PART TWO: THE WORKING AND OPERATIONS OF THE RESERVE BANK OF INDIA

III MONETARY POLICY OPERATIONS

The conduct of monetary policy in India is undergoing a transformation, transiting to a flexible inflation targeting (FIT) framework. During 2014-15, a formal architecture for FIT based on an agreement between the Reserve Bank and the Government of India pertaining to the monetary policy framework was put in place. The liquidity management framework was revised to bring in proactive liquidity operations based on variable rate term repo/ reverse repo auctions to align the weighted average call rate, that is, the operating target around the policy rate. With ebbing inflationary pressures, receding risks to the inflation outlook and commitments to fiscal prudence, the Reserve Bank eased its monetary policy stance with a cumulative 75 bps cut in the policy repo rate during January-August 2015.

III.1 Sustaining the disinflation path set in motion in 2013-14 and instituting a robust and transparent institutional framework assigning primacy to price stability constituted the over-riding goals that the Reserve Bank had set for itself in formulating and conducting monetary policy in 2014-15. These are the first building blocks of its medium-term vision of ensuring price stability on a durable basis as a necessary pre-condition for fostering higher economic growth.

The Changing Institutional Edifice of Monetary Policy

III.2 There was a fundamental change in the conduct of monetary policy in 2014-15. Several institutional and operational innovations were put in place in the preceding year to enable this regime shift based on the recommendations of the Expert Committee to Revise and Strengthen the Monetary Policy Framework. These included improved communication by means of bi-monthly policy reviews; introduction of term repos to offset the reduction in access to liquidity through overnight fixed rate repo under the liquidity adjustment facility (LAF); and the adoption of headline consumer price index (CPI) inflation as the nominal anchor for the conduct of monetary policy. Set against this backdrop, managing the transition to a flexible inflation targeting (FIT) framework in a non-disruptive manner in 2014-15 became a key challenge. Ensuring disinflation consistent with the glide path announced in January 2014 required maintaining an anti-inflationary monetary policy stance till upside risks to the inflation outlook had been contained. Greater transparency on monetary policy necessitated release of Monetary Policy Reports (MPRs). Sector specific refinance facilities were phased out to create conditions for more effective transmission of monetary policy. A new liquidity management framework had to be put in place to ensure market-based liquidity operations through auctions, while striving to ensure consistency of liquidity conditions with the stance of monetary policy. Besides forward looking

surveys, the need to strengthen technical research through forecasting and policy analysis models in order to facilitate decision making under uncertainty also assumed significance.

Agenda 2014-15: Implementation Status

Disinflation Consistent with the Glide Path

III.3 The Reserve Bank had set out a formal framework to guide monetary policy operations in 2014-15. First, in January 2014, it announced a disinflationary glide path for bringing down CPI inflation to below 8 per cent by January 2015 and to below 6 per cent by January 2016. Second, in September 2014, the Reserve Bank introduced a revised liquidity management framework that brought flexibility and transparency to liquidity management operations, while aiming at strengthening transmission in the money market by anchoring the weighted average call rate (WACR) at or closely aligned to the repo rate. Third, a landmark agreement was signed between the Government of India and the Reserve Bank in February 2015 that provided the formal architecture for conducting monetary policy operations consistent with FIT and related institutional and accountability processes.

III.4 In response to the upside risks to inflation stemming from the impact of a sub-normal monsoon on food prices and still elevated international crude oil prices, the policy rate was kept unchanged in Q1 of 2014-15. The disinflationary effects of rate increases undertaken during September 2013-January 2014 were transmitted through the economy, tempering inflationary pressures. Concerns about tepid economic activity nevertheless required the commencement of a process of gradual reduction in the statutory liquidity ratio (SLR) to give banks more freedom to expand credit to productive sectors.

III.5 By Q2, perseverance with the anti-inflationary policy stance had yielded a softening bias to inflation outcomes and was supported by a host of other factors that created room for a softer stance for monetary policy. Besides temporary base effects pulling down headline inflation, international commodity prices, particularly of crude oil (Indian basket), declined sharply by about 57 per cent between June 2014 and January 2015, aiding the disinflationary momentum. Furthermore, there were indications of a more durable downward movement in headline inflation driven by transport and communication and household requisites, suggesting that prices of non-tradables were responding to policy impulses. Awaiting a clearer assessment of the balance of risks and the durability of disinflation, the policy rate was kept unchanged during Q2 and Q3.

