses to policy rate changes under varied market conditions, responding faster with relatively larger responses in liquidity deficit conditions than in surplus conditions. Furthermore, lending rates for certain sectors such as housing and automobiles respond relatively faster to policy rate changes compared with other sectors.

### 3.2. Credit Channel

IV.12 India is a bank-dominated economy, even though in recent years the role of equity and debt markets as sources of financing of economic activities has increased. The share of banks in domestic corporate borrowing has remained high (Chart IV.1). High-dependence on bank finance makes the bank lending and the balance sheet channels particularly important for monetary transmission, which is also evidenced through Granger causality tests<sup>14</sup>. In terms of balance sheet effects, credit growth is seen to have an inverse relationship with movements in the policy rate<sup>15</sup>.



<sup>13</sup> Following Singh (2011) and Mohanty (2012), Granger's causality across markets based on a VAR framework was examined using monthly data from April 2001 to March 2013. Two blocks were considered, viz., (i) policy variable – proxied by monthly average Call Money Rate (CMR) and (ii) other financial market variables. The latter include yield on government securities with residual maturity of 10-years and yield on the 5-year 'AAA' rated corporate bonds representing debt market, weighted average lending rate (WALR) indicating credit market, BSE Sensex showing equity market, and Rupee per US dollar representing foreign exchange market. The test was repeated by replacing 5-year 'AAA' rated corporate bond by the yield of the 10-year 'AAA' rated corporate bonds and results were similar.

<sup>14</sup>

Pair-wise Granger Causality Tests; Sample: 1999Q2 2013Q1; Lags: 2			
Null Hypothesis:	Obs.	F-Statistic	Prob.
Non-Food Credit Growth does not Granger Cause Effective Policy Rate	54	0.17899	0.8367
Effective Policy Rate does not Granger Cause Non-Food Credit Growth	54	3.96329	0.0254

<sup>15</sup> Recent work, i.e., Pandit and Vashisht (2011) #, Khundrakpam (2011) and Khundrakpam and Jain (2012) also corroborated the existence of a robust and statistically significant credit channel of monetary transmission in the post-LAF period. According to Khundrakpam (2011), a 100 basis points increase in policy rate reduced the annualised growth in nominal and real bank credit by 2.78 per cent and 2.17 per cent, respectively.

# Pandit, B.L. and P. Vashisht (2011), "Monetary Policy and Credit Demand in India and Some EMEs", Indian Council for Research on International Economic Relations, Working Paper No.256.

### 3.3. Exchange Rate Channel

IV.13 The exchange rate channel is found to be feeble in India with some evidence of weak exogeneity<sup>16</sup>. While changes in policy interest rates may influence movements in exchange rates, the level of the exchange rate is not a policy goal, as the RBI does not target any level or band of the exchange rate. Exchange rate depreciation is a key source of risk to inflation as the estimated pass-through coefficients for India suggest (Table IV.1).

### 3.4. Asset Price Channel

IV.14 Empirical evidence for India indicates that asset prices, especially stock prices, react to interest

rate changes, but the magnitude of the impact is small (Singh and Pattanaik 2012)<sup>24</sup>. Moreover, the wealth effect of increasing equity prices in the Indian case is found to be limited (Singh, 2012)<sup>25</sup>. With the increasing use of formal finance (from banks and non-banks) for acquisition of real estate, the asset price channel of transmission has improved. However, during periods of high inflation, there is a tendency for households to shift away from financial savings to other forms of savings such as gold and real estate that tend to provide a better hedge against inflation. To the extent that these acquisitions are funded from informal sources, they may respond less to contractionary monetary policy, thus weakening the asset price channel in India.

**Table IV.1: Summary of Exchange Rate Pass-through Coefficient from Select Studies**

Study	Time Period of Study	Exchange rate pass-through coefficient
<b>WPI</b>		
Khundrakpam (2007) <sup>17</sup>	1991M8 to 2005M3	10 per cent change in exchange rate increases final prices by 60 bps in short run and 90 bps in long run
Kapur (2012) <sup>18</sup> & Kapur and Behera (2012) <sup>19</sup>	1996 Q2 to 2011 Q1	10 per cent appreciation (depreciation) of rupee vis-à-vis the US dollar reduces (increases) inflation by 60 bps in the same quarter, while the long-run pass-through is 120 basis points.
Patra and Kapur (2010) <sup>20</sup>	1996 Q2 to 2009 Q3	A 10 per cent appreciation (depreciation) of the Indian rupee ( <i>vis-a-vis</i> the US dollar) would reduce (increase) inflation by 50 bps in the same quarter, by 150 percentage points after seven quarters.
Patra <i>et al.</i> (2013) <sup>21</sup>	1996 Q2 to 2013 Q1	A 10 per cent change in the exchange rate resulted in 1.5 per cent change in prices prior to the global crisis and 1.0 per cent change including post crisis period.
<b>CPI</b>		
Ghosh and Rajan (2007) <sup>22</sup>	1980Q1 to 2006Q4	Exchange rate pass-through elasticity of the rupee-USD to CPI to be between 45 and 50 percent and quite stable over the period under consideration
Bhattacharya, <i>et al.</i> (2008) <sup>23</sup>	1997M9 to 2007M10	One per cent increase in exchange rate causes rise in CPI level by 0.10-0.11per cent in the short run and 0.04-0.17per cent in the long-run

<sup>16</sup> Ray, P., H. Joshi and M. Saggarr (1998): "New Monetary Transmission Channels: Role of Interest Rate and Exchange Rate in the Conduct of Monetary Policy", *Economic and Political Weekly*, 33(44), 2787-94.

<sup>17</sup> Khundrakpam, J. K. (2007): "Economic reforms and exchange rate pass-through to domestic prices in India" *BIS Working Papers* 225, Bank for International Settlements.

<sup>18</sup> Kapur, M. (2012): "Inflation Forecasting: Issues and Challenges", *RBI Working Paper* No. 1.

<sup>19</sup> Kapur, M. and H. Behera (2012): "Monetary Transmission Mechanism in India: A Quarterly Model", *RBI Working Paper* No.9.

<sup>20</sup> Patra, M.D., and M. Kapur (2010), "A monetary policy model without money for India", IMF Working Paper No.10/183, International Monetary Fund.

<sup>21</sup> Patra, M.D., J.K. Khundrakpam, and A.T. George (2013): "Post-Global Crisis Inflation Dynamics in India What has Changed?", *Paper presented at the India Policy Forum*, July 16-17.

<sup>22</sup> Ghosh, A. and R. Rajan (2007): "Macroeconomic Determinants of Exchange Rate Pass-Through in India", April. Available at SSRN: <http://dx.doi.org/10.2139/ssrn.984332>

<sup>23</sup> Bhattacharya, R., Patnaik, I., & Shah, A. (2008). 'Exchange rate pass-through in India', Macro/Finance Group at NIPFP,[Online]. Available at: [http://macrofinance.nipfp.org.in/PDF/BPS2008\\_erpt.pdf](http://macrofinance.nipfp.org.in/PDF/BPS2008_erpt.pdf).

<sup>24</sup> Singh, B. and S. Pattanaik (2012): "Monetary Policy and Asset Price Interactions in India: Should Financial Stability Concerns from Asset Prices be Addressed Through Monetary Policy?", *Journal of Economic Integration*, Vol. 27,167-194.

<sup>25</sup> Singh, B. (2012): "How important is the stock market wealth effect on consumption in India?", *Empirical Economics*, 43(3), 915-927.

#### 4. Identifying Impediments to Transmission

IV.15 In India, financial sector reforms and progressive deregulation of the financial sector created pre-conditions for conducting monetary policy primarily through changes in the interest rate as the main policy instrument. The effectiveness of monetary policy, however, remains constrained by several country-specific factors that affect transmission of the policy impulses through the interest rate channel. Some of the major factors are briefly explained below.

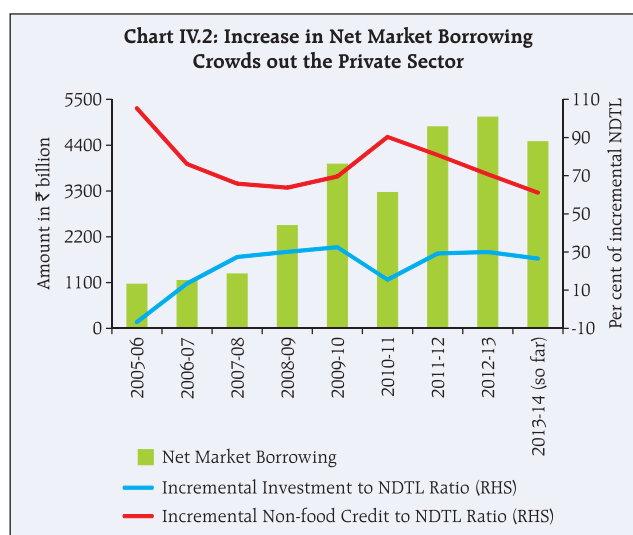
##### 4.1. Sustained Fiscal Dominance

IV.16 Despite phasing out of the Reserve Bank's participation in primary issuances of Government securities (G-secs), fiscal dominance continues to impinge on monetary policy efficacy as open market operations are intermittently deployed to 'manage yields' in the face of large government borrowings. Data for the past decade show that whenever the net market borrowing of the government has increased, the ratio of incremental investment by banks in government securities has gone up, leading to lower share of non-food credit in bank finance, *i.e.*, pointing to crowding out of the private sector (Chart IV.2).

##### i. Statutory Pre-emption through SLR

IV.17 Large government market borrowing has been supported by regulatory prescriptions under which most financial institutions in India, including banks, are statutorily required to invest a certain portion of their specified liabilities in government securities and/or maintain a statutory liquidity ratio (SLR) (Table IV.2).

IV.18 The SLR prescription provides a captive market for government securities and helps to



artificially suppress the cost of borrowing for the Government, dampening the transmission of interest rate changes across the term structure. It is also observed that the Government often borrows at a negative real interest rate, especially in recent years (Chart IV.3). While banks generally invest in government securities above the statutory prescription since excess SLR securities serve as the only collateral for availing central bank resources under the LAF (Table IV.3), a lower SLR prescription, *ceteris paribus*, is likely to decrease banks' investments in G-secs.

##### ii. Small Savings Schemes

IV.19 Besides market borrowings, the other main source of funding government deficits in India is small savings mobilised through, *inter alia*, post office deposits, saving certificates and the public provident fund, characterised by administered interest rates and tax concessions. The interest rates on small savings were earlier changed infrequently<sup>26</sup>. Consequently, small savings in the past had acquired

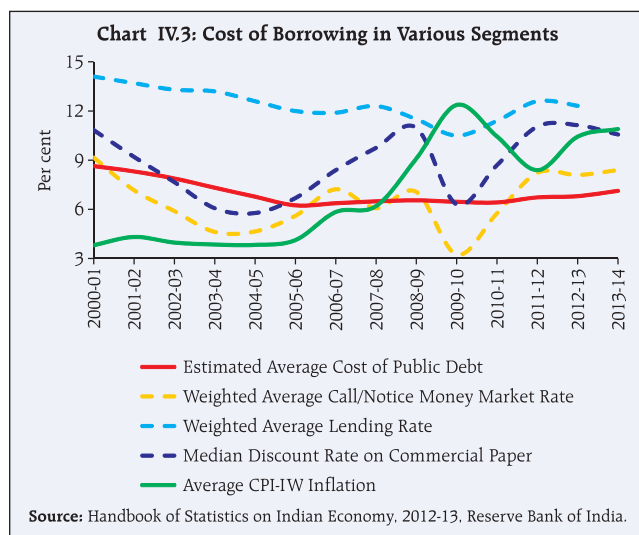
<sup>26</sup> Pursuant to the recommendations of the Committee on Comprehensive Review of National Small Savings Fund (Report submitted in June 2011), the government announced in November 2011 the alignment of the rate of interest on small savings schemes with interest rates on government securities of similar maturity with a spread of 25 basis points. It was also decided that the notification of interest rate on small savings schemes for every financial year would be before the year commenced. Nonetheless, some rigidities still remain in the interest rates on small savings instruments. This is because the benchmark yield is an average of the month-end yields of the previous financial year. Also the interest rate stays fixed for the year. These rigidities continue to pose impediments to transmission.

**Table IV.2: Guidelines on Investment in Centre and State Government Securities (select institutions)**

Institution	Instruments	Minimum Allocation	Remarks
Gilt Funds	Central Government Securities and State Development Loans (SDL).	100 per cent of total corpus.	
Life Insurance Companies	Government Securities and other approved securities.	50 per cent of total corpus (of which 25 per cent in Government Securities).	
Non-life Insurance Companies (Pension and General Annuity Business)	Government Securities, and other approved securities.	40 per cent of total corpus (of which 20 per cent in Government Securities).	
Employees' Provident Fund	Central Government Securities, SDL and other approved securities.	55 per cent of incremental accretions belonging to the Fund.	This is the cap or maximum allocation.
PFs/Retirement Trusts/Gratuity Funds	Central Government Securities; SDL and other approved securities.	25 per cent of Assets Under Management (AUM);  15 per cent of AUM.	In addition to this, there is a discretionary investment to the extent of 30 per cent which are also generally investment in SDLs. As a result, total investment in government paper (Centre+States) is around 70 per cent.
Scheduled Commercial Banks	Central Government Securities, SDL and other approved securities.	23 per cent of net demand and time liabilities (NDTL).*	
Urban Co-operative Banks	Central Government Securities, SDL and other approved securities.	25 per cent of NDTL.	
DICGC	Central Government Securities.	100 per cent of cash surplus.	

\*: The statutory liquidity ratio is marginally met through holdings of gold and cash as well.

a competitive edge over bank deposits during the easing phase of monetary policy, as was evident

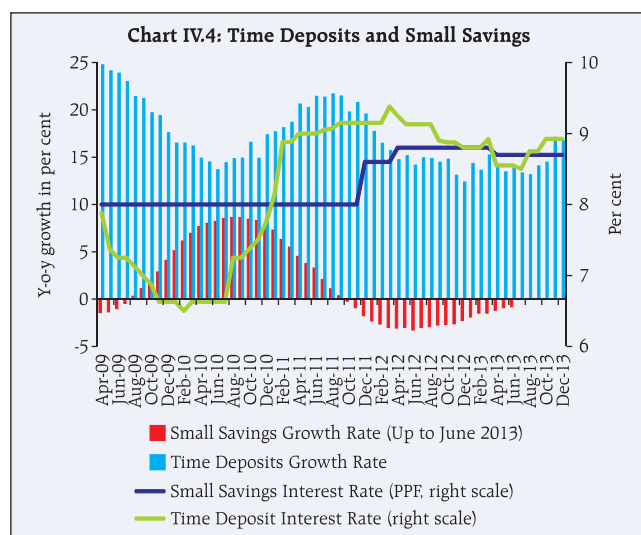


during 2009-10 (Chart IV.4). The resultant substitution from bank deposits to small savings eroded the effectiveness of the monetary transmission mechanism, especially the bank lending channel. To some degree, the annual reset for the small savings rates continues to provide them a competitive edge. Therefore, the option of a half-yearly or quarterly reset should be implemented.

**Table IV.3: SLR Maintenance by Banks**

(Per cent of NDTL)

Financial Year End	SLR Maintained	SLR prescribed
2008-09	28.1	24
2009-10	28.8	25
2010-11	27.1	24
2011-12	27.4	24
2012-13	28.0	23



### iii. Subventions

IV.20 The Government also influences the monetary policy transmission channel through its directives to banks. Keeping some economically and socially important objectives in mind, both the Central and State Governments offer interest rate subvention to certain sectors, including agriculture (Table IV.4). There have also been non-interest subventions, such as the Agricultural Debt Waiver and Debt Relief Scheme in 2008.

### iv. Taxation

IV.21 The tax advantage for the fixed maturity plans (FMPs) of the debt Mutual Funds of tenors of a year

or more against fixed deposits of corresponding maturities also weakens the credit channel of monetary transmission. Similarly, to the extent the financial products of non-banks are not subjected to tax deduction at source, they have an advantage over bank deposits and weaken the transmission on the same grounds.

### Recommendations

IV.22 In order to address specific impediments to monetary policy transmission in India, the Committee recommends the following:

- Consistent with the time path of fiscal consolidation mentioned in Chapter II, SLR should be reduced to a level in consonance with the requirements of liquidity coverage ratio (LCR) prescribed under the Basel III framework.
- Government should eschew suasion and directives to banks on interest rates that run counter to monetary policy actions.
- More frequent intra-year resets of interest rates on small saving instruments, with built-in automaticity linked to benchmark G-sec yields, need to be brought in. Also, the benchmark should be based on average of the previous six months or even shorter intervals so as to better capture changes in interest rate cycles within a year.

**Table IV.4: Subvention Schemes in Force in the Last Two Years**

1.	Introduced in July 2007, there is an interest subvention on pre- and post-shipment rupee export credit for certain employment oriented export sectors. The subvention of two per cent for the financial year 2013-14 was increased to three per cent with effect from August 1, 2013. The interest charged is, however, subject to a floor rate of seven per cent. Applicable to all banks and EXIM Bank.
2.	In 2006-07, an interest subvention was introduced to ensure availability of short-term crop loans up to ₹3,00,000 to farmers at a reduced rate of seven per cent. This scheme continues with minor variations. In 2013-14, with three per cent additional subvention for timely repayment, the effective cost of short-term crop loan for farmers is four per cent. It was, until recently, applicable to public sector banks only, but now extended to private sector.
3.	In October 2009, a scheme of one per cent interest subvention for housing loans up to ₹1 million was introduced. With enhancements, in 2013-14, the one per cent subvention is available for housing loans up to ₹1.5 million for the cost of a house up to ₹2.5 million.
4.	In 2013-14, the Union Budget announced working capital and term loans at a concessional interest of six per cent to handloom weavers. This is supposed to benefit 150,000 individual weavers and 1,800 primary cooperative societies (mostly women and those belonging to the backward classes) in 2013-14.



- (d) *All fixed income financial products should be treated on par with bank deposits for the purpose of taxation and TDS. Further, the tax treatment of FMPs and bank deposits should also be harmonised .*
- (e) *With a sharp rise in the ratio of agricultural credit to agricultural GDP, the need for subventions on interest rate for lending to certain sectors would need to be re-visited<sup>27</sup>.*

#### **4.2. Large Informal Sector and Still Significant Presence of Informal Finance**

IV.23 Despite the growing reach of the formal banking and non-banking network, informal finance still caters to the financing requirements of the major part of India's population<sup>28</sup>. The recourse to non-institutional sources is relatively high, both in rural and urban areas, particularly by lower income groups. Also, the cost of borrowing from informal/semi-formal sources is significantly higher than that of borrowing from banks (Table IV.5). High cost itself may be an impediment to transmission, particularly when incremental changes in the policy rate constitute only a small fraction of the overall funding costs. Thus, the significant presence of informal finance as well

**Table IV.5: Cost of Credit from Various Agencies in India**

Lender Category	Interest Rate (Per cent per annum)*
Self Help Groups (SHGs)	18-24
Microfinance Institutions (MFIs)	20-24
Informal credit providers	18-36
Banks (small borrowal accounts)	6-20

\*: Data pertains to 2006.

Source: Report on Currency and Finance, 2006-08, Reserve Bank of India.

as its costs of intermediation can impede the impact of monetary policy on aggregate demand.

#### **4.3. Financial and Credit Market Frictions, Bank Behaviour and Monetary Policy**

IV.24 There are certain facets of monetary policy that interface with credit and financial markets. In this context, market frictions and/or the endogenous response of the RBI to liquidity demand weaken monetary transmission.

IV.25 First, on the lending side, banks determine their interest rates with reference to the base rate. While banks are free to decide their base rates, they are required to take into consideration factors like cost of funds, adjustment for the negative carry in respect of CRR and SLR, overhead cost and a profit margin. The policy repo rate does not directly affect the determination of base rate of banks, except at the margin where wholesale funding is used. Even this role has greatly diminished, since wholesale funding (including borrowing from the Reserve Bank) constitute barely 10 per cent of the total funds raised by banks (Table IV.6).

IV.26 Secondly, with regard to deposits, while interest rates are re-priced when policy rates increase, this is only at the margin. A more complete transmission is impeded by the maturity pattern being largely concentrated in fixed tenor deposits (Table IV.7). Moreover, the distribution of term deposits is tilted in favour of longer duration (*i.e.*, one year and above) deposits (Table IV.8). These fixed rate deposits, together with the pursuit of inflexible net interest margins by public sector banks, imparts rigidity to the entire interest rate structure. Going forward, increase in competition as suggested by the

<sup>27</sup> The ratio of outstanding agriculture loans to agriculture GDP increased from 9.5 per cent in the 1990s to 12.2 per cent in 2001-02, but subsequently rose sharply to 35.9 per cent in 2012-13.

<sup>28</sup> According to the World Bank Findex Survey (2012), only 35 per cent of Indian adults have access to a formal bank account and 8 per cent borrowed formally in the last 12 months. Only 2 per cent of adults used an account to receive money from a family member living in another area and 4 per cent used an account to receive payment from the Government.

**Table IV.6: Asymmetry in Transmission in Different Phases of Monetary Policy Cycles (to Deposit and Lending Rates of Banks)**

	Change (percentage points)			
	Tightening Phase (October 26, 2005 to October 19, 2008)	Easing Phase (October 20, 2008 to March 18, 2010)	Tightening Phase (March 19, 2010 to April 16, 2012)	Easing Phase (April 17, 2012 to July 15, 2013)
Repo Rate	3.00	-4.25	3.75	-1.25
Modal Deposit Rate	2.38	-2.38	2.31	0.04
Modal Base Rate*	3.00	-2.00	2.75	-0.50
WALR	N.A.	N.A.	2.08	-0.49

\*: Base rate system was introduced from July 1, 2010.  
N.A.=Not Available

Reserve Bank is necessary to impart greater dynamism and flexibility to the banking structure and associated outcomes (RBI, 2013)<sup>29</sup>.

