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 pist 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 sugests, 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 Saggar, 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.

## 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 depreciationinflation spiral, thereby undermining macroeconomic stability[1]. 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 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[2]. 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.

Table II.1: Cross-Country Inflation Comparison

(Per cent y-o-y)

| | 2000-07 | 2008 | 2009 | 2010 | 2011 | 2012 | 2008-12 |
|---|---|---|---|---|---|---|---|
| I. Global Inflation (CPI) | | | | | | | |
| World | 3.9 | 7.0 | 2.5 | 3 | 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 |
| II. Inflation in India | | | | | | | |
| Consumer Price Index – Industrial Workers | 4.5 | 9.1 | 12.4 | 10.4 | 8.4 | 1.4 | 10.1 |
| Wholesale Price Index | 5.2 | 8.1% | 3.8 | 9.6 | | 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).

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[3], 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, 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)[4]. 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)[5]. There are some 38 countries that have not committed to any specific target; among 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[6] (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 tradeoff 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[7]. Here too, the experience has shown that inflation can easily come unhinged since there is nothing to tie it down[8].

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 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 antiinflationary 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[9]. 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[10]. 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[11]. 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 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[12]. 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).

3.2. 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).[14] 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[15].

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.

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:

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-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 welfarebased 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 (CPIAL) and Consumer Price Index-Rural Labourers (CPIRL) – 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[16]. 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[17]. 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[18]. 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 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 CPICombined, 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 61st 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 68th 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.

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 CPICombined

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.

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)[19]. 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, 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[20]. 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.

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 noninflationary rate of unemployment or maximum non-inflationary rate of growth[21]. 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[22] (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[23] 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 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)[24] (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.

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.

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 nonmonetary 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 mediumterm fiscal consolidation, as was pursued under the Fiscal Responsibility and Budget Management

(FRRBM) Act, 2003[25]. 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[26]. 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 preconditions 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).

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 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[27]. These aspects are addressed in Chapter III.

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

[2] "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.

[3]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.

[4]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): "Th e Macroeconomic Eff ects 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).

[5]"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

[6]"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

[7] In Chile, the interest rate on indexed bonds served as the real anchor during 1985 to 2001.

[8] 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.

[9] 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

[10]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.

[11]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.

[12]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.

[13]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.

[14]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.

[15]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.

[16]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.

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

[18]See Annex 1 for causal relation between CPI and WPI for food and core components.

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

[20]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).

[21]"...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).

[22]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.

[23]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.

[24]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.

[25]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.

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

[27]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.

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[1]. 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 decisionmaker, 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 decisionmaking 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[2]:

- Most inflation targeting central banks have an MPC which is involved with decision-making.
- 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)[3]. This view is supported by experimental evidence (Blinder and Morgan, 2005)[4] and a cross country assessment of performance of MPCs in about 40 countries (Maier, 2010)[5].

### 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 setup. 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)[6] .

III.6. In some countries (e.g., New Zealand), the central bank Governor is legally the sole decisionmaker, which makes it especially clear whom to hold 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[7] (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[8].

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[9]. 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 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 selfimposed 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[10] 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)[11].

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 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 prepolicy briefs for MPC members, structured presentations on key macroeconomic variables and forecasts, simulations of suites of macroeconometric 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[12].

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[13].

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 institutionspecific 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 interbank 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 (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 nonmonetary 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 dimension (excessive leverage in upturns and excessive risk aversion in downturns) and the crosssectional dimension or risk concentration (size, substitutability, interconnectedness) as collapse of large or systemically important financial institutions can destabilise the rest of the financial system[14] (Table III.1).

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.

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)[15]. 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 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 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.

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.

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)[16] 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 statecontingent 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'.