III.6 Inflation for January 2015 turned out to be nearly 300 basis points (bps) below the target of 8 per cent. Moreover, by January 2015, there was increasing evidence of a robust disinflationary process having taken hold. For instance, household inflation expectations three months ahead as well as one year ahead eased to a single digit for the first time since September 2009. On January 15, 2015, the policy repo rate was reduced by 25 bps to 7.75 per cent. Further, monetary policy actions were made contingent on on-going evidence about continuing disinflationary momentum and sustenance of high quality fiscal consolidation.

III.7 The new CPI re-based to 2012, which was released on February 12, 2015, confirmed that strong disinflationary impulses were underway in the economy. The pre-conditions for effecting a change in the monetary policy stance materialised in quick succession with inflation ebbing and the Union Budget for 2015-16 suggesting a tangible progress on fiscal consolidation for 2014-15 alongside a renewed medium-term commitment about fiscal rectitude. Consistent with the forward guidance, the Reserve Bank announced a cut in

the repo rate outside the normal policy review cycles to 7.50 per cent in March 2015. This pre-emptive policy action was intended to utilise available space for monetary accommodation, given low capacity utilisation and continuing weakness in production and credit off-take.

III.8 The first bi-monthly policy statement for 2015-16 announced on April 7, 2015 noted that the stance of monetary policy going forward would centre around a gradual and durable disinflation, taking headline CPI inflation to 6 per cent by January 2016 and to 4 per cent by the end of 2017-18. The identified upside risks included the possibility of a sub-normal monsoon, large deviations from their seasonal patterns in vegetable and fruit prices, larger than anticipated administered price revisions, faster closing of the output gap, geo-political risks causing hardening of global commodity prices and external spillovers through the exchange rate and asset price channels. Downsides originating from global deflationary/disinflationary tendencies, the benign outlook on global commodity prices and slack in the domestic economy appeared to ameliorate upside risks. Accordingly, key policy rates were kept unchanged, pending expected transmission of past policy rate reductions to lending rates by banks.

III.9 The second bi-monthly policy statement of June 2, 2015, recognised that the headline inflation trajectory had evolved according to the projected path while the economic activity continued to be fragile. Therefore, while awaiting further data for greater clarity on the risks in meeting the medium term disinflation targets, a cut in the policy repo rate by 25 bps was front-loaded, taking it to 7.25 per cent.

III.10 Taking into account the developments in 2015-16 thus far and the balance of risks as also the front-loaded policy action of June, the third bi-monthly policy on August 4, 2015 kept the policy rate unchanged, while maintaining the accommodative stance of monetary policy. The statement noted that the short-term real risk free rates were supportive of borrowing by interest rate sensitive consumer segments such as housing and automobiles and as greater transmission of front-loaded past actions was awaited, developments would be monitored for emerging room for more accommodation.

Improved Transmission in the Money Market

III.11 The operating framework of monetary policy provides clarity on how the objectives of monetary policy respond to changes in policy rate - the repo rate. The link from the policy rate to inflation target requires a systematic and stable transmission path linking the policy rate, the operating target, an intermediate target and a transparent set of rules guiding liquidity and monetary operations on a day-to-day basis (see Box IV.I in MPR of April 2015). Liquidity management is key to aligning the operating target of monetary policy to the policy rate and is thus critical for the first leg of monetary transmission.

III.12 In India, currently the WACR is the operating target of monetary policy. Recognising the long and variable lags in transmission of monetary policy, inflation forecasts - or the projected baseline inflation path - are used as the intermediate target. This makes monetary policy proactive and forward looking.

III.13 In line with the recommendations of the Expert Committee, Q3 of 2014-15 saw the implementation of a revised liquidity management framework aimed at making liquidity management operations flexible, transparent and predictable. The revised liquidity management framework has the following features: (i) subject to availability of excess SLR securities, assured access to central bank

liquidity of 1 per cent of banks' net demand and time liabilities (NDTL) comprising 0.25 per cent provided through overnight fixed rate repo auctions conducted daily, and 0.75 per cent provided through 14-day variable rate term repo auctions conducted on every Tuesday and Friday; (ii) fine-tuning operations through variable rate repo/reverse repo auctions of maturities ranging from overnight to 28 days; (iii) outright open market operations to manage enduring liquidity mismatches; and (iv) overnight marginal standing facility (MSF) up to excess SLR plus 2 per cent below SLR of individual banks.