IV.27 Thirdly, the transmission of monetary policy to deposit and lending rates is sensitive to liquidity conditions prevailing at the time of a policy rate change and during the period thereafter. As shown in Table IV.9, cumulative increase of 175 bps in the repo rate in 2011-12 was transmitted to both deposit

**Table IV.7: Distribution of Current, Savings and Term Deposits-March 2012**

	(Per cent)			
	Current	Savings	Term	Total
SBI and Associates	8.8	33.5	57.7	100.0
Nationalised Banks	9.1	23.4	67.5	100.0
Foreign Banks	29.2	15.4	55.3	100.0
Private Sector Banks	14.3	24.8	60.9	100.0

Source: Basic Statistical Returns, 2011-12.

and lending rates, *albeit* less than proportionately. In 2012-13, however, the repo rate was cut by 100 bps, but despite the cut in CRR by 75 bps, deposit and lending rates did not soften much due to deficit and occasionally tight liquidity conditions. In 2013-14 (so far), the cumulative increase in repo rate has been 25 bps, but in the absence of any CRR cuts and because of the policy induced tightness in liquidity conditions, transmission to the modal deposit rate has been higher than the change in the policy rate<sup>30</sup>. Empirical research for India corroborates the role of liquidity conditions in impacting the transmission – "monetary policy transmission is more effective during the liquidity deficit mode as compared to the surplus mode" (Ray and Prabhu, 2013)<sup>31</sup>. Significant asymmetry is observed in the transmission of policy rate changes

**Table IV.8: Distribution of Maturity Pattern of Term Deposits of SCBs March 2012 – Based on Contractual Maturity**

	(Per cent)						
	Up to 90 days	91 days and above but less than 6 months	6 months and above but less than 1 year	1 year and above but less than 2 years	2 years and above but less than 3 years	3 years and above but less than 5 years	5 years and above
SBI and Associates	4.1	4.8	5.4	38.9	15.7	11.6	19.5
Nationalised Banks	6.6	6.5	11.8	49.9	6.7	10.9	7.6
Foreign Banks	34.3	12.7	9.8	34.9	3.9	3.6	0.8
Private Sector Banks	10.4	12.5	13.8	43.1	11.1	5.2	4.0

Source: Basic Statistical Returns, 2011-12.

<sup>29</sup> RBI (2013): Discussion Paper on 'Banking Structure in India - The Way Forward', available on [http://www.rbi.org.in/scripts/BS\\_PressReleaseDisplay.aspx?prid=29405](http://www.rbi.org.in/scripts/BS_PressReleaseDisplay.aspx?prid=29405)

<sup>30</sup> Since deposit and lending rates may respond with different lags when the repo rate is changed, and given that liquidity is only one of the many determinants of transmission, direct comparison of deposit and lending rates relative to prevailing liquidity conditions may only provide broad indications of the link between liquidity conditions and transmission.

<sup>31</sup> Ray, P. and E.Prabhu (2013), "Financial Development and Monetary Policy Transmission Across Financial Markets: What Do Daily Data tell for India?", *RBI Working Paper*, No. 4.

**Table IV.9: Monetary Policy Transmission and Liquidity Conditions**

Period	Change in Policy Rates (bps)		Average Liquidity Deficit* (₹ billion)	Modal Deposit Rate	Modal Base Rate	WALR
	Repo Rate	CRR				
Q4 (2010-11)	50	-	-464	6.65	9.00	11.40
<b>2011-12</b>						
Q1	75	-	-378	7.08	9.50	11.45
Q2	75	-	-453	7.44	10.25	11.71
Q3	25	-	-916	7.46	10.50	12.24
Q4	-	-125	-1341	7.42	10.50	12.58
<b>Change during the year</b>	175	-125	-772	0.77	1.50	1.18
<b>2012-13</b>						
Q1	-50	-	-937	7.40	10.50	12.39
Q2	-	-25	-543	7.29	10.45	12.30
Q3	-	-25	-1046	7.33	10.25	12.18
Q4	-50	-25	-1101	7.31	10.20	12.18
<b>Change during the year</b>	-100	-75	-907	-0.11	-0.30	-0.40
<b>2013-14</b>						
Q1	-25	-	-847	7.26	10.20	12.11
Q2	25	-	-1007	7.46	10.25	12.21
Q3	25	-	-856	7.65	10.25	12.15#
<b>Change up to Q3</b>	25	-	-903	0.34	0.05	-0.03

\*: Include Repo, Reverse Repo, Term repo, MSF and ECR; #: Data relate to November; '-': No change.

between the surplus and deficit liquidity conditions, suggesting that maintaining suitable liquidity environment is critical to yielding improved pass-through (Singh, 2011, *op. cit.*).

### **Recommendations**

IV.28 *Unless the cost of banks' liabilities moves in line with the policy rates as do interest rates in money market and debt market segments, it will be difficult to persuade banks to price their loans in response to policy rate changes. Hence, it is necessary to develop a culture of establishing external benchmarks for setting interest rates based on which financial products can be priced. Ideally, these benchmarks should emerge from market practices. However, the Committee is of the view that the Reserve Bank could explore whether it can play a more active supportive role in its emergence.*

IV.29 *The RBI's liquidity management operations should strive to ensure consistency with the stance of monetary policy. Accordingly, an increase in the policy rate to convey an anti-inflation policy stance should be accompanied by tightening of liquidity conditions through liquidity management operations, whereas an easing of the policy stance should be associated with accommodative liquidity conditions.*

IV.30 *The Committee is also of the view that there should be close coordination between the settings of monetary policy and macro-prudential policies, since variations in macro-prudential instruments such as capital buffers, provisions, loan-to-value ratios and the like impacts the cost structures and lendable resources of banks, thereby impacting monetary transmission.*

#### 4.4. Other Aspects of Monetary Policy Transmission

##### i. High Inflation and Financial Disintermediation

IV.31 High inflation in itself impedes transmission of monetary policy. This impact is exacerbated if interest rates on financial products do not adjust to inflation and yield negative returns. In India, gold and real estate compete with deposits, thereby constraining the degree of flexibility available to banks, particularly in lowering the deposit rates (*given* the fear of loss of deposits) in an easing phase of monetary policy. For four consecutive years between 2009-10 and 2012-13, average deposit rates remained below the CPI inflation for those years, whereas the annual return from gold and real estate exceeded CPI inflation most of the times, and by a significant margin as well (Table IV.10). With the annual average consumer price inflation touching double digits or staying just underneath for the last six years, bank deposits have been yielding negative returns in real terms.

##### ii. Endogenous Liquidity Under the Monetary Policy Framework

IV.32 Under the extant monetary policy framework, financing of large fiscal deficits through market borrowings has effectively resulted in the use of open

market operations (OMO) primarily to smoothen G-sec yields rather than being employed as a pure monetary policy tool, contrary to cross-country practices which have increasingly favoured the separation of debt management operations from liquidity management (Table IV.11). In India, on the other hand, transmission has been impeded by: (a) not enforcing enough liquidity management discipline in the banking system; and (b) allowing excessive indirect monetisation of the fiscal deficit which also undermines the credibility of discretionary liquidity management operations. The LAF framework allows banks complete freedom to access liquidity from the RBI at the repo rate, up to their excess SLR holdings. The cost of holding excess SLR gets reflected in the pricing of other assets.

IV.33 As government market borrowing crowds out funds to the private sector, in turn placing pressure on liquidity, the central bank is often forced to accommodate the resultant liquidity shortages by providing additional liquidity through open market operations, especially *via* outright purchases of G-secs. The net market borrowings of the central Government have increased 10-fold in the eight years till 2012-13, even without counting for additional funding of ₹1.16 trillion through 364-day treasury bills during the terminal year. Even in 2010-11, when monetary policy needed to be tightened aggressively and efforts were being made in that direction, large OMO purchases were effected. Reflecting these developments, OMO transactions have largely become one-sided in recent years and have turned into a dominant source of reserve money creation rather than a tool for managing liquidity mismatches (Chart IV.5). While some expansion of reserve money consistent with the growth in broad money and nominal GDP is necessary (as set out under Pillar II in Chapter III), excessive monetary expansion at times results from indirect monetisation of the fiscal deficit through OMOs.

**Table IV.10: Nominal Return on Gold, Real Estate and Bank Deposits (Per cent, y-o-y)**

Year	Return on domestic gold price	Return on real estate (RBI's House Price Index)	CPI-IW Inflation (Average)	Weighted avg. term deposit rates of banks*
2004-05	7.5	-	3.8	6.18
2005-06	12.3	-	4.4	6.51
2006-07	33.9	-	6.7	8.22
2007-08	8.2	-	6.2	8.71
2008-09	29.0	-	9.1	8.84
2009-10	22.2	11.7	12.4	6.97
2010-11	22.0	19.1	10.4	8.29
2011-12	33.8	22.3	8.4	7.40
2012-13	17.6	22.7	10.4	7.27
Apr-Oct 2013	-5.4@	0.9 **	10.9\$	7.74

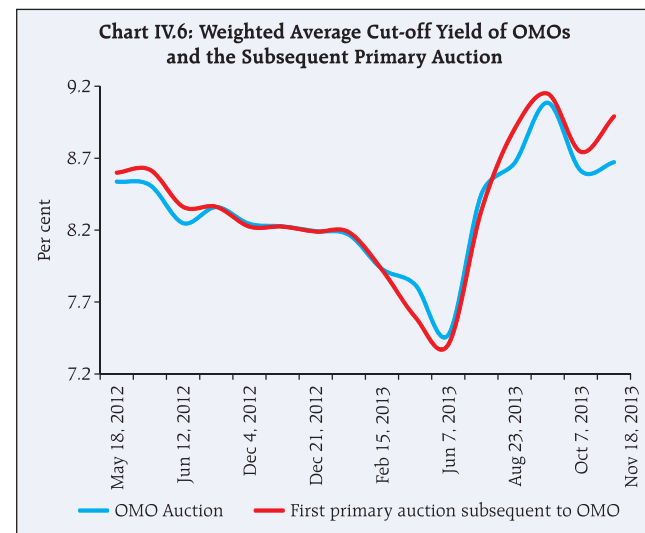
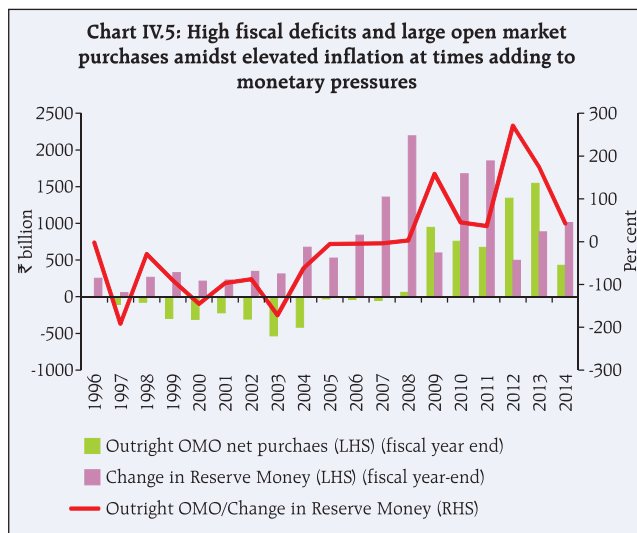
\*: End-March @: Apr-Aug, 2013 \$: Apr-Nov, 2013 \*\* 2013-14 q1

**Table IV.11: Debt Management Arrangements: Cross-Country Practices in Some Emerging Market Economies**

Country	Arrangements	Country	Arrangements
Indonesia	Government debt securities (T-bills and G-bonds) are issued by Ministry. Bank Indonesia (BI) as the implementing agency stipulates and administers the regulations regarding the issuance, sale and purchase of these instruments.	Chile	The International Finance Unit of the Ministry of Finance is in charge of proposing and implementing strategies regarding public debt through the Public Debt Office (PDO). The Central Bank of Chile carries out monthly bond auctions on dates published in a calendar in the amounts established by the Finance Ministry.
Brazil	The National Treasury Secretariat is an agency of the National Treasury in charge of management and administration of domestic and external public debt. Most of the domestic government debt is issued through auctions held by National Treasury, making public offerings to financial institutions.	Mexico	The Federal Government of Mexico, through the Ministry of Finance and Public Credit, is responsible for management and issuance of government securities. The Bank of Mexico operates as the financial agent for the Federal Government and undertakes primary auctions of government securities on a weekly basis.
Poland	The Republic of Poland, via the Ministry of Finance on behalf of State Treasury, issued T-bills of upto one year and bonds of upto 10 years to cover the budget deficit. The National Bank of Poland (NBP) can purchase T-bonds in the secondary market only exceptionally, in the case of a severe crisis, threatening domestic financial stability.	Hungary	The Hungarian Government issues government bonds and discount T-bills, which was shifted out of the central bank in the late 1990s. The majority of government securities – discount T-bills and G-bonds – are sold through public issues.
Turkey	The Under Secretariat of the Treasury, which is the issuer of G-bonds and T-bills, is responsible for the method and terms of issuance as well as debt management. On behalf of the Under Secretariat, the Central Bank of the Republic of Turkey issues bonds and bills in accordance with the financial services agreement with the Treasury. The CBRT is the central securities depository.	South Africa	The management of debt is vested with the National Treasury. The Treasury conducts weekly bond auctions according to a calendar published at the beginning of the fiscal year.

IV.34 When the OMO cut-off yields in a given auction are lower than the cut-off yield in the immediately following primary auction of G-secs

(Chart IV.6, Table IV.12), it creates opportunities for the banking system to profit from the RBI's liquidity management operations. In 2012-13, in effect, 30



**Table IV.12: Comparison of Yields  
(OMOs versus Primary Auctions)**

Auction Date	Weighted Average Cut off Yield (Per cent)	
	OMO Auction	First primary auction subsequent to OMO
May 11, 2012	8.51	8.66
May 18, 2012	8.54	8.60
May 25, 2012	8.51	8.62
June 12, 2012	8.25	8.36
June 22, 2012	8.36	8.36
December 4, 2012	8.24	8.22
December 11, 2012	8.23	8.22
December 21, 2012	8.19	8.19
December 28, 2012	8.17	8.19
February 15, 2013	7.93	7.92
May 7, 2013	7.82	7.60
June 7, 2013	7.47	7.40
July 18, 2013	8.45	8.34
August 23, 2013	8.67	8.90
August 30, 2013	9.09	9.15
October 7, 2013	8.61	8.74
November 18, 2013	8.67	8.99

per cent of the net borrowing requirement of the Government was supported through OMOs (Table IV.13).

### Recommendations

IV.35 Accordingly, the Committee recommends that OMOs have to be detached from fiscal operations and instead linked solely to liquidity management. OMOs should not be used for managing yields on government securities.

IV.36 To sum up, there are several impediments that need to be taken on board for effective monetary transmission, some of which can be addressed through steps taken by the Reserve Bank itself. First and foremost, OMO purchases should be undertaken only when the liquidity condition warrants them. Second, the Reserve Bank should continue its efforts to develop the term repo market by calibrating liquidity at its overnight repo window as necessary. Third, the Reserve Bank should avoid regulatory forbearance, especially by changing norms for portfolio classification when yields rise. Fourth, it should facilitate a more competitive and dynamic banking structure so that re-pricing of deposit and lending rates, in due course, becomes faster in response to RBI's monetary policy actions.

**Table IV.13: Indirect Monetisation Eases Crowding-out Pressures but affects  
Transmission of Changes in Repo Rate**

Year	Net Market Borrowing (NMB) (₹ bn)	RBI Support through Direct Subscription and OMO* (₹ bn)	RBI Support as per cent of NMB	SCBs' Support to NMB (₹ bn)	SCBs' Support as per cent of NMB	Total Support from RBI and SCBs as per cent of NMB
1	2	3	4	5	6	7=4+6
2000-01	734	103	14	616	84	98
2001-02	908	-16	-2	711	78	77
2002-03	1041	-179	-17	1122	108	91
2003-04	889	-205	-23	1313	148	125
2004-05	509	-35	-7	642	126	119
2005-06	1062	-39	-4	-182	-17	-21
2006-07	1148	-51	-4	753	66	61
2007-08	1306	59	5	1826	140	144
2008-09	2470	945	38	1971	80	118
2009-10	3944	755	19	2226	56	76
2010-11	3264	672	21	1188	36	57
2011-12	4841	1342	28	2379	49	77
2012-13	5075	1545	30	2686	53	83

\*: Direct Subscription discontinued with effect from April 2006.

## Chapter V

### Conduct of Monetary Policy in a Globalised Environment

#### 1. Introduction

V.1 The conduct of monetary policy in a globalised environment faces the challenge of managing the impossible trinity<sup>1</sup>. It has become more complicated by spillovers from monetary policies of advanced economies in recent years. Announcement effects of the exit from unconventional monetary policies (UMPs) of systemically important central banks have exposed the limits on the effectiveness of monetary policy in spillovers-receiving economies. Risk-on risk-off shifts in market perceptions have imparted heightened volatility to cross-border capital flows and to changes in asset prices worldwide. Furthermore, because of hysteresis, implications for the real economy (especially the tradable sector) are not symmetric over phases of inflows and outflows.

V.2 Prior to the global crisis of 2008, there was an apparent consensus that flexible exchange rates can engender the space for independent conduct of monetary policy, even if the capital account is open. After the crisis, however, there is a clear intellectual shift justifying a non-trivial role for capital flow management (CFM) measures to mitigate the externalities associated with global spillovers, irrespective of the exchange rate regime, and for a war-chest of international reserves as the first and often, the only line of defence. Thus, the trilemma has collapsed into a dilemma – independent monetary policy is possible only if the capital account is managed<sup>2,3</sup>.

V.3 The dominant influence of US monetary policy on monetary policies of most EMEs has been evident since the onset of the global crisis. Quantitative easing (QE) led to the hardening of global commodity prices which has been transmitted to EMEs in the form of rising current account deficits (CADs) and inflation. QE has also been a strong push factor driving surges in capital flows into EMEs, causing their exchange rates to appreciate and asset prices to increase beyond levels regarded as tolerable hitherto. QE-driven capital inflows, in fact, also helped countries like India to meet the financing gaps opened by sustained high CADs. Since May 2013, the effects of 'taper talk' that became evident in sudden reversal in debt capital flows and sharp depreciation of exchange rates have added a whole new dimension to the conduct of monetary policy in an interconnected world. This warranted a re-think on (a) degree of flexibility that monetary authorities need to retain to manage large anticipated as well as unanticipated globalisation induced shocks; and (b) the armoury of instruments and the associated costs in terms of achieving the final objectives of monetary policy.

#### 2. International Experience

V.4 Over the last decade, trade, finance and sentiment channels have connected constituents of the global economy more than ever before. Repetitive episodes of crises have tended to focus attention on the negative effects of this integration relative to the gains. In particular, shocks emanating

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<sup>1</sup> An independent monetary policy is incompatible with a fixed exchange rate and an open capital account.

<sup>2</sup> Rey, H. (2013): "Dilemma not Trilemma: The Global Financial Cycle and Monetary Policy Independence", Paper presented in the 2013 Economic Policy Symposium, Federal Reserve Bank of Kansas City, Jackson Hole, August 22 -24.

<sup>3</sup> Farhi, E. and I. Werning (2013): "Dilemma not Trilemma? Capital Controls and Exchange Rates with Volatile Capital Flows", Paper presented at the Fourteenth Jacques Polak Annual Research Conference, International Monetary Fund, Washington D.C., November 7-8.

in AEs have amplified and prolonged risks to monetary and financial conditions in EMEs, making macroeconomic management for the latter a testing challenge, especially in view of the large influence of capital flows on macroeconomic fundamentals (Table V.1)<sup>4</sup>.

### 2.1. Post-Global Crisis Country Experience on Managing Surges in Capital Inflows

V.5 Faced with rapid inflows, Brazil imposed a two per cent tax (Imposto de Operacoes Financeiras or IOF) on portfolio (equity and debt) inflows in October 2009 and subsequently raised it in phases to six per cent (Appendix Table V.1). In addition, it also raised unremunerated reserve requirements on time deposits from 15 per cent to 20 per cent in December 2010. In January 2011, it imposed reserve requirements on banks' short dollar positions in the cash market. However, anticipating a drop in foreign inflows once the US taper takes hold, Brazil scrapped the IOF tax in June 2013<sup>5</sup>.

V.6 Similarly, Peru introduced a gamut of measures during 2009-10. In July 2009, it enacted variants of controls on capital inflows to stem appreciation pressures (a ban on foreign purchases of central bank bills and increased fees on central bank liquidity draining instruments). In July 2010, it implemented additional capital requirements for forex credit risk exposure. Subsequently, in September, it imposed increased reserve requirements (to 75 per cent from 50 per cent earlier) on foreign currency deposits with maturity of less than two years and those on non-resident domestic currency deposits to 120 per cent (from 50 per cent earlier).

V.7 Indonesia introduced a one-month minimum holding period requirement for central bank paper in June 2010. In November 2010, reserve requirements on local currency deposits were raised to eight per cent (from six per cent earlier). Subsequently, in December 2010, it raised the reserve requirements on foreign currency deposits (from one per cent to

**Table V.1: Impact of Capital Inflows on Macroeconomic Variables – Cross-country Comparisons**

Country	Net inflows (% of GDP)	Currency Movements (% change in NEER) #	Change in reserves (% of GDP)	Inflation (%: y-o-y) (average during 2006-08)	Real credit growth (%: y-o-y) (average of last six months)
Brazil	6.2	38.4	6.0	5.0 (4.5)	12.9
Indonesia	2.6	19.4	7.4	6.2 (9.8)	9.2
Korea	1.9	17.5	10.7	3.3 (3.2)	0.4
Peru	5.9	5.6	9.0	2.1 (3.2)	9.3
Thailand	5.0	9.3	22.3	3.1 (4.1)	4.3
Turkey	6.9	6.5	1.7	7.9 (9.6)	21.4
South Africa	6.6	41.4	2.6	3.6 (6.4)	-0.1
Czech Rep.	5.3 *	-0.8 \$	-1.0 \$	1.9 \$	5.5 \$
Poland	9.2 **	15.3 \$	0.9 \$	4.3 \$	13.9 \$

Period: Q3:2009-Q2:2010 for the other countries; \* Period: Q2:2009-Q1:2011; \*\*Period: Q2:2009-Q2:2011 \$ 2011 over 2010. #from the trough since the crisis

Source: IMF documents, country pages and central bank websites.

<sup>4</sup> IMF (2011): "Recent Experiences in Managing Capital Inflows – Cross-Cutting Themes and Possible Policy Framework", February 14. Available at [www.imf.org/external/np/pp/eng/2011/021411a.pdf](http://www.imf.org/external/np/pp/eng/2011/021411a.pdf), International Monetary Fund: Washington D.C.

<sup>5</sup> Ostry, J. D., A. R. Ghosh, K. Habermeier, L. Laeven, M. Chamon, M. S. Qureshi and A. Kokenyne (2011): "Managing Capital Flows: What Tools to Use?", *IMF Staff Discussion Note 6*, International Monetary Fund: Washington DC.

Forbes, K., M. Fratzscher and R. Straub (2013): "Capital Controls and Macroprudential Measures: What are they Good For?", MIT (Mimeo).