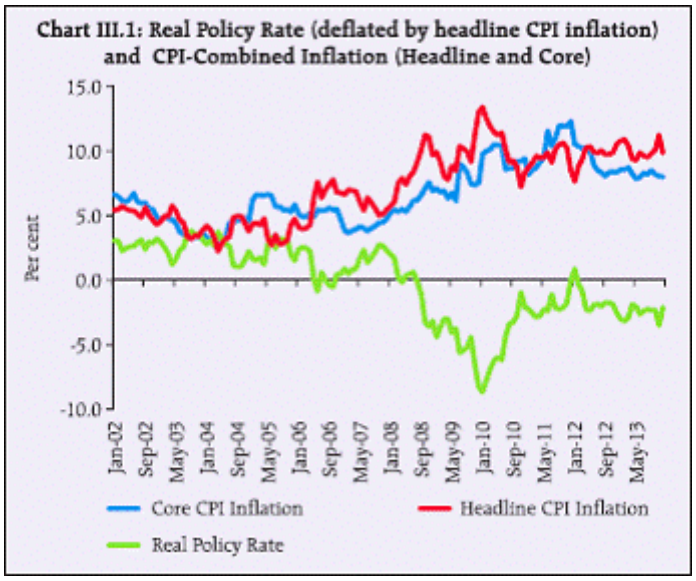
5.2 Refinance Windows Undermine the Operating Framework

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 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 sectorspecific 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)[17].




III.54. Following a simple rule (illustratively the thumb rule proposed by Taylor, 1993) [18] 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 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[19]. 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[20], 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 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 rate auctioned term repos by further calibrating the availability of liquidity at the overnight repo rate as necessary.

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 | Weighted average call rate. | 14-day term repo rate. |

| | | |
|---|---|---|
| policy | | |
| 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.e., 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. |

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 topdown 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[21].

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 shorterterm 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.

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[1]Blinder, A. (2004): "The Quiet Revolution", Central Banking Goes Modern, Yale University Press.

[2]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.

[3]Blinder, A. (2008): "Making Monetary Policy by Committee", CEPS Working paper No. 167, June.

[4]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).

[5]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.

[6]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.

[7]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.

[8]" 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).

[9]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.

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

[11]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

[12]Morgan, Peter J. (2013): "Monetary Policy Frameworks in Asia: Experience, Lessons, and Issues", ADBI Working Paper Series, No. 435, September .

[13]Rose, Andrew (2013): "Surprising Similarities: Recent Monetary Regimes of Small Economies", CEPR Discussion Paper Series No. 9684, October.

[14]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.

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

[16]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.

[17]Back-casted CPI-Combined data used in this report are given in Appendix Table III.6.

[18] 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).

[19]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".

[20]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.

[21]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.

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 shortterm 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[1].

## 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[2].

### 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)[3]. 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 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)[4]. 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)[5]. However, recent evidence suggests that the interest rate channel is strengthening in many EMEs, including India[6]. This is attributed, inter alia, to reduced fiscal dominance, more flexible exchange rates and development of market segments (Gumata et al., 2013)[7].

### 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)[8]. 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 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)[9]. 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)[10],[11].

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)[12]. The broad consensus emerging from these studies is that monetary policy 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[13]. 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[14]. In terms of balance sheet effects, credit growth is seen to have an inverse relationship with movements in the policy rate[15].

3.3. Exchange Rate Channel

IV.13 The exchange rate channel is found to be feeble in India with some evidence of weak exogeneity[16]. 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).

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

| Study | Time Period of Study | Exchange rate pass-though coefficient |
|---|---|---|
| WPI | | |
| Khundrakpam (2007)[17] | 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)[18] & Kapur and Behera (2012)[19] | 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)[20] | 1996 Q2 to | A 10 per cent appreciation (depreciation) of the Indian rupee |

| | | |
|---|---|---|
| | 2009 Q3 | (vis-a-vis the US dollar) would reduce (increase) inflation by 50 bps in the same quarter, by 150 percentage points after seven quarters. |
| Patra et al. (2013)[21] | 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. |
| CPI | | |
| Ghosh and Rajan (2007)[22] | 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, et.al. (2008)[23] | 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 |

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)[24]. Moreover, the wealth effect of increasing equity prices in the Indian case is found to be limited (Singh, 2012)[25]. 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.