III.14 The revised framework has necessitated a more proactive approach to liquidity management by the Reserve Bank, that is, assessing the system level expected liquidity mismatch on a daily/intra-day basis, providing more information to the market to enable precision in liquidity planning and proactive assuaging of frictional and structural liquidity mismatches.

III.15 Since introduction of the revised framework, WACR has moved close to the repo rate, indicative of growing precision in monetary policy operations. Even quarter-end spikes in WACR reflecting advance tax payments and window dressing by banks have become relatively muted, a drastic change from the past experience of large spikes around these events (Chart III.1).

III.16 The Expert Committee had recognised that in India developing market-based benchmarks could enable pricing of deposits and loans to be sensitive to changes in the policy repo rate, thereby facilitating monetary transmission. Regular auctions of 14-day term repos (twice a week) allow market participants to use the primary liquidity for longer durations. This flexibility is intended to facilitate the emergence of a market-based term money benchmark.

III.17 The spread between 14-day term repo rate and the overnight fixed repo rate has narrowed significantly after the introduction of the revised liquidity management framework, barring the year-end spikes (Chart III.2). This process is intended to be taken forward by the establishment of transparent external benchmarks, based on the marginal cost pricing principle (see para III.31).

Chart III.1: Liquidity Conditions

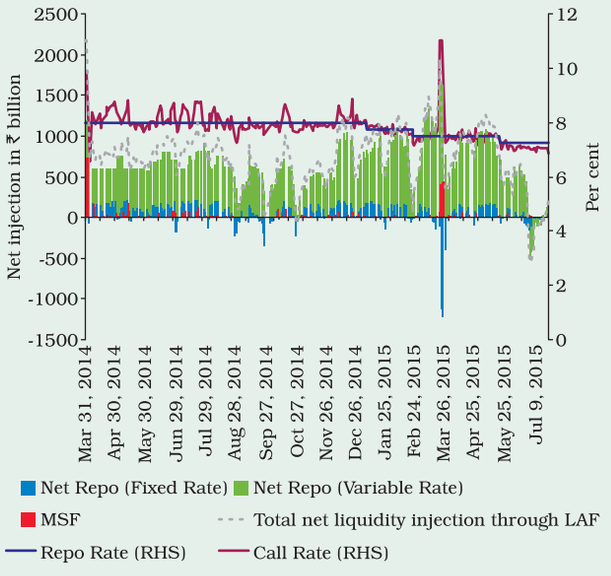
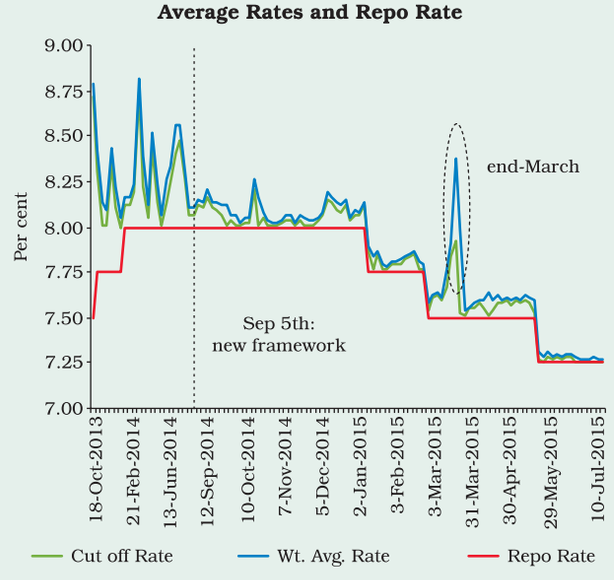


Chart III.2: 14-day Term Repo Cut off, Weighted Average Rates and Repo Rate



III.18 For smooth conduct of banking operations, the Reserve Bank has allowed access to the MSF and reverse repo windows on Saturdays with effect from February 21, 2015. Recognising that sector-specific refinance facilities at the fixed repo rate could interfere with the transmission process, the export credit refinance (ECR) facility was phased out gradually during the year and replaced with the provision of system-level liquidity with effect from February 7, 2015.