Alichi A., S. Choo Ryul and C. Hong (2012): "Managing Non-core Liabilities and Leverage of the Banking System: A Building Block for Macroprudential Policy Making in Korea". *IMF Working Paper 27*, International Monetary Fund: Washington D.C.

Pradhan, M., R. Balakrishnan, R. Baqir, G. Heenan, C. Oner and S. Panth (2011): "Policy Responses to Capital Flows in Emerging Markets". *IMF Staff Discussion Note 10*, International Monetary Fund: Washington D.C.



eight per cent) and restricted short-term foreign borrowings by banks (to 30 per cent of capital), effective March 2011.

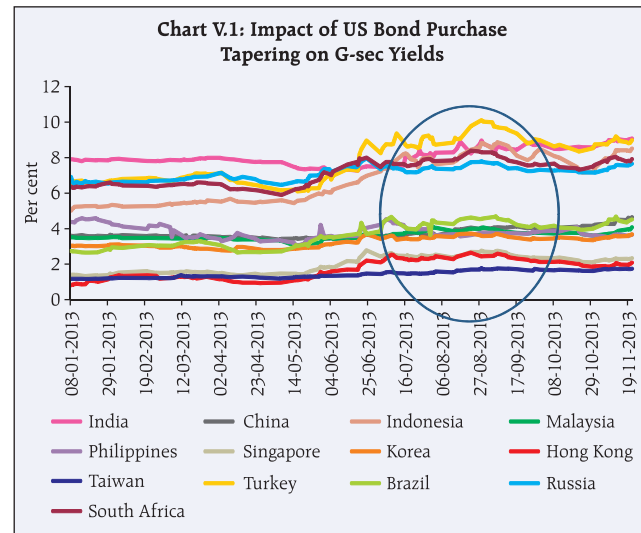
V.8 In June 2010, Korea introduced ceilings on forex forward positions of banks to lower leverage and elongate banks' funding structure. In January 2011, it re-introduced a 14 per cent withholding tax on non-residents' purchase of treasury bonds. In August 2011, Korea also imposed a macro-prudential levy on non-core liabilities, with the extent of the levy being higher for non-core liabilities with shorter remaining maturity.

V.9 Against the backdrop of high bond inflows, Thailand announced the re-imposition of a withholding tax on non-resident interest earnings and capital gains in October 2010. Subsequently, in November 2010, it announced a cap on loan-to-value (LTV) ratio for residential property at 90 per cent on condominiums, effective January 2011, and 95 per cent on low rises, effective January 2012.

V.10 In December 2010, Turkey reduced the withholding tax rate on bonds issued abroad by Turkish firms, with lower rates for longer maturities. Subsequently, it halted the practice of remunerating required reserves, raised the levy on interest on consumer loans and introduced LTV ratios for all mortgages.

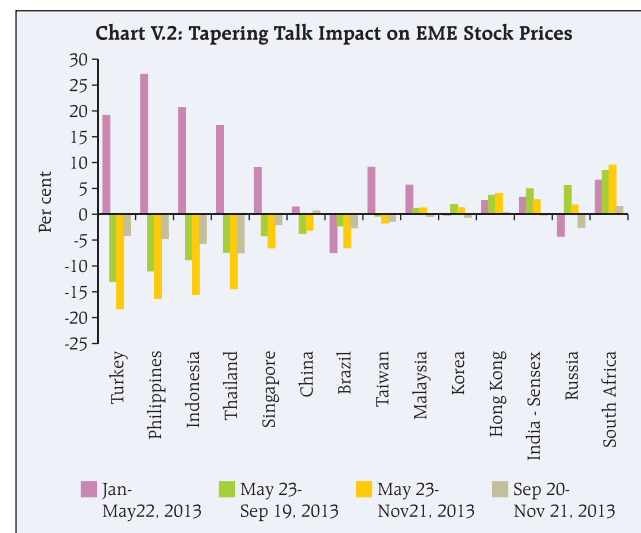
## 2.2. Country Experience on Managing Sudden Capital Outflows

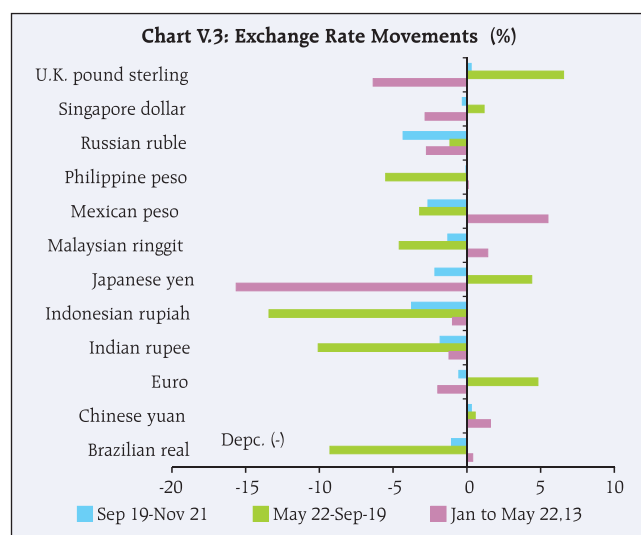
V.11 The Fed's 'taper' announcement in May 2013 came as a major event shock for EMEs. As long-term US treasury yields hardened significantly, there was a huge sell-off in bonds all over the globe. Asian markets came under intense pressure as the bond sell-off was accompanied by flight of capital back into the US. Bond yields firmed up across the globe (Chart V.1). Countries that ran large CADs became particularly vulnerable. Equity outflows followed, first in portfolio and then in direct investment segments.



The subsequent announcement in September 2013 of deferment of the QE program moderated near-term uncertainties to a large extent. Moreover, in recent weeks, financial markets have been relatively calm even as the taper started in January.

V.12 Despite limited headroom, EME central banks have undertaken steps to counter stock market slumps and sharp currency depreciation (Charts V.2 and V.3). While some central banks (such as in Brazil and Indonesia) responded in a conventional manner by raising policy rates and using foreign exchange reserves, others have experimented with a range of unconventional policy





measures. To illustrate, Brazil announced a US\$ 60 billion currency intervention program in August 2013 involving swaps and repurchase agreements with businesses requiring dollars<sup>6</sup>. Turkey's central bank is reported to have sold US\$ 6-8 billion in foreign currency auctions since June 2013.

V.13 In June 2012, the BRICS initiated a plan to establish a US\$ 100 billion fund in order to steady currency markets to address the potential fallout of taper spillovers, with participating members being able to draw a specified amount from the pool. Furthermore, countries have undertaken proactive measures towards rationalising non-essential imports in order to shrink their CADs. In June 2013, Brazil removed several capital controls, including taxes on foreign portfolio investments that were introduced in 2009. South Africa, in contrast, maintained an eclectic approach, favouring a market-determined exchange rate and maintaining an accommodative monetary policy stance.<sup>7</sup>

V.14 Faced with sudden capital outflows and adverse ramifications, several EMEs, including India, had to temporarily alter their conduct of monetary policy in addition to other measures. Some countries used short-term interest rates as the first line of defence, while others focused more on managing liquidity. Some countries employed forex interventions in the spot and/or the forward market, while others relied more on forex swaps. Most countries resorted to capital account management, using a combination of measures to encourage capital inflows and discourage or temporarily restrict capital outflows (Appendix Table V.1).

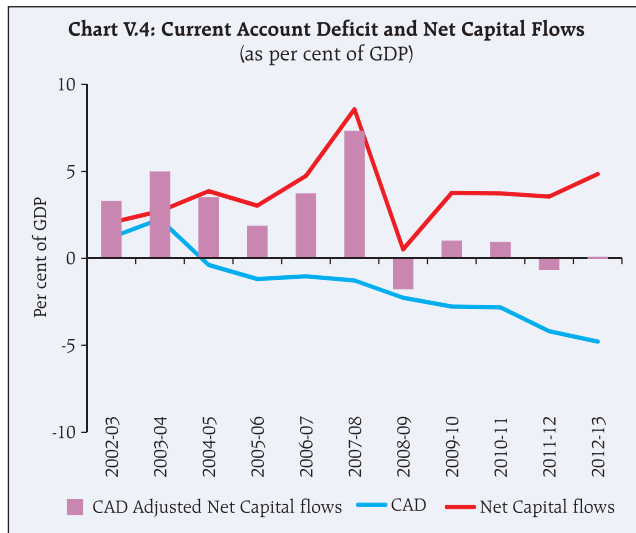
V.15 From this experience, it appears that for dealing with the challenges of globalisation-induced shocks: (a) a wide array of tools is available to central banks and the exact manner of using an instrument could vary; (b) monetary measures may pursue different objectives simultaneously in the face of large and sustained spillovers without compromising the medium-term goal of price stability; (c) forex swaps can be a good short-run tool but their efficacy in the long-run is constrained by difficulties in winding up swap positions; and (d) forex intervention can give some respite, particularly when reserves are perceived to be adequate.

### 3. Indian Experience

V.16 In recent years, India has faced episodes of surges in capital flows and sudden reversals and has used a combination of exchange rate flexibility, capital controls, monetary measures, macro-prudential tools and reserves to manage them. Since 2002-03, India has faced four broad phases of volatile capital movements, each requiring different monetary policy

<sup>6</sup> IMF (2013): "Global Impact and Challenges of Unconventional Monetary Policies", *IMF Policy Paper*, October. Available at [www.imf.org/external/np/pp/eng/2013/090313.pdf](http://www.imf.org/external/np/pp/eng/2013/090313.pdf), International Monetary Fund: Washington D.C.

<sup>7</sup> In January 2014, the Bank of Japan and the RBI expanded the bilateral swap arrangement between Japan and India from US\$15 billion to US\$50 billion effective for three years from 2012 to 2015.



responses<sup>8</sup> (Chart V.4). During 2003-2007, capital inflows were a major challenge for monetary policy. Coinciding with the global crisis of 2008, capital outflows and exchange market pressures necessitated unprecedented monetary easing to avert a financial crisis and support a sluggish economy. In the years immediately after the global crisis, QE-induced capital flows helped to finance large current account deficits over successive quarters from Q2:2009 to Q1:2013, but without accretion to reserves and with rising external liabilities (against the backdrop of an appreciating exchange rate in real terms). More recently, sudden and large outflows in response to taper talk since May 2013 required monetary policy to respond directly to exchange market pressures, including through the use of exceptional measures.

### 3.1. Monetary Policy Response to Surges in Capital Inflows

V.17 Over the period 2003-04 to 2006-07, high growth operated as a 'pull' factor for surges in capital

inflows, with easy global liquidity conditions providing the key 'push'. Large inflows in excess of the absorptive capacity of the economy created concerns about erosion in external competitiveness through exchange rate appreciation, possible overheating of the economy and asset price bubbles, besides the growing risk of an abrupt reversal.

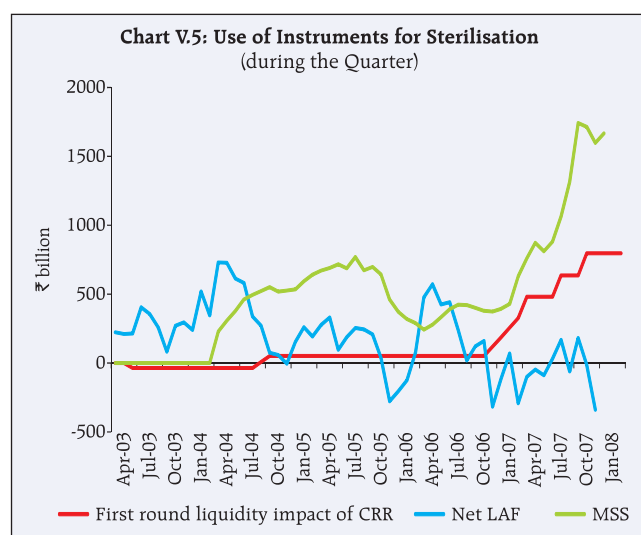
V.18 In response, a multi-pronged approach was followed which included, *inter alia*, phased liberalisation of current as well as capital account outflows; exchange market intervention and partial sterilisation; lowering of interest rate ceilings on NRI deposits; management of external debt through pre-payment; moderation in the access of corporates and intermediaries to external debt; and greater flexibility in exchange rate movements.

V.19 Sterilising the liquidity impact of sustained accretions to reserves was the key monetary policy challenge, and a combination of higher CRR, reverse repos and open market operations under the Market Stabilisation Scheme (MSS)<sup>9</sup> alongside some exchange rate appreciation was used for this purpose, which facilitated distribution of sterilisation costs across the financial system, the Reserve Bank and the Government (Chart V.5).

V.20 Reverse repos and outright OMO sales demanded the availability of adequate stock of government securities with the RBI, which became a constraining factor in sterilisation operations as the volume of capital inflows expanded. Moreover, reverse repo operations involved sterilisation costs, impacting the profit of the RBI, with implications for RBI's operational independence. Using the LAF as an

<sup>8</sup> During the period of surges in capital inflows (2003-07), the real effective exchange rate of the rupee (REER-36 currency, trade based) appreciated by 11.7 per cent. In the immediate aftermath of the global crisis, reflecting nominal depreciation of the rupee, the REER depreciated by 11.1 per cent between September 2008 and April 2009. Subsequently, between May 2009 to March 2013, the REER appreciated by 15.9 per cent using WPI as deflator, largely reflecting higher inflation differential *vis-a-vis* the inflation of India's major trading partners.

<sup>9</sup> The RBI in consultation with the Government of India introduced a new instrument of sterilisation, *viz.*, the Market Stabilisation Scheme (MSS), which empowered the RBI to issue Government Treasury Bills and medium duration dated securities for the purpose of liquidity absorption. The scheme worked by impounding the proceeds of auctions of Treasury bills and Government securities in a separate identifiable MSS cash account maintained and operated by the RBI. The amounts credited into the MSS cash account were appropriated only for the purpose of redemption/buy back of the Treasury Bills/dated securities issued under the MSS. The introduction of MSS succeeded broadly in restoring the LAF to its intended function of daily liquidity management.



instrument of sterilisation tended to erode its utility as a day-to-day liquidity adjustment tool operating at the margin (RBI, 2003)<sup>10</sup>. It was in this context that the RBI introduced MSS<sup>11</sup>. As the subsequent experience showed, the MSS brought with it operational constraints that impacted the conduct of sterilisation.<sup>12</sup>

### 3.2. Monetary Policy Response to Inadequate Capital Inflows/ Sudden Capital Outflows

V.21 Three episodes of drying up of capital and/or reversals are discernible in the recent experience. First, during the Asian crisis and sanctions applied after the Pokhran nuclear tests, *i.e.*, 1997 and 1998, the Indian rupee came under several bouts of pressure. Besides interventions in the spot and the forward segments of the forex market, monetary policy measures were used to tighten domestic liquidity and monetary conditions (Appendix Table

V.2). In August 1998, the scheme of Resurgent India Bonds (RIBs) was launched to attract capital flows from the non-resident Indian diaspora.

V.22 Second, the knock-on effects of the global financial crisis required pre-emptive crisis prevention measures, primarily in the form of adequate assurance on making available both rupee and US dollar liquidity in the domestic markets. Despite exchange market pressures associated with capital outflows, interest rate defence of the exchange rate was not resorted to in view of the risks to financial stability and growth. Moreover, there was a significant moderation in WPI inflation after the global financial crisis, which was partly the result of the crisis-driven crash in global commodity prices. Unprecedented monetary easing over a short time span was the chosen response, facilitated by the headroom created by the gradual withdrawal of monetary accommodation from September 2004 to August 2008 in response to inflation. With reverse repos, OMO sales, CRR cuts, unwinding of MSS balances and the opening up of special liquidity windows and lines of credit to apex refinancing institutions, the potential access to liquidity from the RBI was as high as around 10 per cent of GDP.

V.23 Third, the large depreciation of the rupee after May 22, 2013 – one of the highest among major EME currencies – required actions on multiple fronts, driven by the urgency of curbing speculative pressures on the exchange rate, narrowing the CAD and finding exceptional external financing. Taper-driven capital outflows – primarily in the form of debt portfolio flows – narrowed the spread between

<sup>10</sup> Report of the Working Group on Instruments of Sterilisation (Chairperson: Usha Thorat), 2003.

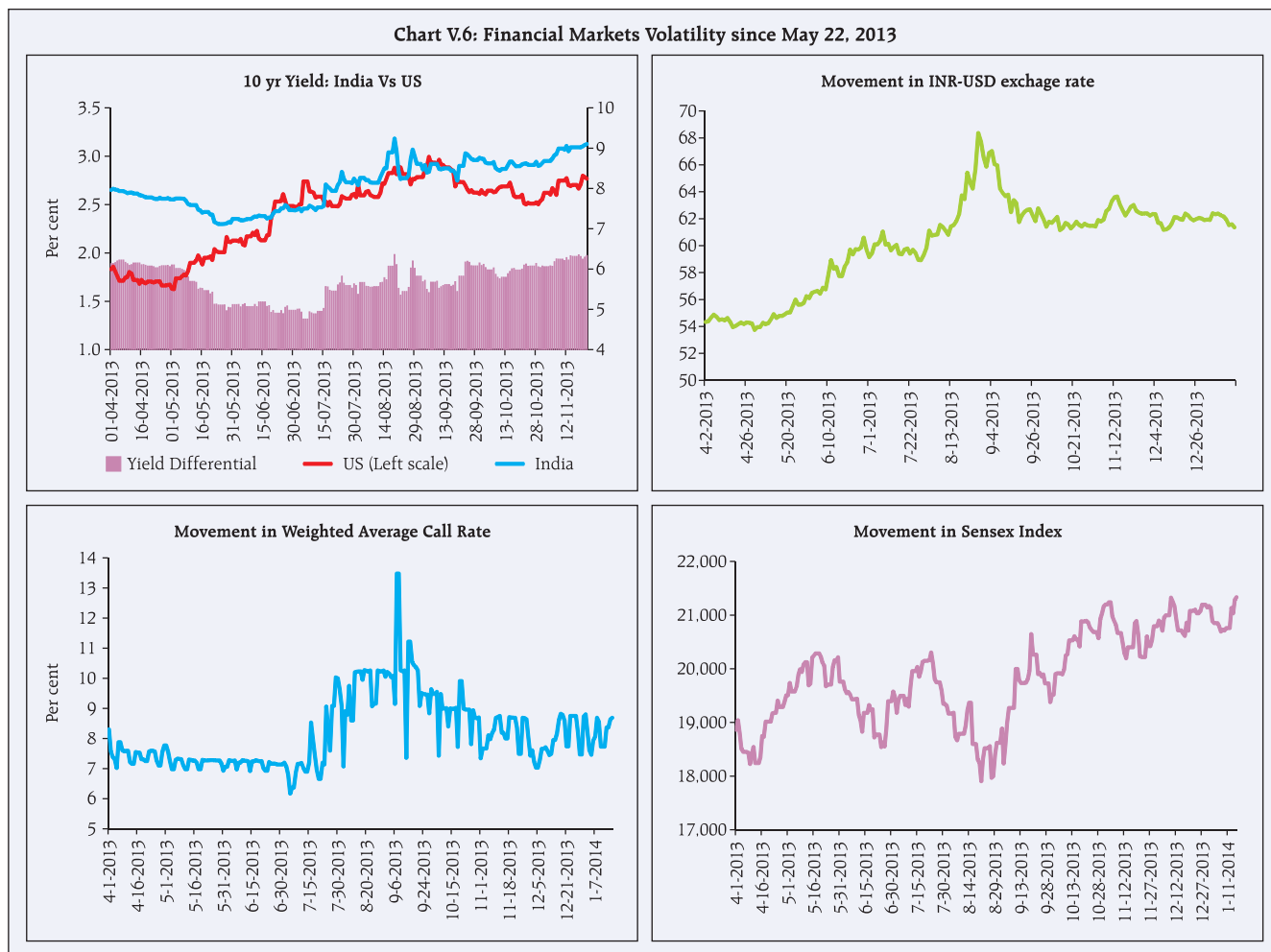
<sup>11</sup> The Reserve Bank had examined two other sterilisation options for India that would have required amendment to the RBI Act – one, to provide for flexibility in determination/remuneration of CRR balances so that interest could be paid on deposit balances of scheduled banks with the RBI; and two, issuance of RBI's own paper, which was not favoured due to no sustainable progress on fiscal consolidation and the risk of market fragmentation stemming from issuing both Government papers and RBI paper.

<sup>12</sup> The requirement to go periodically to the Government for limit increases in respect of securities provided under the scheme and the time lag involved in approval processes severely circumscribed the effectiveness of monetary policy in terms of timing of sterilisation operations. It also added to the fiscal costs. The issue of ring-fencing of funds that were raised through securities flowing into the consolidated fund of India became a thorny legal issue.

the G-sec yield and US Treasury yield significantly; the subsequent increase in money market interest rates and G-sec yields in response to monetary policy actions contributed to expectations of further depreciation, driven by uncovered interest rate parity conditions (Chart V.6, Appendix Tables V.3 and V.4).

V.24 In sum, the Indian experience in managing the challenges of two-way capital flows over different phases suggests that: (a) monetary measures address spillovers only indirectly, and are contingent on their impact on the growth and inflation outlook, but monetary measures occasionally have to respond directly to the disruptive impact of capital flows on financial markets; (b) the capacity of the RBI to sterilise/manage the domestic liquidity impact of net forex market interventions would have to be

augmented significantly in respect of both inflows and outflows; (c) text book interest rate defence of the exchange rate will have to be an instrument of the first resort in order to “buy” time, but its use and sustainability has to be conditioned by the assessment of costs to the economy from rising interest rates and financial stability considerations; (d) if an external event entails the risk of a global recession which can dampen domestic growth prospects and raise financial stability concerns, preparedness for a swift monetary easing may be necessary, even if the exchange rate comes under pressure without compromising the medium-term goal of price stability; and (e) if the foreign exchange reserves are not perceived to be adequate, monetary measures to avert a free fall in the exchange rate may not be very effective. In these



conditions the risks of a failed monetary defence of the exchange rate may get heightened into snowballing consequences propelled by unidirectional expectations and herding.