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[26]. Consequently, small savings in the past had acquired 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.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). | This is the cap or maximum allocation.<br><br>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. |
| 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. | |
| PFs/Retirement Trusts/Gratuity Funds | Central Government Securities;<br>SDL and other approved | 25 per cent of Assets Under Management (AUM);<br>15 per cent of AUM. | |

| | | |
|---|---|---|
| | securities. | |
| 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.

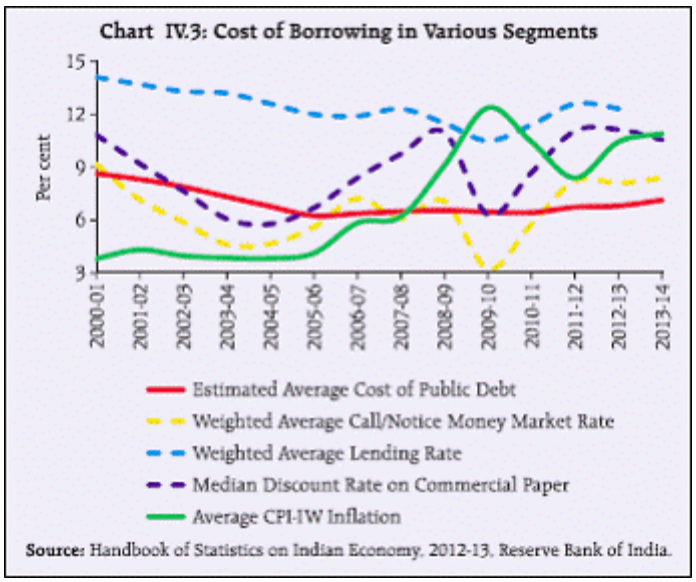
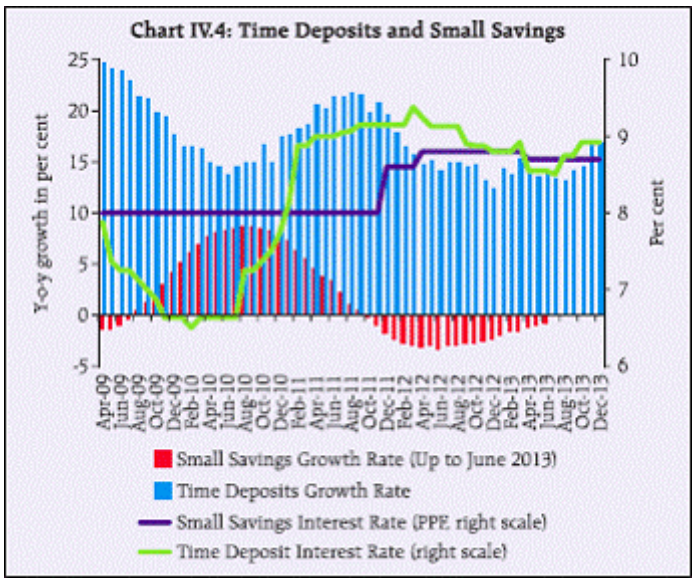



Table IV.3: SLR Maintenance by Banks

(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:

(a) 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.

(b) Government should eschew suasion and directives to banks on interest rates that run counter to monetary policy actions.

(c) 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[27].

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[28]. The recourse to noninstitutional 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 as its costs of intermediation can impede the impact of monetary policy on aggregate demand.

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.

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 Reserve Bank is necessary to impart greater dynamism and flexibility to the banking structure and associated outcomes (RBI, 2013)[29].

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 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[30]. 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)[31]. Significant asymmetry is observed in the transmission of policy rate changes between the surplus and deficit liquidity conditions, suggesting that maintaining suitable liquidity environment is critical to yielding improved passthrough (Singh, 2011,op. cit.).

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

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.

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.