III.19 The liquidity framework was tested in March 2015 as liquidity tightened due to accumulation of cash balances of the government and banks with the Reserve Bank peaking at the end of the financial year on balance sheet and year-end considerations. In April 2015, these balances reversed, declining significantly and creating surplus liquidity conditions in the inter-bank market. The Reserve Bank managed these alternating but large movements in liquidity through 7-day, 2/3-day and overnight reverse repo auctions to fine-tune liquidity. Since mid-April, the liquidity requirement of the system has moved in a narrower range of around 1 per cent of NDTL, which has been managed through additional variable rate overnight and term repos/ reverse repos. With the increase in spending by the government, liquidity conditions improved significantly in June and July. The Reserve Bank absorbed the excess liquidity through the variable rate reverse repo auctions of varying terms. Besides, the Reserve Bank also absorbed the excess liquidity to the tune of ₹82.7 billion through OMO sales conducted on July 14, 2015.

Agreement on the Monetary Policy Framework

III.20 On February 20, 2015, the Government of India and the Reserve Bank signed an agreement on the Monetary Policy Framework. The agreement makes price stability the primary objective of monetary policy; defines price stability numerically - below 6 per cent CPI inflation for 2015-16 (to be achieved by January 2016) and 4 +/- 2 per cent for all subsequent years; sets out what will constitute a failure in achieving the target; and specifies that the Reserve Bank in the event of failure will report to the government on: (a) reasons for deviation of inflation from the target over three consecutive quarters, (b) remedial measures, and (c) an estimated time frame over which inflation will be brought back to the target.

III.21 The agreement represents a fundamental institutional reform in India as it mandates the Reserve Bank to pursue FIT with transparency, predictability and accountability. The government's commitment to the agreement also enhances the credibility of the framework, bringing confidence about the process of fiscal consolidation and supply management, both of which are highly relevant for maintaining price stability.

Monetary Policy Reports and Transparency

III.22 In pursuance of the recommendations of the Expert Committee, the first issue of the MPR was released along with the fourth bi-monthly monetary policy statement in September 2014, providing a medium-term outlook and the balance of risks around a variety of potential shocks. With the publication of MPR, India joins a select band of countries that lay emphasis on transparency and forward looking communication to ensure public understanding and accountability of monetary policy formulation and operations (Box III.1).

III.23 Forward guidance provided in the fifth bi-monthly policy statement in December 2014 indicated the possible commencement of an easing cycle by early 2015 if the disinflationary process moved along the expected trajectory, coupled with evidence of softening inflationary expectations, quality and quantity of fiscal consolidation, steps to augment supply of key inputs and unlocking of stalled investments so as to revive the economy

Box: III.1
Monetary Policy Report – A Communication Tool under Inflation Targeting

The inflation targeting (IT) framework is based on the premise that an explicit and clearly communicated numerical target level of inflation over a specified period will help anchor long-run inflation expectations. Achieving credibility by way of anchoring inflation expectations to the target is crucial for the framework to be successful. This requires an effective communication strategy between the central bank and the public. A core element of this communication strategy is that of providing forecasts of inflation, an analysis underpinning these forecasts and the rationale embedded in the policy decisions taken by the central bank. Thus, a high degree of transparency embodied in high quality reports is often considered essential for establishing and maintaining the credibility of the framework (Svensson 2002). Consequently, inflation targeting central banks typically publish a regular Inflation or Monetary Policy Report (MPR) with the aim of making monetary policy transparent, comprehensible and predictable, and hence, credible as far as possible (Table 1).

In fact, transparency and communication has become a *sine qua non* for effective and successful conduct of monetary policy in recent years; even non-IT central banks such as the Federal Reserve now communicate through an MPR.

In India, based on the recommendations of the Expert Committee, the monetary policy framework began a phased transition to a flexible inflation targeting (FIT) framework from the first bi-monthly monetary policy statement in April 2014. Along with this transition, a half-yearly MPR has been introduced since September 2014. Consequent to the agreement signed between the Government of India and the Reserve Bank in February 2015 to formally adopt a FIT framework, it has become mandatory for the Reserve Bank to publish a six-monthly report explaining the sources of inflation and forecasts of inflation for six to 18 months ahead. The first report after the agreement was published as the second MPR in April 2015. As with other IT countries, the endeavour is to make MPR a prominent communication tool to bring about transparency and credibility in the conduct of monetary policy in India. The MPR brings out the assessment of the Reserve Bank's staff on the macroeconomic outlook based on a forward looking assessment and on model-based forecasts along with baseline assumptions and balance of risks, which form the basis for its monetary policy stance. The report also carries a detailed assessment of economic and financial conditions which inform the overall macroeconomic outlook.