**Recommendations**

*V.25 In view of the cross country and Indian experience with global spillovers driving episodes of large and volatile capital inflows as well as outflows, a flexible setting of monetary policy by the RBI in the short-run is warranted. This presages readiness to use a range of instruments at its command, allowing flexibility in the determination of the exchange rate while managing volatility through capital flow management (CFM) and macro-prudential measures (including sector specific reserve requirements)*

*V.26 With regard to inflows that are excessive in relation to external financing requirements and the need for sterilised intervention: (a) the RBI should build a sterilisation reserve out of its existing and evolving portfolio of GoI securities across the range of maturities, but accentuated towards a 'strike capability' to rapidly intervene at the short end; and (b) the RBI should introduce a remunerated standing deposit facility, as recommended in Chapter-III, which will effectively empower it with unlimited sterilisation capability.*

*V.27 As a buffer against outflows, the RBI's strategy should be to build an adequate level of foreign exchange reserves, adequacy being determined not only in terms of its existing metrics but also in terms of intervention requirements set by past experience with external shocks and a detailed assessment of tail events that materialised in the country experiences. As a second line of defence, swap arrangements, including with regional financing initiatives, should be actively pursued. While retaining the flexibility to undertake unconventional monetary policy measures as demonstrated in response to announcement effects of QE taper but with clarity in communication and better co-ordination, the Committee recommends that the RBI should respond primarily through conventional policy measures so as to ensure common set of shared expectations between the markets and the RBI, and to avoid the risk of 'falling behind the curve' subsequently when the exceptional measures are unwound.*

*V.28 In addition to the above, the RBI should engage proactively in the development of vibrant financial market segments, including those that are missing in the spectrum, with regulatory initiatives that create depth and instruments, so that risks are priced, hedged, and managed onshore.*

## Chapter VI

### Recommendations

The recommendations of the Committee are set out in this Chapter.

#### **The Choice of Nominal Anchor**

(1) Inflation should be the nominal anchor for the monetary policy framework. This nominal anchor should be set by the Reserve Bank as its predominant objective of monetary policy in its policy statements. The nominal anchor should be communicated without ambiguity, so as to ensure a monetary policy regime shift away from the current approach to one that is centered around the nominal anchor. Subject to the establishment and achievement of the nominal anchor, monetary policy conduct should be consistent with a sustainable growth trajectory and financial stability (*Para No: II.25*).

#### **The Choice of Inflation Metric**

(2) The RBI should adopt the new CPI (combined) as the measure of the nominal anchor for policy communication. The nominal anchor should be defined in terms of headline CPI inflation, which closely reflects the cost of living and influences inflation expectations relative to other available metrics (*Para No: II.36*).

#### **Numerical Target and Precision**

(3) The nominal anchor or the target for inflation should be set at 4 per cent with a band of +/- 2 per cent around it (a) in view of the vulnerability of the Indian economy to supply/external shocks and the relatively large weight of food in the CPI; and (b) the need to avoid a deflation bias in the conduct of monetary policy. This target should be set in the frame of a two-year horizon that is consistent with the need to balance the output costs of disinflation against the speed of entrenchment of credibility in policy commitment (*Para No: II.42*).

#### **Time Horizon for Attaining Price Stability**

(4) In view of the elevated level of current CPI inflation and hardened inflation expectations, supply constraints and weak output performance, the transition path to the target zone should be graduated to bringing down inflation from the current level of 10 per cent to 8 per cent over a period not exceeding the next 12 months and to 6 per cent over a period not exceeding the next 24 month period before formally adopting the recommended target of 4 per cent inflation with a band of +/- 2 per cent. The Committee is also of the view that this transition path should be clearly communicated to the public (*Para No: II.43*).

(5) Since food and fuel account for more than 57 per cent of the CPI on which the direct influence of monetary policy is limited, the commitment to the nominal anchor would need to be demonstrated by timely monetary policy response to risks from second round effects and inflation expectations in response to shocks to food and fuel (*Para No: II.44*).

#### **Institutional Requirements**

(6) Consistent with the Fiscal Responsibility and Budget Management (Amendment) Rules, 2013, the Central Government needs to ensure that its fiscal deficit as a ratio to GDP is brought down to 3.0 per cent by 2016-17 (*Para No: II.47*).

(7) Administered setting of prices, wages and interest rates are significant impediments to monetary policy transmission and achievement of the price stability objective, requiring a commitment from the Government towards their elimination (*Para No: II.48*).

### **Organisational Structure for Monetary Policy Decisions**

(8) Monetary policy decision-making should be vested in a monetary policy committee (MPC) (*Para No: III.22*).

#### **Monetary Policy Committee: Composition & Tasks**

(9) The Governor of the RBI will be the Chairman of the MPC, the Deputy Governor in charge of monetary policy will be the Vice Chairman and the Executive Director in charge of monetary policy will be a member. Two other members will be external, to be decided by the Chairman and Vice Chairman on the basis of demonstrated expertise and experience in monetary economics, macroeconomics, central banking, financial markets, public finance and related areas (*Para No: III.23*).

(10) External members will be full time with access to information/analysis generated within the Reserve Bank and cannot hold any office of profit, or undertake any activity that is seen as amounting to conflict of interest with the working of the MPC. The term of office of the MPC will ordinarily be three years, without prospect of renewal (*Para No: III.24*).

(11) Each member of the MPC will have one vote with the outcome determined by majority voting, which has to be exercised without abstaining. Minutes of the proceedings of the MPC will be released with a lag of two weeks from the date of the meeting (*Para No: III.25*).

(12) In view of the frequency of data availability and the process of revisions in provisional data, the MPC will ordinarily meet once every two months, although it should retain the discretion to meet and recommend policy decisions outside the policy review cycle (*Para No: III.26*).

(13) The RBI will also place a bi-annual inflation report in the public domain, drawing on the experience gained with the publication of the

document on Macroeconomic and Monetary Developments. The Inflation Report will essentially review the analysis presented to the MPC to inform its deliberations (*Para No: III.27*).

(14) The Chairman, or in his absence the Vice Chairman, shall exercise a casting vote in situations arising on account of unforeseen exigencies necessitating the absence of a member for the MPC meeting in which voting is equally divided (*Para No: III.28*).

#### **Accountability of MPC**

(15) The MPC will be accountable for failure to establish and achieve the nominal anchor. Failure is defined as the inability to achieve the inflation target of 4 per cent (+/- 2 per cent) for three successive quarters. Such failure will require the MPC to issue a public statement, signed by each member, stating the reason(s) for failure, remedial actions proposed and the likely period of time over which inflation will return to the centre of the inflation target zone (*Para No: III.29*).

(16) With the establishment of the MPC, there would be a need to upgrade and expand analytical inputs into the decision making process through pre-policy briefs for MPC members, structured presentations on key macroeconomic variables and forecasts, simulations of suites of macroeconomic models as described in Chapter II, forward looking surveys and a dedicated secretariat. This will require restructuring and scaling-up of the monetary policy department (MPD) in terms of skills, technology and management information systems, and its reorganization (*Para No: III.30*).

#### **The Operating Framework of Monetary Policy**

(17) As an overarching prerequisite, the operating framework has to subserve stance and objectives of monetary policy. Accordingly, it must be redesigned around the central premise of a policy rule. While



several variants are available in the literature and in country practice, the Committee is of the view that a simple rule defined in terms of a real policy rate (that is easily communicated and understood), is suitable to Indian conditions and is consistent with the nominal anchor recommended in Chapter II. When inflation is above the nominal anchor, the real policy rate is expected, on average, to be positive. The MPC could decide the extent to which it is positive, with due consideration to the state of the output gap (actual output growth relative to trend/potential) and to financial stability (*Para No: III.59*).

(18) A phased refinement of the operating framework is necessary to make it consistent with the conduct of monetary policy geared towards the establishment and achievement of the nominal anchor (*Para No: III.60*).

#### **Phase-I**

(19) In the first or transitional phase, the weighted average call rate will remain the operating target, and the overnight LAF repo rate will continue as the single policy rate. The reverse repo rate and the MSF rate will be calibrated off the repo rate with a spread of (+/-) 100 basis points, setting the corridor around the repo rate. The repo rate will be decided by the MPC through voting. The MPC may change the spread, which however should be as infrequent as possible to avoid policy induced uncertainty for markets (*Para No: III.61*).

#### **Liquidity Management**

(20) Provision of liquidity by the RBI at the overnight repo rate will, however, be restricted to a specified ratio of bank-wise net demand and time liabilities (NDTL), that is consistent with the objective of price stability. As the 14-day term repo rate stabilizes, central bank liquidity should be increasingly provided at the 14-day term repo rate and through the introduction of 28-day, 56-day and 84-day variable rate auctioned term repos by further calibrating the

availability of liquidity at the overnight repo rate as necessary (*Para No: III.62*).

(21) The objective should be to develop a spectrum of term repos of varying maturities with the 14-day term repo as the anchor. As the term yield curve develops, it will provide external benchmarks for pricing various types of financial products, particularly bank deposits, thereby enabling more efficient transmission of policy impulses across markets (*Para No: III.63*).

(22) During this phase, the RBI should fine-tune and sharpen its liquidity assessment with a view to be in a position to set out its own assessment of banks' reserves. This will warrant a juxtaposition of top-down approaches that estimate banks' reserves demand consistent with macroeconomic and financial conditions appropriate for establishing the nominal anchor, and bottom-up approaches that aggregate bank-wise assessments of liquidity needs submitted by banks themselves to the RBI on a daily basis. As these liquidity assessments become robust, they should be announced for market participants prior to the commencement of market operations every day and could be subjected to review and revision during the day for fine-tuning them with monetary and liquidity conditions. It is envisaged that the RBI will expand capabilities to conduct liquidity operations on an intra-day basis if needed, including by scaling up trading on the NDS-OM platform (*Para No: III.64*).

(23) Consistent with the repo rate set by the MPC, the RBI will manage liquidity and meet the demand for liquidity of the banking system using a mix of term repos, overnight repos, outright operations and the MSF (*Para No: III.65*).

#### **Phase-II**

(24) As term repos for managing liquidity in the transition phase gain acceptance, the "policy rate" voted on by the MPC will be a target rate for the short end of the money market, to be achieved through

active liquidity management. The 14-day term repo rate is superior to the overnight policy rate since it allows market participants to hold central bank liquidity for a relatively longer period, thereby enabling them to on lend/repo term money in the inter-bank market and develop market segments and yields for term transactions. More importantly, term repos can wean away market participants from the passive dependence on the RBI for cash/treasury management. Overnight repos under the LAF have effectively converted the discretionary liquidity facility into a standing facility that could be accessed as the first resort, and precludes the development of markets that price and hedge risk. Improved transmission of monetary policy thus becomes the prime objective for setting the 14-day term repo rate as the operating target (*Para No: III.66*).

(25) Based on its assessment of liquidity, the RBI will announce the quantity of liquidity to be supplied through variable rate auctions for the 14-day term repos alongside relatively fixed amounts of liquidity provided through longer-term repos (*Para No: III.67*).

(26) The RBI will aim at keeping 14-day term repo auction cut-off rates at or close to the target policy rate by supplementing its main policy operation (14-day term repos) with (i) two-way outright open market operations through both auctions and trading on the NDS-OM platform; (ii) fine tuning operations involving overnight repos/reverse repos (with a fine spread between the repo and reverse repo rate) and (iii) discretionary changes in the CRR that calibrate bank reserves to shifts in the policy stance (*Para No: III.68*).

(27) The MSF rate should be set in a manner that makes it a truly penal rate to be accessed only under exceptional circumstances (*Para No: III.69*).

(28) An accurate assessment of borrowed and non-borrowed reserves and forward looking projections of liquidity demand would assume critical importance in the framework. So far, the government's

cash balances have been the prime volatile autonomous driver of liquidity, making accurate liquidity projections a difficult task. Therefore, continuing with reforms in the Government securities market, which envisage that the debt management function should be with the Government, the cash management function should concomitantly also be with the Government (*Para No: III.70*).

### ***New Instruments***

(29) To support the operating framework, the Committee recommends that some new instruments be added to the toolkit of monetary policy. Firstly, to provide a floor for the new operating framework for absorption of surplus liquidity from the system but without the need for providing collateral in exchange, a (low) remunerated standing deposit facility may be introduced, with the discretion to set the interest rate without reference to the policy target rate. The introduction of the standing deposit facility (analogous to the marginal standing facility for lending purposes) will require amendment to the RBI Act for which the transitional phase may be utilised. The standing deposit facility will also be used for sterilization operations, as set out in Chapter 5, with the advantage that it will not require the provision of collateral for absorption – which had turned out to be a binding constraint on the reverse repo facility in the face of surges in capital flows during 2005-08 (*Para No: III.71*).

(30) Secondly, term repos of longer tenor may also be conducted since term repo market segments could help in establishing market based benchmarks for a variety of money market instruments and shorter-term deposits/loans (*Para No: III.72*).

(31) Thirdly, dependence on market stabilisation scheme (MSS) and cash management bills (CMBs) may be phased out, consistent with Government debt and cash management being taken over by the Government's Debt Management Office (DMO) (*Para No: III.73*).

(32) Fourthly, all sector specific refinance should be phased out (*Para No: III.74*).

### **Addressing Impediments to Transmission of Monetary Policy**

#### ***Statutory Liquidity Ratio***

(33) Consistent with the time path of fiscal consolidation mentioned in Chapter 2, SLR should be reduced to a level in consonance with the requirements of liquidity coverage ratio (LCR) prescribed under the Basel III framework. [*Para No: IV.22 (a)*].

(34) Government should eschew suasion and directives to banks on interest rates that run counter to monetary policy actions [*Para No: IV.22 (b)*].

#### ***Small Savings Schemes***

(35) More frequent intra-year resets of interest rates on small saving instruments, with built-in automaticity linked to benchmark G-sec yields, need to be brought in. Also, the benchmark should be based on the average of the previous six months or even shorter intervals so as to better capture changes in interest rate cycles within a year [*Para No: IV.22 (c)*].

#### ***Taxation***

(36) All fixed income financial products should be treated on par with bank deposits for the purposes of taxation and TDS. Furthermore, the tax treatment of FMPs and bank deposits should also be harmonized [*Para No: IV.22 (d)*].

#### ***Subventions***

(37) With a sharp rise in the ratio of agricultural credit to agricultural GDP, the need for subventions on interest rate for lending to certain sectors would need to be re-visited [*Para No: IV.22 (e)*].

#### ***Financial Markets Pricing Benchmarks***

(38) Unless the cost of banks' liabilities moves in line with the policy rates as do interest rates in money market and debt market segments, it will be difficult

to persuade banks to price their loans in response to policy rate changes. Hence, it is necessary to develop a culture of establishing external benchmarks for setting interest rates out of which financial products can be priced. Ideally, these benchmarks should emerge from market practices. The Reserve Bank could explore whether it can play a more active supportive role in its emergence (*Para No: IV.28*).

(39) The RBI's liquidity management operations should strive to ensure consistency with the stance of monetary policy. Accordingly, an increase in the policy rate to convey an anti-inflation policy stance should be accompanied by tightening of liquidity conditions through liquidity management operations, whereas an easing of the policy stance should be associated with accommodative liquidity conditions (*Para No: IV.29*).

(40) There should be close coordination between the settings of monetary policy and macro-prudential policies, since variations in macro-prudential instruments such as capital buffers, provisions, loan-to-value ratios and the like alter the cost structures and lendable resources of banks, thereby impacting monetary transmission (*Para No: IV.30*).

#### ***Open Market Operations (OMOs)***

(41) OMOs have to be detached from fiscal operations and instead linked solely to liquidity management. OMOs should not be used for managing yields on government securities (*Para No: IV.35*).

#### **Conduct of Monetary Policy in a Globalised Environment**

##### ***Managing Surges in Capital Inflows/ Sudden Outflows***

(42) In view of the cross country and Indian experience with global spillovers driving episodes of large and volatile capital inflows as well as outflows, a flexible setting of monetary policy by the RBI in the short-run is warranted. This presages readiness to use a range of instruments at its command, allowing

flexibility in the determination of the exchange rate while managing volatility through capital flow management (CFM) and macro-prudential measures (including sector specific reserve requirements) (*Para No: V.25*).

(43) With regard to inflows that are excessive in relation to external financing requirements and the need for sterilized intervention: (a) the RBI should build a sterilization reserve out of its existing and evolving portfolio of GoI securities across the range of maturities, but accentuated towards a 'strike capability' to rapidly intervene at the short end; and (b) the RBI should introduce a remunerated standing deposit facility, as recommended in Chapter-III, which will effectively empower it with unlimited sterilization capability (*Para No: V.26*).

(44) As a buffer against outflows, the RBI's strategy should be to build an adequate level of foreign exchange reserves, adequacy being determined not only in terms of its existing metrics but also in terms of intervention requirements set by past experience

with external shocks and a detailed assessment of tail events that materialised in the country experiences. As a second line of defence, swap arrangements, including with regional financing initiatives, should be actively pursued. While retaining the flexibility to undertake unconventional monetary policy measures as demonstrated in response to announcement effects of QE taper but with clarity in communication and better co-ordination, the Committee recommends that the RBI should respond primarily through conventional policy measures so as to ensure common set of shared expectations between the markets and the RBI, and to avoid the risk of 'falling behind the curve' subsequently when the exceptional measures are unwound (*Para No: V.27*).

(45) In addition to the above, the RBI should engage proactively in the development of vibrant financial market segments, including those that are missing in the spectrum, with regulatory initiatives that create depth and instruments, so that risks are priced, hedged, and managed onshore (*Para No: V.28*).

Memorandum

Expert Committee to Revise and Strengthen the Monetary Policy Framework

It has been decided to constitute an Expert Committee to examine the current monetary policy framework of the Reserve Bank and recommend what needs to be done to revise and strengthen it with a view to, *inter alia*, making it transparent and predictable.


The Committee will comprise:

Dr. Urjit R. Patel	Deputy Governor, RBI	Chairman
Dr. P. J. Nayak		Member
Dr. Chetan Ghate	Associate Professor, Economics and Planning Unit, Indian Statistical Institute, New Delhi	Member
Dr. Peter J. Montiel	Professor of Economics, Williams College, USA	Member
Dr. Sajjid Z. Chinoy	Chief Economist and Executive Director J. P. Morgan	Member
Dr. Rupa Nitsure	Chief Economist, Bank of Baroda	Member
Dr. Gangadhar Darbha	Executive Director, Nomura Securities	Member
Shri Deepak Mohanty	Executive Director, RBI	Member
Dr. Michael D. Patra	Principal Adviser, MPD, RBI	Member Secretary

The Secretariat of the Committee will comprise Dr. Mridul Sagar, Director, Department of Economic and Policy Research, RBI, Shri Sitikantha Pattanaik, Director, Monetary Policy Department, RBI and Dr. Abhiman Das, Director, Department of Statistics and Information Management, RBI.

The terms of reference of the Committee are:

1. To review the objectives and conduct of monetary policy in a globalised and highly inter-connected environment.
2. To recommend an appropriate nominal anchor for the conduct of monetary policy.
3. To review the organisational structure, operating framework and instruments of monetary policy, particularly the multiple indicator approach and the liquidity management framework, with a view to ensuring compatibility with macroeconomic and financial stability, as well as market development.
4. To identify regulatory, fiscal and other impediments to monetary policy transmission, and recommend measures and institutional pre-conditions to improve transmission across financial market segments and to the broader economy.
5. In respect of all of the above, to carefully consider the recommendations of previous Committees/ Groups. The Committee is expected to submit its report within three months.



(Dr. Raghuram G. Rajan)

Governor

September 12, 2013




## Memorandum

### Expert Committee to revise and strengthen Monetary Policy Framework

In continuation of the Memorandum dated September 12, 2013 it has been decided to co-opt Dr. Praggya Das, Director, Monetary Policy Department (MPD) into the Secretariat of the Committee. Additionally, the following resource persons will assist in the work of the Committee:

Name of the resource persons	Department
Snehal Harwadkar Rajesh Kavediya S.M. Lokare Asish Thomas George Abhilasha	MPD
Saurabh Ghosh Saibal Ghosh G.V. Nadhanael	DEPR
Sanjib Bordoloi Joice John	DSIM

  
 (Ujjit Patel)  
 Deputy Governor  
 September 27, 2013

**Annex B**

**Consultation Meeting of the Committee with Economists/Analysts  
(Held on December 18, 2013)**

The Committee engaged in informal consultations with nine experts/economists/analysts (listed below) at a meeting held on December 18, 2013.

- 1) Professor Vikas Chitre
- 2) Professor Dilip Nachane
- 3) Professor Ashima Goyal
- 4) Dr. Renu Kohli
- 5) Dr. Soumya Kanti Ghosh
- 6) Dr. Ajit Ranade
- 7) Dr. Tushar Poddar
- 8) Mr. Chetan Ahya
- 9) Mr. Niranjana Rajadhyaksha

The summary of discussions is organised around the key issues.

**(1) Nominal Anchor for Monetary Policy**

Two broad sets of views emerged on this issue: (a) abandon the current multiple indicator approach as it has no clear nominal anchor, and switch over to explicit inflation targeting (IT), with inflation as the nominal anchor; and (b) continue with the current multiple indicator approach, despite lack of any explicit nominal anchor, as this framework draws on the high credibility earned by the RBI over years and allows flexibility to the RBI to respond to multiple macro-financial challenges.

Those who supported the first viewpoint argued that the current multiple indicator approach has failed to deliver price stability, primarily because of the pursuit of multiple objectives and the scope for time - inconsistent behaviour in the short-run. India is also the only major EME (excluding China) which has not yet adopted explicit inflation targeting. Cross country experience of EMEs suggests that after switching over to IT, the performance on inflation has generally improved. In this view, "flexible inflation forecasting targeting" was seen as appropriate with uncertainty surrounding inflation projections accommodated by operating with an *ex ante* target, but allowing for discretionary response to shocks. In the case of demand shocks, the monetary policy response is obvious, but in the case of supply shocks, discretion will be critical because of the asymmetric impact on inflation and growth. Accommodation of supply shocks is a matter of judgment and cannot be left to a simple rule.

Those who favoured the second viewpoint underscored the point that the theoretical and empirical basis for IT is weak, and a switch over to IT in India driven entirely by the inflation experience of the last few years must be preceded by clarification on how IT will be made consistent with exchange rate stability and financial stability. Some also suggested that there must be clarity on how a new framework would respond to asset prices, unlike the ambiguity in the current framework. There was a view that a nominal anchor alone may not guarantee price stability, since the RBI had adopted monetary targeting in the past, but that regime was not any way better in terms of performance on price stability. A nominal anchor, therefore, could work only if fiscal policy works in tandem with monetary policy.