Table IV.9: Monetary Policy Transmission and Liquidity Conditions

| Period | Change in Policy Rates (bps) | | Average Liquidity Deficit* | Modal Deposit Rate | Modal Base Rate | WALR |
|---|---|---|---|---|---|---|
| | Repo Rate | CRR | (` billion) | | | |
| Q4 (2010-11) | 50 | - | -464 | 6.65 | 9.00 | 11.40 |
| 2011-12 | | | | | | |
| 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 |
| Change during the year | 175 | -125 | -772 | 0.77 | 1.50 | 1.18 |
| 2012-13 | | | | | | |
| 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 |
| Change during the year | -100 | -75 | -907 | -0.11 | -0.30 | -0.40 |
| 2013-14 | | | | | | |
| 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# |
| Change up to Q3 | 25 | - | -903 | 0.34 | 0.05 | -0.03 |

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

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.

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

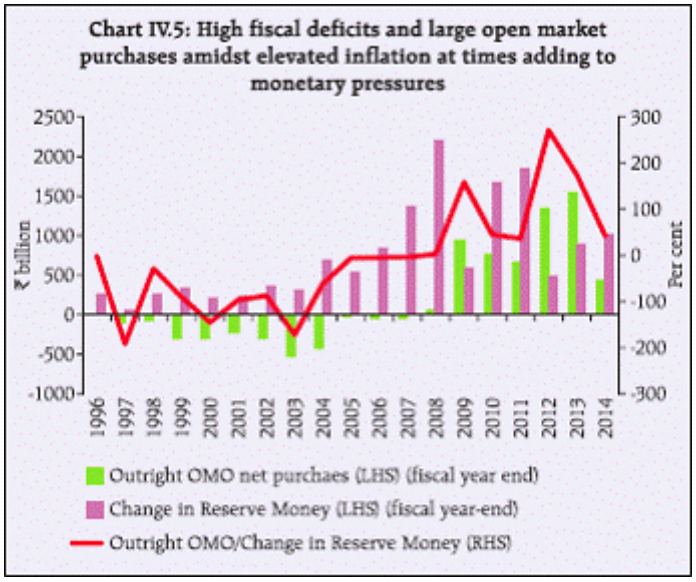
IV.33 As government market borrowing crowds out funds to the private sector, in turn placing pressure on liquidity, the central bank is often forced to accommodate the resultant liquidity shortages by providing additional liquidity through open market operations, especially via outright purchases of 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.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 per cent of the net borrowing requirement of the Government was supported through OMOs (Table IV.13).



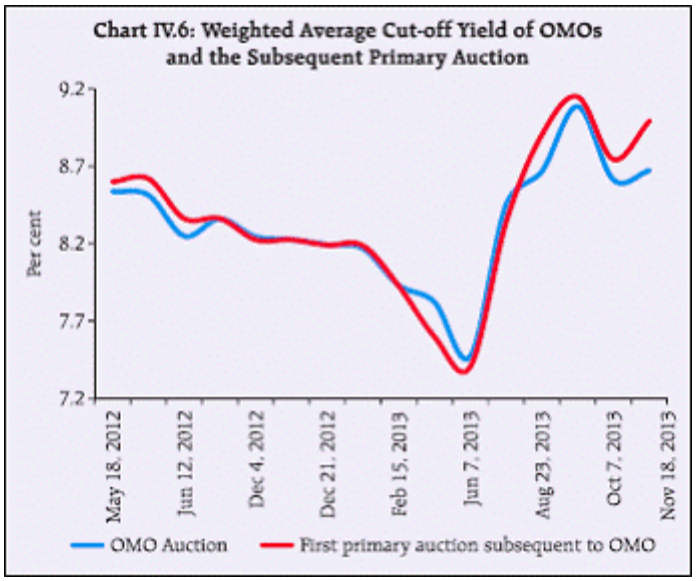




Table IV.12: Comparison of Yields (OMOs versus Primary Auctions)

| 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 |

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.

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[1]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", 14th Jacques Polak Annual Research Conference, IMF, Washington).

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[13]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.

[14]

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 |

[15]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.

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

[26]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.

[27]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.

[28]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.

[29]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

[30]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.

[31]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.