## **(2) Choice of the Inflation Metric**

Views were divided on this issue, with some favouring headline CPI, and others supporting a core measure of CPI that is sensitive to changes in monetary policy. The key arguments against a core measure of CPI were: (a) the importance of food and fuel in the consumption basket in India; (b) food and fuel also reflect the impact of demand pressures and not just the impact of supply constraints; and (c) transmission of food and fuel inflation to inflation expectations and wage setting behaviour. The arguments against the use of headline CPI inflation included: (a) the all-India CPI is a new index and its properties – particularly its relationship with other variables – are not very clear; (b) there are macro risks of shifting to the new CPI at a time when growth is weak and the political environment is uncertain – the key risk is of raising interest rate significantly, conditioned by the high CPI inflation but, possibly, not being able to lower inflation despite a strong anti-inflationary stance; (c) public preference in a democracy matters and people may accept higher inflation if that helps in higher growth.

All supported the need for a robust inflation expectations survey, and measures to deepen the market for inflation indexed bonds so as to obtain market based information on inflation expectations. It was felt that this will help improve understanding of relationships between CPI or its specific components and inflation expectations.

## **(3) The Inflation Target**

There was a view that the RBI already has an implicit inflation target – often communicated in terms of 5 per cent as its comfort level. What may be required under a new framework, therefore, is clarity on single versus multiple objectives and accountability on attaining the target. Others felt that setting the target level is not an easy choice. Some suggested careful calibration of the time path over which the target may be pursued, being mindful of disinflation costs. Others were of the view that comparing the Mexican and Brazilian experience would suggest that Mexico has a lower inflation target (which does not allow much scope to accommodate supply shocks), therefore, its performance on price stability is better. In contrast, Brazil has a higher inflation target, which leaves scope for accommodating supply shocks, leading to relatively higher average inflation.

## **(4) Who should set the Inflation Target?**

The view was that the target must be set by the RBI and not the Government – contrary to what is recommended by the FSLRC. The prime argument is incentive incompatibility, *i.e.*, the Government may set a low inflation target, but ensure neither independence for the RBI nor fiscal prudence, thereby making the target unattainable for the RBI.

## **(5) Impediments to Transmission of Monetary Policy**

One view highlighted uncertainty surrounding monetary policy transmission in India as a key factor that could constrain performance evaluation and hence fixing accountability under IT. If the action to outcome relationship is uncertain, persisting with the multiple indicator approach may be acceptable. A counter view was that the switch over to IT cannot wait for a well defined and understood transmission process



to evolve. In this context, the example of Brazil was presented to suggest that countries have migrated to an IT regime without being constrained by transmission weaknesses and lack of clarity on how to anchor inflation expectations. On improving transmission, one view underscored the need to develop the term money market, another view suggested adding borrowings from the RBI to the calculation of the base rate. There was also a view that the large and growing size of the parallel economy may be a major impediment to transmission.

#### **(6) Liquidity Management**

It was highlighted that in a period of falling productivity, more provision of liquidity may not be a solution to the growth slowdown. The RBI should track productivity trends and must recognise that liquidity injected at negative real interest rates must be used productively; otherwise it will be inflationary. One view emphasised that liquidity conditions are more important than even the repo rate, and a policy of keeping the system in permanent liquidity deficit mode need not be ideal for all phases of the business cycle. Another view underscored the obvious connection between liquidity and asset prices and suggested that the new framework must recognise this.

#### **(7) Other Issues**

During the discussions several other specific points were highlighted, such as: (a) flexibility in the framework to respond to spillovers from the monetary policy stance of the reserve currency country (*i.e.*, the US); and (b) use of credit policy as an adjunct to monetary policy aimed at addressing supply constraints; and (c) use of macro-prudential policies for financial stability objectives.

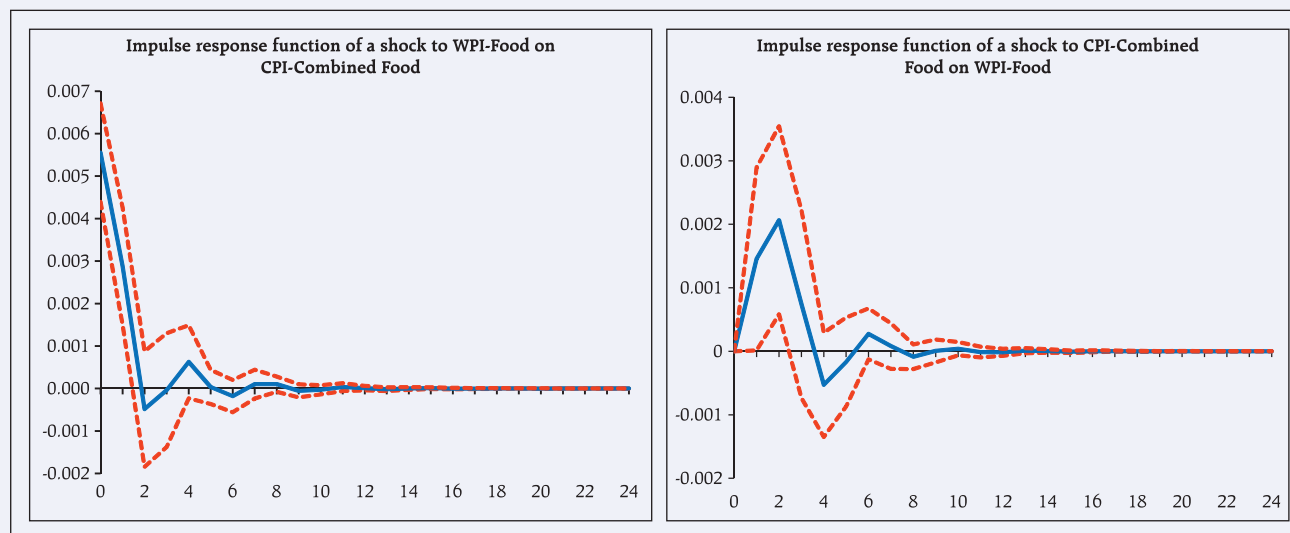
### The Relationship between CPI-Combined and WPI

The relationship between WPI and CPI was examined based on monthly data from January 2000 to December 2013, for Food and Core (non-food non-fuel) parts separately.

For this, the variables were initially seasonally adjusted using X-12-ARIMA technique. The inter-relationship was tested using Granger Causality and SVAR framework. First difference of the log of seasonally adjusted data was used.

A. Investigating the relationship between CPI-Combined Food and WPI-Food			
Dependent variable	Independent variable	Test statistic	Remark
Dlog(WPI_food)	Dlog(CPI_food)	9.62 (0.02)	Bidirectional causality
Dlog(CPI_food)	Dlog(WPI_food)	8.58 (0.04)	

Figures in parentheses are p-values. The optimum lag length is 2.



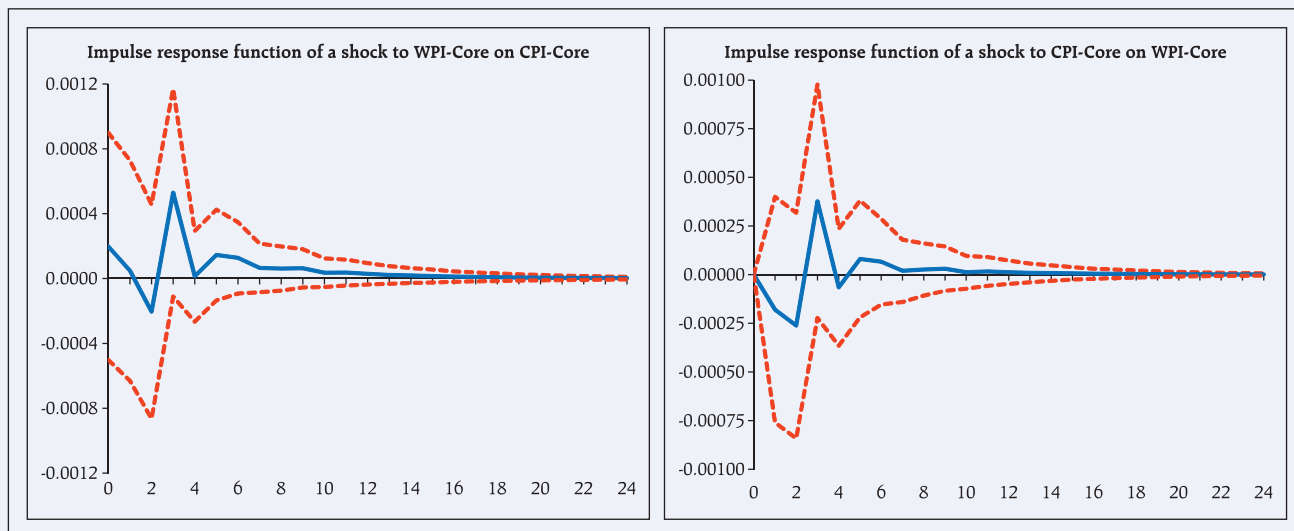
**Conclusion:** Impact of an increase in WPI-food inflation on CPI-Combined food inflation is significant and leads to increase in CPI-Combined food till two months, while an increase in CPI-Combined food inflation leads to a corresponding increase in WPI-food inflation.

### B. Investigating the relationship between CPI-Combined Core and WPI-Core

Here core is defined as headline CPI/WPI excluding Food & Fuel.

Dependent variable	Independent variable	Test statistic	Remark
Dlog(WPI_Core)	Dlog(CPI_Core)	3.29 (0.35)	No evidence of existence of causality between WPI-Core and CPI-Core.
Dlog(CPI_Core)	Dlog(WPI_Core)	3.23 (0.36)	

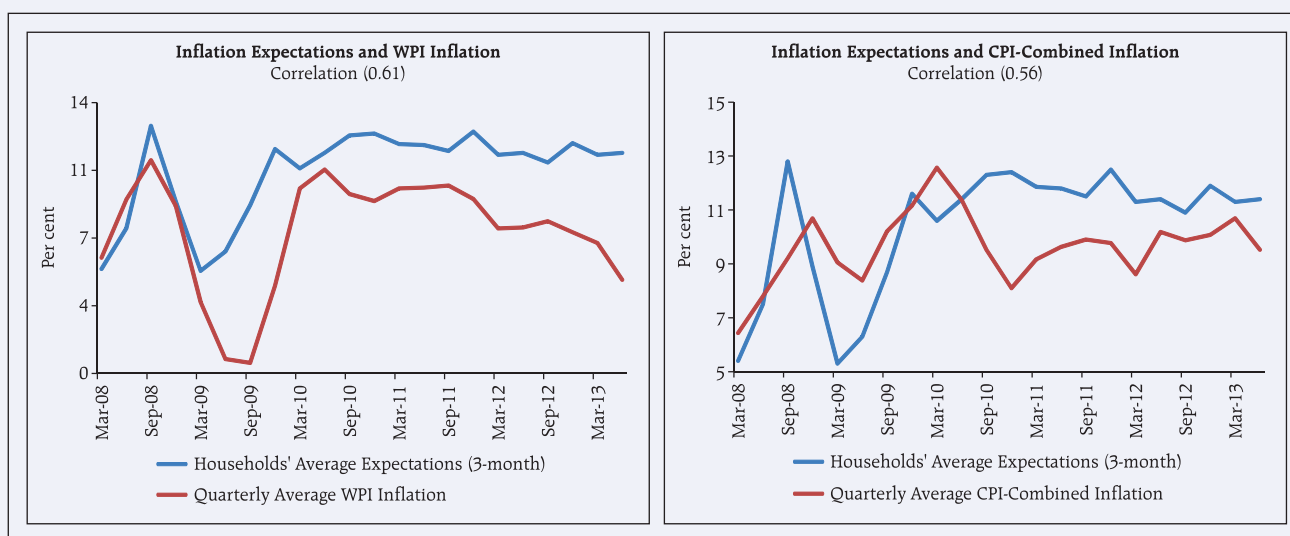
Figures in parentheses are p-values. The optimum lag length is 3.



**Conclusion:** No significant impact of WPI-Core on CPI-Combined Core and *vice versa*.

### Correlation Between Measures of Inflation and Inflation Expectations

Both WPI and CPI-Combined series are highly correlated with 3-month ahead inflation expectations. However, in both cases, movement has been directionally different at times.



### 1-year ahead and 3-month ahead inflation expectations and their relationship with food and fuel inflation

#### CPI-IW Inflation and Household Inflation Expectations (IESH)

Sample period: 2008:Q3 to 2013:Q2

Total panel (balanced) observations: 140

Dependent Variable	IESH 1-year ahead	IESH 3-month ahead
Constant	0.16 (1.17)	0.16 (1.15)
CPI-IW Food	0.11** (2.01)	0.13** (2.22)
CPI-IW Fuel and Lighting	0.18* (4.18)	0.16* (3.83)
CPI-IW excluding Food and Fuel	0.13*** (1.70)	0.09 (1.15)
Adjusted R-squared	0.12	0.10
S.E. of regression	1.60	1.60
F-statistic	7.33	6.22
Prob(F-statistic)	0.00	0.00

**Note :** Figures in parentheses denote t-values.

Coefficient significant at \*1 per cent \*\* 5 per cent and \*\*\*10 per cent levels.

**Note:** All the panel regressions were carried out using first differences of the variables.

### WPI Inflation and Household Inflation Expectations (IESH)

Sample period: 2008:Q3 to 2013:Q2

Total panel (balanced) observations: 140

Dependent Variable	IESH 1-year ahead	IESH 3-month ahead
Constant	0.24** (2.05)	0.22*** (1.83)
WPI- Food Items	0.02 (0.42)	0.03 (0.53)
WPI-Fuel Group	0.22* (5.16)	0.24* (5.46)
WPI-Non-food Manufactured Products	-0.15 (-1.09)	-0.23*** (-1.76)
Adjusted R-squared	0.34	0.32
S.E. of regression	1.39	1.39
F-statistic	24.64	22.65
Prob(F-statistic)	0.00	0.00

**Note:** Figures in parentheses denote t-values.

Coefficient significant at \*1 per cent \*\* 5 per cent and \*\*\*10 per cent levels.

**Note:** All the panel regressions were carried out using first differences of the variables.

### Estimation of Threshold Inflation

#### Estimates of Threshold Inflation from Past Empirical Studies

Study	Period	Threshold Inflation (Per cent)	Methodology
Chakravarty Committee Report (1985)#		4	
Rangarajan (1998)*		6	Macro Econometric Model
Kannan and Joshi (1998)	1981-96	6-7	
Vasudevan, Bhoi and Dhal (1998)	1961-98	5-7	Correlation/regression
Samantaraya and Prasad (2001)	1970-99	6.5	
Report on Currency and Finance (2001)	1970-2000	5	Sarel's Spline Method
Singh and Kalirajan (2003)	1971-98	No Threshold	Spline regression
Bhanumurthy and Alex (2010)**	1975-2005	5 - 5.5	Spline regression
Singh, Prakash (2010)	1970-2009	6	Spline regression
RBI Annual Report 2010-11		4 - 6	Spline regression, non-linear least squares and Logistic Smooth Transition Regression (LSTR) model.
Pattanaik and Nadhanael (2013)	1972-2011	6	Spline regression, non-linear approach, vector auto regression (VAR)
IMF (2012)	1996-2012	5-6	
Mohanty et al (2011)	1996-2011	4-5.5	Spline regression, non-linear least squares and Logistic Smooth Transition Regression (LSTR) model.
Subbarao (2013)	1996-2012	4.4-5.7	Spline regression, non-linear least squares and Logistic Smooth Transition Regression (LSTR) model.

# cited as accepted rate of rise in prices

\* Rangarajan(1996) observed that the objective of policy should be to keep inflation rate around 6 per cent.

\*\*Using monthly data for January 2000 to April 2007, they suggested 4-4.5 per cent as the threshold.

## 1. Univariate approach

A Logistic Smooth Transition Regression (LSTR) model proposed by Teräsvirta (1994<sup>1</sup>; 1998<sup>2</sup>) is used to estimate the inflation threshold (Espinoza et al. (2010)<sup>3</sup>)

The model specification is as proposed by McAleer & Medeiros (2008)<sup>4</sup> which employs a quasi maximum likelihood (QML) estimator of smooth transition regression with multiple regimes.<sup>5</sup>

$$\Delta y = \alpha + \beta_0 \pi + \sum_{i=1}^M \beta_i W_i (\pi - \pi^*) + \Theta' X + e;$$

$$\text{where } W_i = \frac{1}{(1 + e^{(-\gamma_i (\pi - \pi^*)})})}$$

Quarterly data from 1996-97 to 2012-13 is used in the analysis. Apart from inflation and lagged values of GDP growth, a control variable capturing world GDP growth is also used. GDP growth for OECD countries is used as proxy for world GDP data. The impact of domestic factors is controlled using GDP lags.

### LSTR coefficients of Regression

Parameters	WPI as measure of inflation	CPI -C as measure of inflation
$\alpha$	-0.63 (1.25)	2.13 (1.09)
$\beta_0$	1.72 (0.56)	0.59 (0.20)
$\beta_1$	-1.39 (1.42)	-0.35 (0.47)
$\vartheta_1 (\Delta y_{t-1})$	0.23 (0.13)	0.17 (0.12)
$\vartheta_2 (\Delta y_{t-4})$	0.20 (0.13)	0.14 (0.12)
$\vartheta_3 (\Delta W\_GDP_{t-1})$	0.36 (0.29)	0.16 (0.24)
<b>Inflation threshold</b>	<b>5.8 (0.61)</b>	<b>6.7 (0.20)</b>

**Note :** Figures in parentheses denote standard errors.

<sup>1</sup> Teräsvirta, T.(1994) "Specification, Estimation, and Evaluation of Smooth Transition Autoregressive Models," *Journal of the American Statistical Association*, Vol. 89, pp. 208–218.

<sup>2</sup> Teräsvirta, T. (1998) "Modelling Economic Relationships with Smooth Transition Regressions," in *Handbook of Applied Economic Statistics*, ed. by A. Ullah and D.E. Giles, pp. 507-552, New York: Marcel Dekker.

<sup>3</sup> Espinoza, R., Leon, H., & Prasad, A. (2010) "Estimating the Inflation-Growth Nexus – A Smooth Transition Model" *IMF Working Paper*, WP/10/76

<sup>4</sup> McAleer M., & Medeiros, M.C. (2008). "A multiple regime smooth transition Heterogeneous Autoregressive model for long memory and asymmetries" *Journal of Econometrics* 147, pp 104-119

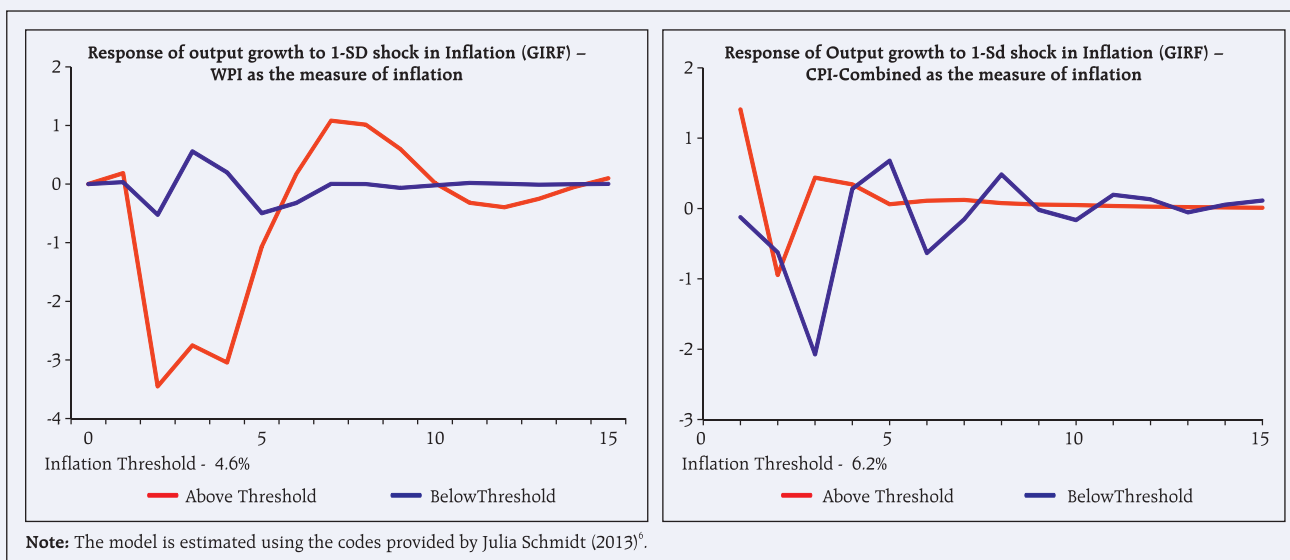
<sup>5</sup> Matlab codes developed by Marcelo C. Medeiros available at <http://sites.google.com/site/marcelocmedeiros/Home/codes>

## 2. Multivariate Approach

A Threshold Vector Auto Regression (TVAR) is a non-linear multivariate system of equations. TVARs approximate the non-linear relationship by several regime-dependent formulations which are linear. Each regime is defined in terms of threshold values and coefficients of the VAR system are specific to each regime. The system of equations that is estimated for the reduced-form VAR with one threshold is given by

$$Y_t = C_1 + \Phi_1(L)Y_t + (C_2 + \Phi_2(L)Y_t) I(\pi_d > \gamma) + \varepsilon_t$$

Where  $Y = \{\pi, GDP, Call, USD\}$  and  $\gamma$  is the inflation threshold.  $\pi$ ,  $GDP$ , and  $USD$  are annualized month-on-month seasonally adjusted growth rates in the price index (WPI or CPI), real GDP and Re/\$ exchange rate, respectively.  $Call$  is the weighted average call money rate representing monetary policy. The estimation is done using quarterly data from 1996-97 to 2012-13.



The chart indicates that in the case of both WPI and CPI-Combined, inflation above threshold reduces output growth.

Cross-country Threshold Inflation Rates			
Country	Threshold Inflation (Per cent)	Country	Threshold Inflation (Per cent)
Armenia	4.5	New Zealand	3
China	2.5	Nigeria	11.2-12
Ghana	11	South Africa	4
Indonesia	8.5- 11	USA	2.5
Mexico	9	India	4-6

**Source:** Compiled from different empirical studies.

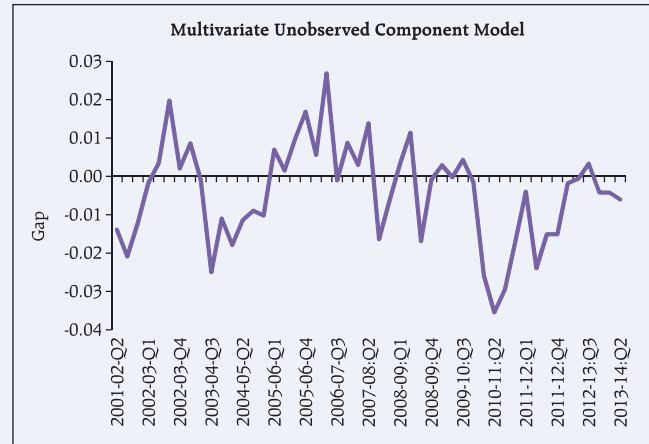
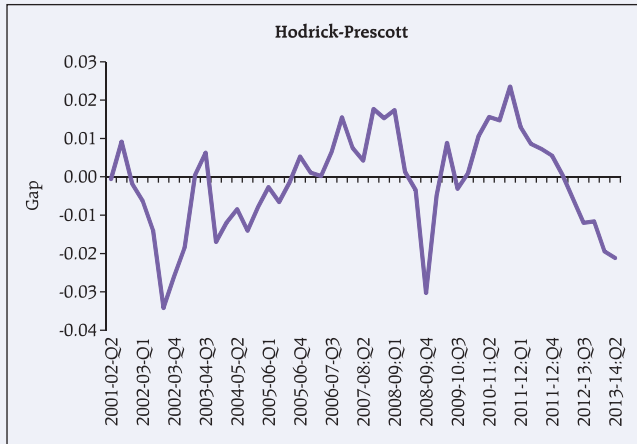
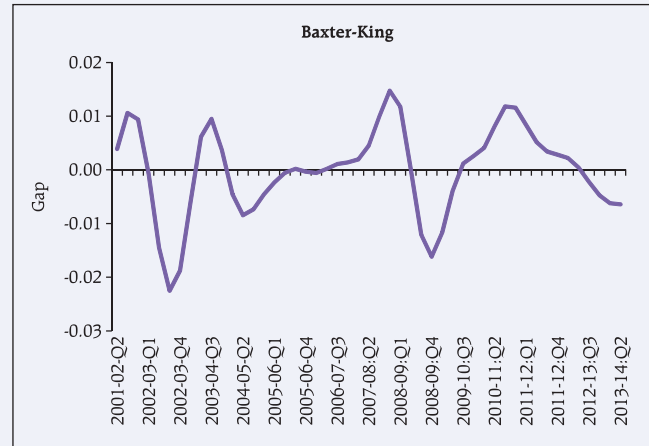
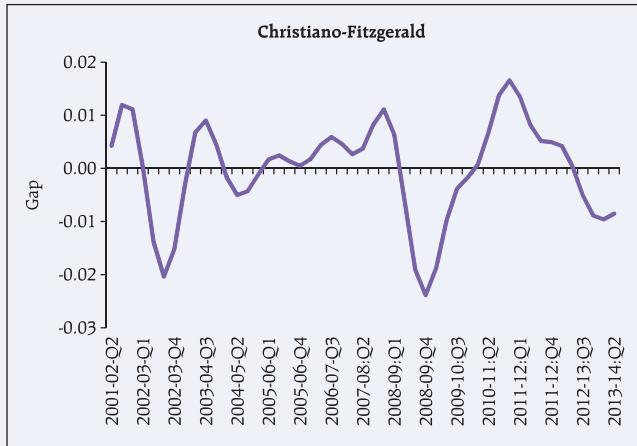
<sup>6</sup> Julia Schmidt (2013) "Country risk premia, endogenous collateral constraints and non-linearities: A Threshold VAR approach"



**Annex 4**

**Average CPI Inflation during Near Zero Output-gap**

Alternative methods of estimation of the output gap (univariate and multivariate) suggest that the output gap was near zero during the period from 2003-04:Q3 and 2006-07:Q1. During the same period, CPI-Combined inflation was at around 4.0 per cent.





<b>Appendix Table II.1: Nominal Anchors – Pros and Cons</b>		
<b>Anchor</b>	<b>Advantages</b>	<b>Disadvantages</b>
Monetary targeting	<p>Some monetary aggregates can be quickly and easily controlled by the central bank.</p> <p>Monetary aggregates can be accurately measured (with short lags).</p> <p>Increases the transparency of monetary policy, thereby avoiding the time-inconsistency trap.</p>	<p>Depends on a well-defined and stable relationship between monetary aggregates and nominal income. With financial innovations, this stability often breaks down.</p> <p>Greater stress on making policy transparent (clear, simple and understandable) and on regular communication with the public may undermine credibility in the face deviations.</p>
Nominal income targeting	<p>It could be superior to monetary targeting, since it avoids the problem of velocity shocks and time inconsistency.</p> <p>Allows a country to maintain independent monetary policy.</p>	<p>Compels a central bank to announce a potential GDP growth number, over which it has limited control.</p> <p>Concept of nominal GDP is not clearly understood by the public, lowering transparency.</p> <p>Could engender time inconsistency if the central bank announces too low or too high a number, which subsequently is found to be different from the announced one.</p>
Exchange rate targeting	<p>The nominal anchor of the exchange rate fixes the inflation rate for internationally traded goods and thus, contributes directly to keeping inflation in check.</p> <p>If the exchange rate target is credible, it anchors inflation expectations to the inflation rate in the anchor country to whose currency it is pegged.</p> <p>Has the advantage of simplicity and clarity; well understood by the public.</p>	<p>The central bank has limited control over its monetary policy.</p> <p>The country becomes vulnerable to shocks emanating from the country to which its currency is pegged.</p> <p>Speculative attacks on the exchange rate might force the central bank to substantially raise its interest rates, with significant economic costs.</p>
Inflation targeting	<p>Preserves independence of monetary policy.</p> <p>Provides a nominal anchor for the path of price level.</p>	<p>Too much focus on inflation often at the cost of output stabilisation.</p> <p>Long and variable lags in monetary transmission means that a substantial amount of time must elapse before the success of monetary policy can be ascertained.</p>

(Contd...)

<b>Appendix Table II.1: Nominal Anchors – Pros and Cons (Concl.)</b>		
<b>Anchor</b>	<b>Advantages</b>	<b>Disadvantages</b>
	<p>Clear and simple; hence, well-understood by the public.</p> <p>Transparency increases the potential for promoting low inflation expectations, which helps to produce a desirable inflation outcome.</p>	<p>Efficacy could be compromised if interest rates hit a zero lower bound.</p> <p>A rigid rule does not allow enough headroom (discretion) to respond flexibly to unforeseen contingencies.</p>
Price level targeting	<p>Lowers uncertainty about prices that would prevail in the near future.</p> <p>Allows economic agents to form forward-looking expectations, based on current price levels.</p> <p>Can prove effective when nominal interest rates hit the zero lower bound.</p>	<p>Poses communication challenges. Under this approach, the central bank, at a minimum, needs to specify both an intercept (level of target in the base period) and a slope (rate of increase in target price path over time), over and above a time period.</p> <p>Not practical experience on the success or failure of its implementation across countries in modern times<sup>1</sup>.</p> <p>The transition costs of moving to this practice (for countries already on inflation targeting) could be large and uncertain.</p>
Just-do-it strategy	<p>Constructive ambiguity in policy making often helps central bank achieve its long-term goal (price stability).</p> <p>Demonstrated success.</p>	<p>Non transparent; not clear to the public what the central bank intends to do (or, is doing).</p> <p>Strongly dependent on skills and preferences of individuals in charge of the central bank.</p>

<sup>1</sup> In 1931, Sweden went off the gold standard and adopted a price-level target in order to counter deflationary pressures associated with the Great Depression (C. Berg and L. Jonung, 1999. Pioneering Price Level Targeting: The Swedish Experience 1931-1937, *Journal of Monetary Economics* 43, 525-51).

Appendix Table II.2A: Inflation Targeting Countries – Advanced Economies							
Country	Since when	Previous / why inflation targeting	Who sets the Target /goal independence	Target indicator, time frame and style	Frequency of Meeting	Key policy rate / Operational target/ instrumental independence	Any other comments
Australia	1993	None/Provide a new monetary anchor	Reserve Bank Board in agreement with Governor and the Minister of Finance (Treasurer)	Target range of 2-3 per cent inflation on average over the economic cycle. Medium term	Normally meets 11 times each year, on the first Tuesday of each month (no meeting in January)	Target cash rate /Interbank cash rate	In determining monetary policy, the Bank has a duty to maintain price stability, full employment, and the economic prosperity and welfare of the Australian people.
Canada	1990-1991	None/Provide a new monetary anchor and bring down inflation	The inflation targets are agreed jointly by the Government of Canada and the Bank of Canada	A target rate for total CPI of 2 per cent on a 12-month basis, with a 1-3 per cent control range. The current target range extends to December 2016	In late 2000, the Bank of Canada adopted a system of eight pre-set dates per year on which it announces its key policy rate.	The Bank carries out monetary policy by influencing short-term interest rates. It does this by raising and lowering the target for the overnight rate.	The Bank also monitors a set of "core" inflation measures, including the CPI-X, which strips out eight of the most volatile CPI components. These "core" measures allow the Bank to "look through" temporary changes in total CPI inflation and to focus on the underlying trend of inflation, which is a good indicator of where total CPI inflation is headed in the absence of policy action.

(Contd...)

Appendix Table II.2A: Inflation Targeting Countries – Advanced Economies (Contd.)							
Country	Since when	Previous / why inflation targeting	Who sets the Target /goal independence	Target indicator, time frame and style	Frequency of Meeting	Key policy rate / Operational target/ instrumental independence	Any other comments
Japan	January 2013		The Act states, "The Bank of Japan's autonomy regarding currency and monetary control shall be respected." sufficiently."	Price stability target of 2 percent in terms of the year-on-year rate of change in the CPI at the earliest possible time, with a time horizon of about two years.	Monetary Policy Meetings (MPMs) are held once or twice a month, for one or two days. Disclosure via press releases, minutes of the meetings, press conference.	The Bank controls the amount of funds in the money market, mainly through money market operations.	The Bank supplies funds to financial institutions by, for example, extending loans to them, which are backed by collateral submitted to the Bank by these institutions. Such an operation is called a funds-supplying operation.
New Zealand	1989-90	None/Part of extensive reforms, dissatisfaction with earlier outcomes; provide a new nominal anchor	The Minister of Finance and the Governor of the Reserve Bank shall together have a separate agreement setting out specific targets for achieving and	The current agreement, signed in September 2012, calls for inflation to be kept within 1 to 3 percent a year, on average over the medium term, with a	Eight scheduled decision making meetings in a year.	Official cash rate (OCR)- the wholesale price of borrowed money.	The Reserve Bank publishes its Monetary Policy Statement (MPS) quarterly. Each Monetary Policy Statement must set out: 1) how the Reserve Bank proposes to achieve its targets; 2) how it proposes to formulate and implement monetary policy during the next five years; and 3) how

Appendix Table II.2A: Inflation Targeting Countries – Advanced Economies (Contd.)							
Country	Since when	Previous / why inflation targeting	Who sets the Target /goal independence	Target indicator, time frame and style	Frequency of Meeting	Key policy rate / Operational target/ instrumental independence	Any other comments
Norway	2001	Exchange rate / gradual movement towards flexible exchange rate and stronger emphasis on price stability	The Government has set an inflation target for monetary policy.	The operational target of monetary policy shall be annual consumer price inflation of close to 2.5 per cent over time.	The Executive Board sets the key rate at pre-announced times, normally six times a year.	Key policy rate, which is the interest rate on banks' deposits in Norges Bank.	The Norges Bank's focus is on price stability, financial stability and generating added value through investment management.
			maintaining price stability. This is known as the Policy Targets Agreement (PTA).	focus on keeping future average inflation near the 2 percent target midpoint. The Reserve Bank has published an interactive inflation calculator on its website,			monetary policy has been implemented since the last Monetary Policy Statement.

Appendix Table II.2A: Inflation Targeting Countries – Advanced Economies (Contd.)

Country	Since when	Previous / why inflation targeting	Who sets the Target /goal independence	Target indicator, time frame and style	Frequency of Meeting	Key policy rate / Operational target/ instrumental independence	Any other comments
Sweden	Announced in January 1993, adopted in 1995	Exchange rate / Forced off a fixed exchange rate regime	The Executive Board of the Riksbank makes the monetary policy decisions without instruction from any other parties.	2 per cent target in annual change in headline CPI	The Executive Board holds six scheduled monetary policy meetings a year.	Overnight repo rate / Overnight repo rate target	The Riksbank's function is to keep inflation close to the goal of 2 per cent. If the credibility of this inflation target is not threatened, the Riksbank can make further contributions to reducing variations in areas such as production and employment - the 'real economy'.
South Korea	April 1998		Based on Bank of Korea Act, it sets the mid-term inflation target to be applied for three years in consultation with the government.	The inflation target measure during the period from 2013 to 2015 is set at 2.5~3.5%, based on consumer price inflation (year-on-year).	The Base Rate, the BOK's policy rate, is set during the 'main meeting' of the Monetary Policy Committee that takes place once every month.	The Bank of Korea Base Rate is the reference policy rate.	In addition, the Bank of Korea also gives explanation to the general public as to the status of the medium term inflation target by monitoring it on an annual basis.



Appendix Table II.2A: Inflation Targeting Countries – Advanced Economies (Concl.)

Country	Since when	Previous / why inflation targeting	Who sets the Target /goal independence	Target indicator, time frame and style	Frequency of Meeting	Key policy rate / Operational target/ instrumental independence	Any other comments
UK	October 1992	Exchange rate Inflation targeting	Forced off a fixed exchange rate regime to maintain price stability/ Price stability is defined by the Government's inflation target of 2%.	The inflation target of 2 per cent is expressed in terms of an annual rate of inflation based on the Consumer Prices Index (CPI).	Monetary Policy Committee meets monthly for a two-day meeting. Decisions are made by a vote of the Committee on a one-person one-vote basis.	The 1998 Bank of England Act made the Bank independent to set interest rates. Bank rate is being used since 2009; asset purchase as an additional instrument.	In August 2013 the MPC provided some explicit guidance regarding the future conduct of monetary policy. The MPC intends at a minimum to maintain the present highly stimulative stance of monetary policy until economic slack has been substantially reduced, provided this does not entail material risks to price stability or financial stability.

Appendix Table II.2B: Non-inflation Targeting Countries – Advanced Economies							
Country	Since when	Previous / any target other than inflation targeting	Who sets the Target / Goal independence	Target indicator, timeframe and style	Frequency of Meeting	Key policy rate / Operational target/ Instrumental independence	Any other comments
Euro area		To maintain price stability is the primary objective of the Eurosystem and of the single monetary policy for which it is responsible. This is laid down in the Treaty on the Functioning of the European Union, Article 127 (1).	the Governing Council.	price stability is defined as "a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area of below 2 per cent. Price stability is to be maintained over the medium term".	Twice a month, with first day discussing overall assessment of the economic situation and the risks to price stability based on a comprehensive economic and monetary analysis in the context of the ECB's (two-pillar) monetary policy strategy.	Minimum rate in main refinancing operation (MRO) and the interest rates on the marginal lending facility and the deposit facility.	The Euro system currently accepts a very broad range of debt instruments, issued both by public and private issuers.
Switzerland		The Swiss National Bank (SNB) implements its monetary policy by fixing a target range for the three-month	Article 99 of the Federal Constitution entrusts the SNB, as an independent central bank, with the	SNB equates price stability with a rise in the national consumer price index of less than 2 per cent per annum in	Quarterly meetings (March, June, September and December) with press release and bulletin publication.	CHF 3-month Libor.	Medium-term inflation forecasts.

(Contd...)

Appendix Table II.2B: Non-inflation Targeting Countries – Advanced Economies (Contd.)							
Country	Since when	Previous / any target other than inflation targeting	Who sets the Target / Goal independence	Target indicator, timeframe and style	Frequency of Meeting	Key policy rate / Operational target/ Instrumental independence	Any other comments
		Swiss franc Libor.	conduct of monetary policy in the interests of the country as a whole.	terms of total CPI.			
Singapore	Early 1980s	Centred on the management of the exchange rate.	The exchange rate policy band is periodically reviewed to ensure that it remains consistent with the underlying fundamentals of the economy.	The objective of Singapore's exchange rate policy has always been to promote sustained and non-inflationary growth for the Singapore economy.	Regular monetary policy announcements are scheduled in April and October.	The trade-weighted exchange rate is allowed to fluctuate within a policy band, and where necessary, Monetary Authority of Singapore (MAS) conducts direct interventions in the foreign exchange market to maintain the exchange rate within this band.	MAS' monetary policy is centred on the management of the exchange rate rather than targeting interest rate levels.

Appendix Table II.2B: Non-inflation Targeting Countries – Advanced Economies (Concl.)							
Country	Since when	Previous / any target other than inflation targeting	Who sets the Target / Goal independence	Target indicator, timeframe and style	Frequency of Meeting	Key policy rate / Operational target/ Instrumental independence	Any other comments
United States		No formal target/ The Committee judges that inflation at the rate of 2 per cent, as measured by the annual change in the price index for personal consumption expenditures, is most consistent over the longer run.	Statutory Mandate from the Congress.	Maximum employment, stable prices, and moderate long-term interest rates.	FOMC meetings and press conference.	Decision by consensus/ Eight scheduled per year, with others as needed/ Meetings may last one or two days.	In the most recent projections, FOMC participants' estimates of the longer-run normal rate of unemployment had a central tendency of 5.2-6.0 per cent.

**Source:** BIS MC Compendium, Petursson (2004), monthly bulletin, Handbook of Central Banking, 29, Bank of England, different central bank websites till January 10, 2014

Appendix Table II.3: Inflation Targeting Countries – Emerging Market Economies								
Country	Since when	Previous / why inflation targeting	Who sets the Target / operational independence	Target indicator, timeframe and style	Frequency of Meeting	Key policy rate	Any other comments	Performance on inflation
Chile	September 1999	High inflation due to expansionary policies, oil price hike during Gulf war, failure with exchange rate based stabilisation programme, instability of money demand and difficulty in monetary targeting, provide a new monetary anchor and gradual disinflation.	Central bank/ Yes	Annual CPI (headline) Point target: 3 per cent/ +/- 1 percentage point/ Around 2 years.	Monetary Policy Report/ 4 times a year.	Monetary Policy Interest Rate (Overnight interbank rate).		
Brazil	June 1999	Due to concerns on fiscal front, collapse of currency under speculative attack and search for a nominal anchor within IMF programme.	National Monetary Council (both Govt and central bank Governor)/ Yes	Headline Broad National CPI/ 4.5 per cent +/- 2 percentage point Yearly target.	Inflation Report/ 4 times a year	An overnight interest rate (SELIC )		
Hungary	June 2001	Increasing incompatibility of fixed exchange rate regime and disinflation; need to bring down inflation with future EU membership in mind	Central bank/ Yes	CPI/ 3 per cent per annum/ Medium-term.	Quarterly Report on Inflation/ 4 times a year.	Interest rate on 2-week central bank bond.		

(Contd...)

Appendix Table II.3: Inflation Targeting Countries – Emerging Market Economies (Contd.)									
Country	Since when	Previous / why inflation targeting	Who sets the Target / operational independence	Target indicator, timeframe and style	Frequency of Meeting	Key policy rate	Any other comments	Performance on inflation	
Indonesia	July 2005	The relationship between monetary aggregates and nominal income becoming tenuous due to instability in income velocity of money following financial deregulation and less success with exchange rate as nominal anchor.	Government in consultation with central bank/ Yes.	CPI / 4.5 per cent +/- 1 percentage point/ Medium-term.	Monetary Policy Report/ 4 times a year.	BI rate.			
Israel	Informally in 1992; full-fledged from June 1997	Lock in disinflation and define the slope of the exchange rate crawling peg.	Government in consultation with central bank Governor/ Yes.	CPI / Target Range of 1-3 per cent/ Within 2 years.	Inflation Report/ Twice a year.	Short-term interest rate (overnight transactions between central bank and banks).			
Mexico	2001	Difficulty with monetary targeting, unreliability of relationship between monetary base and inflation, and lack of nominal anchor to guide inflation expectations.	The Board of Governors/ Yes.	CPI / Multi-annual inflation target 3 per cent +/-1 per cent/ Medium-term.	Inflation Report/ 4 times a year.	Overnight inter-bank rate.			

Appendix Table II.3: Inflation Targeting Countries – Emerging Market Economies (Contd.)								
Country	Since when	Previous / why inflation targeting	Who sets the Target / operational independence	Target indicator, timeframe and style	Frequency of Meeting	Key policy rate	Any other comments	Performance on inflation
South Africa	February 2000	Following liberalisation and structural developments, changing relationship between output, prices and money growth, making monetary targeting less useful; need for greater transparency in policy.	Government in consultation with central bank/ Yes.	CPI / A Target range of 3-6 per cent/ On a continuous basis.	Monetary Policy Review/ Twice a year.	Repo rate.		
Peru	January 2002	Formalisation of earlier regime; greater transparency of policy.	Target is approved by the Board of Directors.	CPI / 2 per cent +/- 1 percentage point/ At all times.	Inflation Report/ 4 times a year.	Reference interest rate.		
Philippines	January 2002	Formalisation and simplification of earlier regime; greater transparency and focus on price stability.	Government in consultation with central bank/Yes.	CPI / 4 per cent +/- 1 percentage point for 2012, 2013 and 2014/ Medium-term.	Inflation Report/ 4 times a year	Key Policy interest rates for overnight repo/ reverse repo and term repo/ reverse repo and special deposit accounts.	Target is announced 2 years in advance.	

Appendix Table II.3: Inflation Targeting Countries – Emerging Market Economies (Contd.)									
Country	Since when	Previous / why inflation targeting	Who sets the Target / operational independence	Target indicator, timeframe and style	Frequency of Meeting	Key policy rate	Any other comments	Performance on inflation	
Poland	1998	Considered the most effective way to bring down inflation as a precondition for subsequent EU membership.	Monetary Policy Council/ Yes.	CPI / 2.5 per cent +/- 1 percentage points/ Medium-term.	Inflation Report/ 3 times a year	Reference rate (the rate that determines the yield on the main OMOs).			
South Korea	April 1998	Unstable money demand following structural changes in financial markets, and with 1997 financial crisis; discontinuation of exchange rate.	Central Bank in consultation with the Govt./ Yes.	CPI / 3 per cent +/- 1 percentage point/ 3 years.	Monetary Policy Report/ Twice a year.	Bank of Korea Base rate.			
Thailand	May 2000	Inflation targeting considered more appropriate with floating exchange rate than money supply targeting after the financial crisis of 1997.	MPC in consultation with the Govt./ Yes.	3.0 per cent +/- 1.5 percentage points/ 8 quarters.	Inflation Report/ 4 times a year.	One day repo rate.	Target is set by MPC annually. The target decided in agreement with the Minister of Finance, which then requires approval by the Cabinet.		



Appendix Table II.3: Inflation Targeting Countries – Emerging Market Economies (Concl.)								
Country	Since when	Previous / why inflation targeting	Who sets the Target / operational independence	Target indicator, timeframe and style	Frequency of Meeting	Key policy rate	Any other comments	Performance on inflation
Turkey	January 2006		MPC in consultation with the Government.	Annual CPI/ 5 per cent +/-2 percentage points for 2012, 2013 and 2014/ Multi-year horizon 3 years.	Inflation Report/ 4 times a year.	One week repo auction rate.	Interest rate corridor and required reserve ratios also used as policy instruments.	

**Source:** 1. Petursson T. G. (2005): "Inflation Targeting and its Effects on Macroeconomic Performance", SUERF studies: 2005/5 - The European Money and Finance Forum, Vienna.  
2. Hammond G. (2012): "State of the Art of Inflation Targeting", CCBS, Handbook No.29, Bank of England.

Appendix Table II.4A: Individual Countries Inflation Targets			
Country	Target Measure	Target 2013	Target Type
Armenia	H CPI	4% ± 1.5 pp	P + T
Australia	H CPI	2% - 3%	Range
Brazil	H CPI	4.5% ± 2 pp	P + T
Canada	H CPI	2% (mid-point of 1%-3%)	P + T
Chile	H CPI	3% ± 1 pp	P + T
Colombia	H CPI	2% - 4%	Range
Czech Republic	H CPI	2% ± 1 pp	P + T
Ghana	H CPI	9% ± 2 pp	P + T
Guatemala	H CPI	4% ± 1 pp	P + T
Hungary	H CPI	3%	Point
Iceland	H CPI	2.5%	Point
Indonesia	H CPI	4.5% ± 1 pp	P + T
Israel	H CPI	1% - 3%	Range
Mexico	H CPI	3% ± 1 pp	P + T
New Zealand	H CPI	1% - 3%	Range
Norway	H CPI	2.5%	Point
Peru	H CPI	2% ± 1 pp	P + T
Phillippines	H CPI	4.0% ± 1 pp	P + T
Poland	H CPI	2.5% ± 1 pp	P + T
Romania	H CPI	2.5% ± 1 pp	P + T
Serbia	H CPI	4.0% ± 1.5 pp	P + T
South Africa	H CPI	3% - 6%	Range
South Korea	H CPI	2.5% - 3.5%	Range
Sweden	H CPI	2%	Point
Thailand	Core Inflation	0.5% - 3.0%	Range
Turkey	H CPI	5.0% ± 2 pp	P + T
United Kingdom	H CPI	2%	Point

H CPI - Headline CPI; P+ T - Point with tolerance; PP – Percentage point

**Source:** Hammond G. (2012); "State of the art of inflation targeting", CCBS, Handbook - No.29, Bank of England and Website of Central Banks

Appendix Table II.4B: Non-Inflation Targeting Countries		
Country	Target Measure	Desired level of Inflation
US	PCE	≤ 2 %
ECB	H CPI	Below but close to 2%
Malaysia	H CPI	2% - 3%
Singapore	H CPI	3% - 4%
Russia	H CPI	5% - 6%
China	H CPI	3.50%

PCE: Personal Consumption Expenditure

**Source:** Website of Central Banks

<b>Appendix Table II.5: Time Horizon for attending Price Stability</b>			
<b>Inflation Targeting</b>		<b>Non-inflation Targeting</b>	
<b>Country</b>	<b>Time horizon</b>	<b>Country</b>	<b>Time horizon</b>
Armenia	Medium term	US	Long-term
Australia	Medium term	ECB	Medium-term
Brazil	Yearly Target	Malaysia	Short-term
Canada	Six-eight quarters; current target extends to Dec.2016	Singapore	Short-term
Chile	Around two years	Russia	Medium-term
Colombia	Medium term	China	Short-term
Czech Republic	Medium term, 12-18 months		
Ghana	18-24 months		
Guatemala	End of year		
Hungary	Medium term		
Iceland	On average		
Indonesia	Medium term		
Israel	Within two years		
Mexico	Medium term		
New Zealand	Medium term		
Norway	Medium term		
Peru	At all times		
Philippines	Medium term(from 2012-14)		
Poland	Medium term		
Romania	Medium term target from 2013		
Serbia	Medium term		
South Africa	On a continuous basis		
South Korea	Three years		
Sweden	Normally two years		
Thailand	Eight quarters		
Turkey	Multi year(Three years)		
United Kingdom	At all times		

**Source:** Hammond G. (2012); "State of the art of inflation targeting", CCBS, Handbook - No.29, Bank of England and Website of Central Banks

Appendix Table II.6A: Communication and Transparency Practices in Inflation Targeting Countries							
Country	Open letter	Parliamentary hearings?	Press Notice/Conference	Minutes	Votes	Inflation Frequency	
Armenia	No	Yes, annual	PR	Yes, within ten days	No	Yes	4
Australia	No	Yes, twice yearly	Notice	Yes, after two weeks	n/a	Yes	4
Brazil	Yes	Yes, six per year	PR + PC for IR	Yes, after eight days	Balance of votes	Yes	4
Canada	No	Yes, twice yearly	PR + PC for IR	No	n/a	Yes	4
Chile	No	Yes, four times per year	PR	Yes, after two weeks	yes	Yes	4
Colombia	No	Yes, twice yearly	PR + PC for IR	Yes, after two weeks	Majority/unanimous	Yes	4
Czech Republic	No	No (Report)	PR + PC for IR	Yes, after eight days	Yes	Yes	4
Ghana	No	No	PR + PC	No	n/a	Yes	4 to 6
Guatemala	No	Yes, twice yearly	PR + PC	Yes, after four weeks	no	Yes	3
Hungary	No	Yes, once a year	PC	Yes	yes	Yes	4
Iceland	Yes	Yes, twice yearly	PR + PC	Yes	Balance of votes	Yes	2 plus 2
Indonesia	No	No	PR	No	n/a	Yes	4
Israel	No	Yes, twice yearly	PR	Yes, after two weeks	Balance of votes	Yes	2
Mexico	No	Yes, not regular	PR	Yes, after two weeks	n/a	Yes	4
New Zealand	Other	Yes, four times a year	PR + PC for IR	No	n/a	Yes	4
Norway	No	Yes	PR + PC	No	n/a	Yes	3
Peru	No	Yes, once a year	Teleconference	No	No	Yes	4
Philippines	Yes	No	PR + PC	Yes, after four weeks	No	Yes	4
Poland	No	No <sup>(a)</sup>	PR + PC	Yes, after three weeks	Yes in IR	Yes	4
Romania	No	No	PR + PC for IR	No	No	Yes	4
Serbia	Yes	No <sup>(b)</sup>	PR + PC	No	No	Yes	4
South Africa	No	Yes, at least three per year	PR + PC	No	n/a	Yes	2
South Korea	No	Yes	PR + PC	Yes, after six weeks	No	Yes	2
Sweden	No	Yes, twice yearly	PR	Yes, after two weeks	Yes	Yes	3 plus 3
Thailand	Yes	No	PR + PC	Yes, after two weeks	Balance of votes	Yes	4
Turkey	Yes	Yes, twice yearly	PR	Yes, after two weeks	No	Yes	4
United Kingdom	Yes	Yes, three per year	PR + PC for IR	Yes, after two weeks	Yes	Yes	4

IR: Inflation Report. PC: Press Conference PR: Press Release.

(a) Governor reports to Lower House once a year on Monetary Policy in preceding year.

(b) Governor explains reports to National Assembly.

Source: Hammond G. (2012): "State of the art of inflation targeting", CCBS, Handbook - No.29, Bank of England and Website of Central Banks

<b>Country</b>	<b>Press Notice/ Conference</b>	<b>Minutes of Monetary Policy Meeting</b>	<b>Inflation Projection</b>	<b>Other Publications</b>
US	PR + PC	Yes, within twenty days	2 years ahead	
ECB	PR + PC	No	N.A.	
Malaysia	PR	No	One Year	Outlook and Policy (annual)
Singapore	PR	No	One year	Macroeconomic Review (twice a year)
Russia	PR	No	N.A.	Guidelines for Single State Monetary Policy, Monetary Policy Report
China	PR	No	One year	Quarterly Monetary Policy Report

PR: Press Release; PC: Press Conference.

**Source:** Website of Central Banks.

**Appendix Table III.1: Monetary Policy Framework - International Experience**

Country/ Central Bank	Decision making by	Policy objective	Monetary policy target	Key policy rate	Standing Facility	Reserve requirements	Market operations
United States (Federal Reserve System)	Federal Open Market Committee	Promote price stability and maximum sustainable employment	Maximum employment and 2 per cent inflation*	Uncollateralised interbank rate	Primary Credit Facility. No Deposit facility**	Yes	Yes
United Kingdom (Bank of England)	Monetary Policy Committee	To maintain price stability and to support the objectives for growth and employment	An inflation targeting framework	The official Bank Rate paid on commercial bank reserves	Yes	No	Yes
Brazil (Central Bank of Brazil)	Monetary Policy Committee	Achievement of inflation targets set by the Government	An inflation targeting framework	Interest rate on overnight interbank loans	Yes	Yes	Yes
Canada (Bank of Canada)	Governing Council	Contributing to sustained economic growth, rising levels of employment and improved living standards	An inflation targeting framework	Interest rate on collateralized market-based overnight transactions	Yes	No	Yes

(Contd...)

\*: In its recent policy announcements, the Fed has indicated that their assessment suggests that it will be appropriate to maintain the current target range for the Federal Funds rate well past the time that the unemployment rate declines below 6.5 per cent, especially if projected inflation continues to run below the committee's 2 per cent longer-run goal.

\*\* In 2008, the Fed started paying interest on required and excess reserves, to avoid downward pressures on the Fed Funds rate.

Appendix Table III.1: Monetary Policy Framework - International Experience (Concl.)

Country/ Central Bank	Decision making by	Policy objective	Monetary policy target	Key policy rate	Standing Facility	Reserve requirements	Market operations
Euro area (European System of Central Banks)	Governing Council	To maintain price stability	Inflation below but close to 2 per cent over medium-term	Minimum bid rate in main refinancing operations	Yes	Yes	Yes
Australia (Reserve Bank of Australia)	Reserve Bank Board	Achievement of inflation target	An inflation targeting framework	Target cash rate	Yes	No	Yes
Japan (Bank of Japan)	The Policy Board	Multiple objectives	2 per cent inflation	Uncollateralized overnight call rate	Yes	Yes	Yes
Singapore (Monetary Authority of Singapore)	Monetary and Investment Policy	Price stability for sustainable economic growth	Price stability for sustainable economic growth	Exchange rate	Yes	Yes	Exchange intervention
Mexico (Bank of Mexico)	Board of Governors	Achievement of price stability	An inflation targeting framework	Target for the interbank overnight funding rate	Yes	No	Yes
Switzerland (Swiss National Bank)	Governing Board	Price stability	Price stability	CHF 3-month Libor	Yes	Yes	Yes
Sweden (Riksbank)	Executive Board	Maintain price stability	An inflation targeting framework	Repo rate	Yes	No	Yes
Korea (Bank of Korea)	Monetary Policy Committee	Price stability	An inflation targeting framework	The Bank of Korea Base Rate	Yes	Yes	Yes

Appendix Table III.2: Standing Facilities, Main Liquidity Operations and Other Discretionary Operations of Some Major Central Banks												
Country	Bank Reserve		Standing Facility			Main Liquidity Operation			Other discretionary			Counter party Lending Operations
	Req.	Avg.	Loan	Deposit	Tenor	Instrument(s)	Tenor	Freq.	Instrument	Tenor	Collateral	
Australia	N	-	Y	Y	Overnight	Repo/ Rev. repo	1 day to 12 months	daily	Outright / Fx-Swap / term deposit	1 day to 3 month	discretion	Wide
Brazil	Y	Y	Y	Y	Two Days	Repo/ Rev. repo	1-30 days	daily	Outright operation; non-standardized, non-regular		no discretion	
Canada	N	-	Y	Y	Overnight	OMO / Intraday through special purchase and Resale		daily			collateral includes US treasury bills, notes and bonds, list of treasure were expanded during the crisis	OMO for PDs, SF for Payment and settlement system participants
Euro Area	Y	Y	Y	Y	Overnight	Collateralized credit	variable	weekly/ monthly	OMO and Intraday credit		the Governing council has the discretion to expand	Wide in terms of both type and participants
Hong Kong SAR	N	-	Y		Overnight	Two way convertibility undertaking					all exchange fund bill and notes, extended to use US Treasuries under discount window	
Japan	Y	Y	Y	Y	Fixed Term	Repo (short run)	overnight to 1 year	2-3 times a day	OMO		Japan Government Bonds / CPs; Law generally limits expanding collateral	Wide but varies with facilities
Korea	Y	Y	Y	Y	Overnight	Repo/Rev. repo (issuer / redemption of money stabilisation bonds)	7 days	weekly	Additional repos	1-3 days	Bank of Korea act gives the bank discretion to extend loan against the collateral of any asset.	Narrow for OMO, wide for SF

- : Not applicable.

(Contd...)



Appendix Table III.2: Cross Country Standing Facilities, Main Liquidity Operations and Other Discretionary Operations (Concd.)												
Country	Bank Reserve		Standing Facility			Main Liquidity Operation			Other discretionary			Counter party
	Req.	Avg.	Loan	Deposit	Tenor	Instrument(s)	Tenor	Freq.	Instrument	Tenor	Collateral	Lending Operations
Mexico	N		Y	Y	Overnight	Open market operation	1-25 days	daily	Long term sterilisation of excess liquidity/ sporadic use of compulsory deposit	Up to 1 year	central bank has the discretion to expand other type of collaterals	OMO for all local banks, SF for private sector banks only
Singapore	Y	Y	Y	Y	Overnight	Exchange rate intervention	FS- spot	discretionary	Repo / Fx-swap direct lending / borrowing	Up to 1 year	MAS has the discretion to expand collateral	PD only for OMO, all RTGS participants for SF
Sweden	N		Y	Y	Overnight	Repo / Riksbank certificate	1 week		loan / deposit	Over-night	Act allows expansion of collateral	Wide
Switzerland	Y	Y	Y		Overnight	Open market operation /repo /SNB Bills	Mostly one week	daily	Injection / absorption through auctions	Mostly over-night	SNB has discretion on collateral	Wide in terms of type
UK	Voluntary	Y	Y		Overnight	Short term (fixed rate) long term (variable rate repo operation)	weekly / monthly	weekly / monthly	Sterling Financing through OMO		broad based security for discount window	Varies with facility-banks for liquidity
USA	Y	Y	Primary Credit		Generally Overnight	repo	up to 65 days	daily / weekly	OMO	variable	Under exceptional situation	PDs only OMOs; wide for SF

**Source:** BIS Markets Committee several publications, web-sites of central banks. Narrow=restricted for select few institutions (wide otherwise); Y=yes, N=no. PD=primary dealers, SF =Standing liquidity facility.

Appendix Table III.3: Deregulation of Interest Rates in India					
Deposit Rates*			Lending Rate		
Saving Deposit		Term Deposit			
Effective from	Restrictions and Regulations Prescribed	Month & Year	Restrictions and Regulations Prescribed	Month & Year	Restrictions and Regulations Prescribed
July 1, 1977	3 per cent (chequeable deposits) and 5 per cent (non- chequeable)	Apr. 1985	Banks were allowed to set interest rates for maturities between 15 days and up to 1 year, subject to a ceiling of 8 per cent.	March 1981	A broad framework of interest rates was provided with fixed rates on certain types of advances and ceiling rate on other types of advances.
March 2, 1978	4.5 per cent, uniformly	May 1985	Freedom to set interest rates accorded in April 1965 was withdrawn.	October 1988	Fixed rate stipulations converted into floor rates with option to banks to raise the rates.
April 24, 1992	6.0 per cent	Oct. 1989	Domestic short term deposits of maturity 46 days to 90 days and 90 days to one year merged together with uniform interest rate payable, effective October 11, 1989.	September 1990	Discontinuation of sector-specific and programme-specific interest rate stipulations, barring a few areas like agriculture, small industries, differential rate of interest (DRI) scheme and export credit. Linking interest rate to the size of the loan (over ₹2 lakh) was introduced.
July 1, 1993	5.0 per cent	Apr. 1992	Replacement of maturity-wise ceiling rates by a single ceiling rate of 13 per cent on all deposits above 46 days.	April 1992	The interest rates of SCBs (except DRI advances and export credit) were rationalized by bringing the six slabs of advances to four slabs according to size of credit.
November 1, 1994	4.5 per cent	Nov. 1994	Ceiling rate was brought down to 10 per cent.	April 1993	Lending rates were further rationalized as the number of slabs was brought down from four categories to three categories by merging the first two slabs.

(Contd...)

Saving Deposit		Deposit Rates*		Month & Year	Restrictions and Regulations Prescribed	Lending Rate
		Month & Year	Restrictions and Regulations Prescribed			
April 1, 2000	4.0 per cent	Apr. 1995	Ceiling rate raised to 12 per cent.	October 1994	Lending rates for credit limit of over ₹2 lakh were deregulated. Banks were required to declare their Prime Lending Rates (PLRs).	
March 1, 2003	3.5 per cent	Oct. 1995	Interest rates on deposits with maturity of over two years were freed.	October 1995	Interest rate on advances against term deposits of ₹2 lakh and above for both domestic and NRE deposits were deregulated.	
May 3, 2011	4.0 per cent	Jul. 1996	Freedom to set rates for term deposit above one year maturity. Minimum period of term deposit brought down from 46 days to 30 days. For the maturity bucket of 30 days to 1 year, banks could fix interest rates subject to a ceiling.	February 1997	Banks allowed to prescribe PLRs and spreads separately for loan and cash credit components of loans.	
Oct 25, 2011	Deregulation subject to conditions.	Apr. 1997	Ceiling interest rate on domestic term deposits of maturity of 30 days and up to 1 year was linked to Bank Rate	October 1997	For term loans of 3 years and above, separate Prime Term Lending Rates (PTLRs) were required to be announced by banks.	
		Oct. 1997	Term deposit rates were fully deregulated.	April 1998	PLR converted as a ceiling rate on loans up to ₹2 lakh.	

Appendix Table III.3: Deregulation of Interest Rates in India (Concl'd.)					
Deposit Rates*					
Saving Deposit			Term Deposit		Lending Rate
Effective from	Restrictions and Regulations Prescribed	Month & Year	Restrictions and Regulations Prescribed	Month & Year	
		Apr.1998	Freedom to offer differential interest rate for bulk deposits of ₹15 lakh and above. Freedom to set own penal interest rates on premature withdrawal of domestic term deposits. Minimum period of maturity of term deposits reduced from 30 days to 15 days.	April 1999	Banks were provided freedom to operate tenor linked PLR.
		Apr. 2001	Minimum maturity period of 15 days reduced to 7 days for wholesale deposits of ₹15 lakh and above.	October 1999	Flexibility to charge interest rates without reference to the PLR on certain categories of loans/credit.
		Nov. 2004	Minimum maturity period of 15 days reduced to 7 days for all deposits.	April 2000	Banks allowed to charge fixed/floating rate on their lending for credit limit of over ₹2 lakh.
		Jan.2013	Banks were permitted to offer differential deposit rates for bulk deposits of ₹1 crore and above.	April 2001	Commercial banks allowed to lend at sub-PLR rate for loans above ₹2 lakh.
				April 2003	Tenor linked PLR system replaced by Benchmark Prime Lending Rate (BPLR).
				July 2010	Introduction of Base Rate System, which serves as the floor rate for almost all types of advances.

\*: The regulation that no interest may be paid on current deposits continues till date.

<b>Appendix Table III.4: Money Demand Estimates</b>								
<b>M3 deflated by GDP deflator</b>								
Rolling Reg Output: Log(real money) , log(rgdp), call rate (i) with 15-year window								
	<b>start</b>	<b>end</b>	<b>lrgdp</b>	<b>t-stat</b>	<b>Call Rate</b>	<b>t-stat</b>	<b>Constant</b>	<b>t-stat</b>
1	1991	2005	1.57	18.5	0.00	0.3	-10.75	-12.3
2	1992	2006	1.58	21.7	0.00	0.3	-10.85	-14.4
3	1993	2007	1.57	28.1	0.00	-0.4	-10.79	-18.5
4	1994	2008	1.58	35.4	-0.01	-1.2	-10.80	-23.1
5	1995	2009	1.59	35.7	0.00	-0.9	-10.94	-23.1
6	1996	2010	1.60	35.1	0.00	-0.6	-11.05	-22.7
7	1997	2011	1.52	29.3	-0.01	-1.2	-10.23	-17.8
8	1998	2012	1.44	34.6	-0.02	-2.6	-9.34	-20.5
9	1999	2013	1.40	37.2	-0.02	-3.1	-8.89	-21.9
<b>M3 deflated by WPI Index</b>								
Rolling Reg Output: Log(real money) , log(rgdp), call rate (i) with 15-year window								
	<b>start</b>	<b>end</b>	<b>lrgdp</b>	<b>t-stat</b>	<b>Call Rate</b>	<b>t-stat</b>	<b>Constant</b>	<b>t-stat</b>
1	1991	2005	1.59	23.1	0.00	0.1	-10.94	-15.4
2	1992	2006	1.58	26.6	0.00	0.0	-10.83	-17.6
3	1993	2007	1.56	36.1	0.00	-1.2	-10.61	-23.5
4	1994	2008	1.56	44.9	-0.01	-2.0	-10.59	-29.0
5	1995	2009	1.56	44.0	-0.01	-1.8	-10.61	-28.1
6	1996	2010	1.55	40.4	-0.01	-1.6	-10.55	-25.6
7	1997	2011	1.51	34.4	-0.01	-1.0	-10.05	-20.7
8	1998	2012	1.42	45.3	-0.02	-2.9	-9.13	-26.6
9	1999	2013	1.39	49.7	-0.02	-3.5	-8.73	-29.1
<b>M3 deflated by GDP deflator</b>								
Rolling Reg Output: Log(real money) , log(rgdp), WALR with 15-year window								
	<b>start</b>	<b>end</b>	<b>lrgdp</b>	<b>t-stat</b>	<b>WALR</b>	<b>t-stat</b>	<b>Constant</b>	<b>t-stat</b>
1	1991	2005	1.54	31.5	0.00	-1.0	-10.44	-21.6
2	1992	2006	1.15	16.1	-0.07	-6.1	-5.60	-6.5
3	1993	2007	1.18	14.6	-0.06	-5.3	-5.89	-6.0
4	1994	2008	1.30	16.8	-0.05	-4.2	-7.28	-7.7
5	1995	2009	1.32	17.1	-0.05	-4.0	-7.54	-8.0
6	1996	2010	1.33	13.5	-0.04	-3.0	-7.74	-6.4
7	1997	2011	1.23	14.9	-0.06	-4.4	-6.45	-6.3
8	1998	2012	1.24	22.7	-0.06	-5.2	-6.63	-9.5
9	1999	2013	1.22	26.4	-0.06	-5.5	-6.34	-10.5

WALR: Weighted Average Lending Rate.

<b>Appendix Table III.5: Access to Liquidity Under Refinance Facilities</b>	
15-Apr-1997	A general refinance facility was introduced effective from April 26, 1997 under which all SCBs (except RRBs) were provided General Refinance equivalent to 1 per cent of each bank's forthrightly average outstanding aggregate deposits in 1996-97 in two blocks of 4 weeks each at Bank rate for the first block of 4 weeks and Bank rate plus one percentage point for second block of 4 weeks.
15-Apr-1997	From April 26, 1997 the base level ECR limit at 20 per cent of export credit as on Feb. 16, 1996 was withdrawn and SCBs were provided ECR only to the extent of 100 per cent of the increase in outstanding export credit eligible for refinance over the level of such credit as on Feb. 16, 1996. Interest rate was retained at 11 per cent ( <i>i.e.</i> , the Bank Rate).
16-Jan-1998	Effective from Jan 17, 1998 the ECR limit was lowered to 50 per cent of the increase in outstanding export credit eligible for refinance over the level of such credit as on Feb. 16, 1996, in order to reduce the access to liquidity in the context of measures announced relating to foreign exchange market.
16-Jan-1998	Access to General Refinance Facility was reduced to equivalent to 0.25 per cent of forthrightly average outstanding aggregate deposits in 1996-97.
15-Apr-1998	General Refinance Facility was closed (effective from April 20, 1998).
29-Apr-1998	Export Credit Refinance Limit was raised to 100 per cent (effective from May 9, 1998).
19-Apr-2001	With effect from May 5, 2001 SCBs were provided ECR to the extent of 15 per cent of the outstanding export credit eligible for refinance as at the second preceding fortnight.
3-Nov-2008	A special refinance facility was introduced under which all SCBs (excluding RRBs) were provided refinance (which could be flexibly drawn and repaid) from the Reserve Bank equivalent to up to 1.0 per cent of each bank's NDTL as on October 24, 2008 at the LAF repo rate up to a maximum period of 90 days.
18-May-2004	ECR made available at the Reverse Repo Rate.
15-Nov-2008	Eligible limit for ECR facility increased from 15 per cent to 50 per cent of outstanding export credit eligible for refinance.
6-Dec-2008	Refinance facility of ₹7,000 crore was provided to SIDBI at the Repo Rate. This facility was available up to March 31, 2010
11-Dec-2008	Refinance facility of ₹4,000 crore was provided to the National Housing Bank at the Repo Rate. This facility was available up to March 31, 2010
11-Dec-2008	Refinance facility of ₹5,000 crore was provided to the EXIM Bank at the Repo Rate. This facility was available up to March 31, 2013.
27-Oct-2009	The special refinance facility introduced on November 03, 2008 was closed.
27-Oct-2009	Eligible limit of ECR facility reduced from 50 per cent of the outstanding rupee export credit eligible for refinance to 15 per cent.
18-Jun-2012	Export Credit Refinance limit increased to 50 per cent from 15 per cent of eligible outstanding export credit.
14-Jan-2013	INR-USD swap facility with the Reserve Bank was provided to SCBs (except RRBs) to support incremental Pre-shipment export credit in foreign currency, with the option to access rupee refinance to the extent of swap with the RBI under Special Export Credit Refinance Facility (SECRF). The scheme was closed on June 28, 2013.
18-Nov-2013	Refinance facility of ₹5,000 crore was provided to SIDBI . This refinance facility is be available up to November 13, 2014.

<b>Appendix Table III.6: CPI-Combined</b> (back-casted series*)												
	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
2001	55.5	55.4	55.7	56.1	56.5	57.1	57.8	58.2	58.0	58.6	59.0	58.8
2002	58.6	58.5	58.9	59.2	59.6	60.2	60.8	61.1	61.2	61.5	61.7	61.3
2003	61.2	61.4	61.8	62.7	62.8	63.0	63.5	63.1	63.2	63.7	63.8	63.7
2004	63.8	63.8	63.9	64.1	64.6	65.1	65.6	66.2	66.3	66.8	66.6	66.1
2005	66.6	66.6	66.6	67.1	66.7	66.8	67.9	68.1	68.2	68.8	69.5	69.2
2006	69.3	69.3	69.3	70.0	70.9	71.9	72.3	72.8	73.3	74.2	74.2	73.9
2007	73.9	74.1	74.1	74.8	75.2	75.8	76.9	77.2	77.3	77.9	78.0	78.0
2008	78.1	78.6	79.7	80.7	80.8	81.9	83.3	84.3	85.1	86.7	86.7	85.5
2009	85.9	85.8	86.1	87.0	87.9	88.9	92.0	92.9	93.6	94.6	96.5	96.7
2010	97.4	96.5	96.3	97.0	97.8	99.0	101.3	101.4	102.3	102.9	103.5	104.7
2011	105.9	105.3	105.6	106.2	107.1	108.8	110.5	111.7	113.0	113.8	114.1	113.6
2012	114.0	114.6	115.5	117.1	118.2	119.6	121.4	122.9	124.0	124.9	125.4	125.6
2013	126.3	127.1	127.5	128.1	129.2	131.4	133.1	134.6	136.2	137.5	139.5	138.0

\*The new series of Consumer Price Index-Combined (CPI-C) (Base: 2010=100) is available on a monthly basis from January-2011. For the purpose of empirical analysis in this Report, back-casted data had to be generated, and the data presented here should not be seen as an official price index. The back-casted series of CPI-C was generated by using the price indices of Consumer Price Index-Industrial Workers (CPI-IW) (Base: 2001=100) and applying the corresponding weighting diagram of CPI-C at sub-group level, with some minor adjustments.

Appendix Table V.1: Measures Aimed at Managing the Impact of Taper Talk								
Country	Key Policy Rate Hikes	Key Policy Rate Cuts	Liquidity Measures	FX intervention	FX swaps	Capital account management	Macro-prudential measures	
Indonesia	Rates were hiked in several stages by 175 bps.		Assurance to provide domestic liquidity.	Assurance to provide domestic liquidity.	Yes Also a special swap line with Bank of Korea.	Allowed more mineral exports; easing of holding period restrictions to attract inflows.	Bank Indonesia Deposit Certificates added as a component of Secondary Statutory Reserves; LTV on property loans raised.	
Thailand		Cut overnight repo rate by 25 bps to 2.5% on May 29, 2013.						
South Korea				Yes	Swap line with Bank Indonesia.			
Turkey			Cut required reserve ratios on forex deposits to boost market liquidity.	Tried using forex intervention for monetary policy goals, but this could not contain inflation.		Doubled the amount of reserves that banks are allowed to keep in foreign currency.	Forex reserve ratio requirement was increased.	

(Contd...)



Appendix Table V.1: Measures Aimed at Managing the Impact of Taper Talk (Concl.)

Country	Key Policy Rate Hikes	Key Policy Rate Cuts	Liquidity Measures	FX intervention	FX swaps	Capital account management	Macro-prudential measures
Russia			Undertook liquidity management reforms. Introduced 1-week term repos as the main instrument. 1-day repo to be discontinued from Feb.1, 2014. Will start using 1-6 day repo as fine-tuning operations. Introduced standing facility.				
Brazil	Hiked Selic rate 150 bps from 8.0% to 9.5% during May-Oct. 2013. Earlier it had raised Selic rate 75 bps during Jan-April 2013.			On Aug.24 US\$54 bn Intervention Plan announced after 15% depreciation of real in three months. Included weekly auction of US\$1 bn dollar loans.	US\$0.5 bn of forex swaps four days a week. Real appreciated 7.7% during Sept-Oct. 2013 aided by intervention plan but raised the cost of its continuation. However, on Nov. 8, the central bank announced rollover of swaps thus increasing its intervention.	Relaxed capital inflows. Scrapped the 6% IOF on foreign portfolio inflows into fixed income investments.	

<b>Appendix Table V.2: Monetary Measures to Address Exchange Market Pressures</b>	
<b>Asian crisis of 1997-98</b>	
Rate Measures	<p>Increase in Bank Rate (to 11 per cent) and reverse repo rate (to 9 per cent) by two percentage points each on January 16, 1998.</p> <p>Increase in interest rate surcharge on bank credit for imports to 30 per cent on January 16, 1998.</p> <p>Hike in the interest rate on post-shipment rupee export credit beyond 90 days and up to 6 months from 13 per cent to 15 per cent on November 26, 1997 (a brief period of stability in end-December led to withdrawal of the hike from January 1, 1998).</p> <p>On December 17, 1997 it was stipulated that the minimum interest rate of 20 per cent per annum to be charged on overdue export bills. An interest rate surcharge of 15 per cent on import credit was also announced.</p>
Quantity Measures	<p>CRR was raised twice in December 1997 (by 50 bps to 10 per cent and the incremental 10 per cent CRR on NRE and NRRR deposit schemes was withdrawn) and January 1998 (by 50 bps to 10.5 per cent). This was intended to absorb excess liquidity and remove the arbitrage on account of low rates in the call money market and the potential gains in the foreign exchange market.</p> <p>Reduction in access to refinance facilities (general refinance limit reduced from 1.0 per cent to 0.25 per cent of fortnightly average outstanding aggregate deposits in 1996-97 and export refinance limit reduced from 100 per cent to 50 per cent of the increase in outstanding export credit over February 16, 1996).</p>
<b>Global financial crisis of 2008-09</b>	
Rate Measures	<p>Cut in the repo rate under the LAF by a cumulative 425 bps from 9.0 per cent to 4.75 per cent.</p> <p>Cut in the reverse repo rate by a cumulative 275 bps from 6.0 per cent to 3.25 per cent.</p> <p>The ceiling rate on export credit in foreign currency increased to LIBOR plus 350 bps.</p> <p>Cumulative increase in the interest rate ceilings on FCNR(B) and NR(E)RA term deposits by 175 bps each since September 16, 2008.</p>
Quantity Measures	<p>Cut in the CRR by a cumulative 400 bps of NDTL from 9.0 per cent to 5.0 per cent.</p> <p>Introduction of a special refinance facility up to March 31, 2010 under which all SCBs (excluding RRBs) provided refinance from the Reserve Bank equivalent to 1.0 per cent of each bank's NDTL as on October 24, 2008.</p> <p>Term repo facility under the LAF to enable banks to ease liquidity stress faced by mutual funds, NBFCs and housing finance companies (HFCs) with associated SLR exemption of 1.5 per cent of NDTL. This facility is available up to March 31, 2010.</p> <p>Reduction in statutory liquidity ratio (SLR) from 25 per cent to 24 per cent of NDTL with effect from the fortnight beginning November 8, 2008.</p> <p>Introduction of a mechanism to buyback dated securities issued under the MSS.</p> <p>Extension of the period of entitlement by 90 days of the first slab of pre-shipment and post-shipment rupee export credit with effect from November 15, 2008 and November 28, 2008, respectively.</p> <p>Increase in the eligible limit of the ECR facility for scheduled banks (excluding RRBs) from 15 per cent to 50 per cent of the outstanding export credit eligible for refinance.</p>

(Contd...)

**Appendix Table V.2: Monetary Measures to Address Exchange Market Pressures (Concl.d.)**

	<p>In order to provide liquidity support to housing, export and MSE sectors, RBI provided a refinance facility to NHB, EXIM Bank and SIDBI up to March 2010.</p> <p>Scope of OMO widened by including purchases of government securities through an auction-based mechanism.</p> <p>Special market operations to meet the foreign exchange requirements of public sector oil marketing companies against oil bonds.</p> <p>HFCs registered with the NHB were allowed to raise short-term foreign currency borrowings under the approval route, subject to compliance with prudential norms laid down by the NHB.</p> <p>ADs allowed to borrow funds from their head office, overseas branches and correspondents and overdrafts in nostro accounts up to a limit of 50 per cent of their unimpaired Tier 1 capital or US\$ 10 million, whichever was higher.</p> <p>A foreign exchange swap facility with tenure up to three months to Indian public and private sector banks having overseas operations in order to provide them flexibility in managing their short-term funding requirements at their overseas offices.</p> <p>Systemically important non-deposit taking NBFsCs were permitted to raise short-term foreign currency borrowings under the approval route, subject to compliance with the prudential requirements of capital adequacy and exposure norms.</p>
	<p><b>Exchange market pressures since May 22 in response to talk of tapering</b></p> <p><b>Rate Measures</b></p> <p>MSF was raised by 200 bps to 10.25 per cent (reversed by October 29, 2013).</p> <p>Interest rate ceiling on NRI deposits of 3-5 years maturity was increased by 100 bps to LIBOR/SWAP plus 400 bps.</p> <p>The ceiling on interest rate on NRE deposits removed.</p> <p><b>Quantity Measures</b></p> <p>Restriction on the overall access to LAF to 0.5 per cent of each bank's NDTL.</p> <p>OMO sales of ₹25 billion.</p> <p>CRR, which banks had to maintain on a fortnightly average basis subject to a daily minimum requirement of 70 per cent, was modified requiring banks to maintain a daily minimum of 99 per cent of the requirement (reduced later to 95 per cent).</p> <p>Auction of CMBs on a weekly basis of a notified amount of ₹220 billion for a few weeks.</p> <p>With effect from fortnight beginning August 24, 2013, incremental FCNR (B) and NRE deposits, of three year and above maturity, were exempted from maintenance of CRR and SLR. This measure was announced to give impetus to banks to mop up NRI deposits of long-term maturity.</p> <p>On August 28, 2013, a forex swap window was opened to meet the entire daily dollar requirements of three public sector oil marketing companies.</p> <p>On September 4 2013, RBI opened a special concessional window for swapping fresh FCNR(B) dollar deposits, mobilised for a minimum tenor of three years and above at a fixed rate of 3.5 per cent per annum for the tenor of the deposit (up to November 30, 2013).</p> <p>The existing overseas borrowing limit of 50 per cent of the unimpaired Tier I capital was also raised to 100 per cent and the borrowings mobilised could be swapped with RBI at a concessional rate of 100 bps below the ongoing swap rate prevailing in the market (up to November 30, 2013).</p>

Appendix Table V.3: Counter-Cyclical Prudential Regulation: Variations in Risk Weights and Provisioning Requirements										
Date	Capital Market		Housing		Other Retail		Commercial Real Estate		Non-Deposit taking Systemically Important Non-Banking Financial Companies	
	Risk Weight	Provisions (%)	Risk Weight	Provisions (%)	Risk Weight	Provisions (%)	Risk Weight	Provisions (%)	Risk Weight	Provisions (%)
Dec-2004	100	0.25	75	0.25	125	0.25	100	0.25	100	0.25
Jul-2005	125	0.25	75	0.25	125	0.25	125	0.25	100	0.25
Nov-2005	125	0.40	75	0.40	125	0.40	125	0.40	100	0.40
May-2006	125	1.00	75	1.00	125	1.00	150	1.00	100	0.40
Jan-2007	125	2.00	75	1.00	125	2.00	150	2.00	125	2.00
May-2007	125	2.00	50-75	1.00	125	2.00	150	2.00	125	2.00
May-2008	125	2.00	50-100	1.00	125	2.00	150	2.00	125	2.00
Nov-2008	125	0.40	50-100	0.40	125	0.40	100	0.40	100	0.40
Nov-2009	125	0.40	50-100	0.40	125	0.40	100	1.00	100	0.40
Dec-2010	125	0.40	50-125	0.4-2.0#	125	0.40	100	1.00	100	0.40
Jul-2011	125	0.40	50-125	0.4-2.0	125	0.40	100	1.00	100	0.40
Jul-2012	125	0.40	50-125	0.4-2.0	125	0.40	100	1.00	100	0.40
Jul-2013	125	0.40	50-75*	0.4-2.0	125	0.40	100@	1.00	100	0.40

\* The risk weights for housing loans vary according to amount of the loan and the loan-to-value ratio as below.

# Provisioning requirement for housing loans with teaser interest rates was increased to 2.0 per cent in December 2010. It remained at two per cent till one year after reset of interest rate to higher rate and thereafter it was 0.4 per cent. For other housing loans, the provisioning remained at 0.4 per cent.

@: As per the DBOD Circular No.DBOD.BP.BC.No. 104 dated June 21, 2013, a new subsector called 'Commercial Real Estate-Residential Housing (CRE-RH)' has been carved out of CRE and this segment attracts a lower risk weight of 75 per cent and lower standard asset provisioning of 0.75 per cent.

Appendix Table V.4: Capital Control Measures Taken to Address Exchange Market Volatility					
Item	August 1995 to March 1996 (Mexican Crisis)	August 1997 - August 1998 (East Asian Crisis)	High Capital flow during 2003-04 to 2007-08	Global Crisis: 2008-09	Since May 2013
<b>FCNR (B) &amp; NRE</b>	Foreign currency deposits like FCNR(B) and NR(NR) RD were exempted from CRR requirements. Increase in interest rates on NRE deposits.	Removal of incremental CRR of 10 per cent on NRERA and NR(NR) deposits.	Reduction in interest rate ceiling on FCNR(B) and NR(E)RA deposits.	Increase in interest rate ceiling on FRNR (B) and NRE deposits.	Separate concessional swap window to attract FCNR(B) dollar funds. Exemption from maintenance of CRR and SLR on incremental FCNR (B) deposits as also NRE deposits with reference to base date of July 26, 2013, and having maturity of three years and above. Deregulation of interest rate on NRE deposits. Increase in interest rate ceiling by 100 bps to LIBOR/ SWAP plus 400 bps on FCNR(B) deposits of maturity 3 to 5 years.
<b>ECB and trade credit</b>	Relaxation in the ECB norms.		Increasing the existing limit for prepayment of external commercial borrowings (ECBs) without the RBI's approval from US\$ 400 million to US\$ 500 million, subject to compliance with the minimum	Relaxation in ECB policy in terms of upward revision in all-in-cost ceiling, eligible borrowers and end use. ECB allowed for repayment of outstanding rupee loan towards capital expenditure, under approval route.	Expansion of eligible end use of ECB to include import of services, technical know-how and payment of license fees as part of import of capital goods, subject to certain conditions. Availment of ECB for working capital for civil aviation sector. Extension of scheme for Buyback / Prepayment of FCCBs under the approval route, up to December 31, 2013.

(Contd...)

Appendix Table V.4: Capital Control Measures Taken to Address Exchange Market Volatility (Contd.)					
Item	August 1995 to March 1996 (Mexican Crisis)	August 1997 - August 1998 (East Asian Crisis)	High Capital flow during 2003-04 to 2007-08	Global Crisis: 2008-09	Since May 2013
			average maturity period.	Introduction of Foreign Currency Exchangeable bonds. All-in-cost ceiling for trade credits with maturity up to one year and between one and three years has been revised to 350 bps above 6-month LIBOR.	Availment of ECB for financing 3G spectrum outstanding rupee loan. Availment of ECB by NBFC-Asses Finance companies. ECB raised under the approval route from foreign equity holder company with minimum average maturity of seven years allowed to use for general corporate purposes, subject to the certain conditions.
<b>FII</b>			Ban on use of Promissory Notes.	Lock-in period of long term infrastructure bonds for FIIs was reduced to one year. Ceiling for FIIs investment in G-sec and corporate bonds raised by US\$ 5 billion each to US\$ 20 billion and US\$ 45 billion respectively.	Enhance the limit for foreign investment in Government dated securities by US\$ 5 billion to US\$ 30 billion. Enhanced limit is available only for long term investors registered with SEBI (Sovereign Wealth Funds (SWFs), Multilateral Agencies, Pension/ Insurance/ Endowment Funds, Foreign Central Banks).

Appendix Table V.4: Capital Control Measures Taken to Address Exchange Market Volatility (Contd.)					
Item	August 1995 to March 1996 (Mexican Crisis)	August 1997 - August 1998 (East Asian Crisis)	High Capital flow during 2003-04 to 2007-08	Global Crisis: 2008-09	Since May 2013
<b>Others</b>		Floating of Resurgent India Bonds.	Ban on use of offshore derivative products. Ban on overseas individual to participate in Indian stock market.	Rupee Dollar Swap Facility. To convert 10 per cent of the balances in the EEFC accounts. Qualified Foreign Investors (QFIs) allowed to invest in mutual funds. Broadening of investor base for G-sec to include Sovereign Wealth Funds, insurance funds and pension funds. Increased in overseas borrowing limits for banks from 25 per cent to 50 per cent of Tier-I capital or US\$ 10 million, whichever is higher.	Increase in overseas borrowing limits for banks from 50 per cent to 100 per cent of Tier-I capital. Increase in overseas borrowing limits for banks from 50 per cent to 100 per cent of Tier-I capital or US\$ 10 million, whichever is higher.

Appendix Table V.4: Capital Control Measures Taken to Address Exchange Market Volatility (Contd.)					
Item	August 1995 to March 1996 (Mexican Crisis)	August 1997 - August 1998 (East Asian Crisis)	High Capital flow during 2003-04 to 2007-08	Global Crisis: 2008-09	Since May 2013
<b>Outflows</b>			<p>Limit on outward FDI increased gradually to 400 per cent of their net worth under the automatic route.</p> <p>Gradual increase in limit of outward portfolio investments by listed companies to 50 per cent of the net worth and dispensing with the requirement of 10 per cent reciprocal share holding in the listed Indian companies by overseas companies.</p> <p>Enhancement in limit on overseas investment by mutual funds registered with the SEBI to US\$ 7 billion.</p>		<p>Reduction in the limit of outward FDI from 400 per cent to 100 per cent of net worth of Indian company, under Automatic Route.</p> <p>Reduction in limit of US\$ 200,000 per financial year to US\$ 75,000 per financial year under Liberalized Remittance Schemes.</p>



Appendix Table V.4: Capital Control Measures Taken to Address Exchange Market Volatility (Concl.d.)					
Item	August 1995 to March 1996 (Mexican Crisis)	August 1997 - August 1998 (East Asian Crisis)	High Capital flow during 2003-04 to 2007-08	Global Crisis: 2008-09	Since May 2013
			<p>Enhancement of limit on overseas investment under the Liberalised Remittance Scheme (LRS) for resident individuals.</p> <p>Interest payment of EEFC accounts to the extent of outstanding balances of US\$ 1 million per exporters (temporary measure, valid up to Oct 31, 2018.</p> <p>Facility closed on Nov 1, 2018.</p>		