References:

Svensson, L.E.O. (2002), 'Monetary Policy and Real Stabilization', in 'Rethinking Stabilisation Policy: A Symposium by the Federal Reserve Bank of Kansas City,' MO: Federal Reserve Bank for Kansas City

Reserve Bank of India (2014), *Report of the Expert Committee to Revise and Strengthen the Monetary Policy Framework*, January.

Table1: Inflation targeting countries and objectives of the Monetary Policy Report

Countries	*Report*	*Main Objective*	*Countries*	*Report*	*Main Objective*
1	2	3	4	5	6
Armenia	IR	Transparency	**New Zealand**	MPS	Communication
Australia	SMP	Transparency	**Norway**	MPR	Communication
Brazil	IR	Transparency	**Peru**	IR	Communication
Canada	MPR	Transparent communication	**Philippines**	IR	Transparency
Chile	MPR	Transparent communication	**Poland**	IR	Communication
Colombia	IR	Transparency	**Romania**	IR	Transparency
Czech Republic	IR	Transparent communication	**Russia**	MPR	Transparency
Ghana	MPR	Transparency	**Serbia**	IR	Communication
Guatemala	MPR	Transparency	**South Africa**	MPR	Transparency
Hungary	IR	Transparency	**South Korea**	MPR	Communication
Iceland	Monetary Bulletin	Accountability	**Sweden**	MPR	Communication
Indonesia	MPR	Transparency and accountability	**Thailand**	MPR	Communication
Israel	MPR	Transparency	**Turkey**	IR	Communication
Mexico	Quarterly Report	Transparency	**Uganda**	MPR	Communication
Moldova	IR	Transparency	**UK**	IR	Communication

Source: Central banks' websites and IMF.
Note: SMP: Statement on monetary policy; MPS: Monetary policy statement, IR: Inflation report; MPR-Monetary Policy Report/ Review

more generally. Policy rate reductions, in January, March and June 2015 were consistent with this guidance.

Monetary Policy Transmission to Lending and Deposit Rates

III.24 The transmission of monetary policy is typically characterised by long, variable and uncertain time lags with asymmetric market responses to policy impulses in terms of magnitude and/or direction across segments in different phases of liquidity conditions. Furthermore, the transmission of policy rate changes to deposit and lending rates of banks is lagged and less complete relative to money market rates, reflecting the presence of structural rigidities in the credit market (Table III.1). Therefore, improving the efficacy of monetary policy impulses to their fullest effect remains incomplete even as some degree of pass through of rate reductions in the recent period has been translated into lending rates. The Reserve Bank announced a number of initiatives and measures during the year to incentivise banks to improve transmission at their end. Progress in this direction is expected to be seen going forward.

III.25 The improvement in liquidity conditions following the implementation of the revised liquidity

Table III.1: Asymmetry in Transmission Across Financial Markets in Different Phases of Monetary Policy Cycles

Items	Variation (Percentage Points)			
	Tightening Phase (March 19, 2010 to April 16, 2012)	Easing Phase (April 17, 2012 to July 15, 2013)	Tightening Phase (July 16, 2013 to Jan 14, 2015)	Easing Phase** (Since Jan 15, 2015)
1	2	3	4	5
Policy Rate (Repo Rate)	3.75	-1.25	0.75	-0.75
CRR	-1.00@	-0.75	0.00	0.00
Call Rate	4.98	-1.51	0.36	-0.21$
CBLO Rate	5.43	-2.34	2.14	-0.96
Market Repo Rate	6.12	-1.49	0.61	-0.37
91-Days Treasury Bill	4.53	-1.29	0.83	-0.90
3-Month CP Rate	4.24	-2.17	0.43	-0.96
3-Month CD Rate	4.36	-2.08	0.50	-0.98
5-Year Corporate Debt Yield	0.93	-0.71	-0.21	-0.16
10-Year Corporate Debt Yield	3.13	-1.02	-0.09	-0.43
2-Year G-Sec Yield	1.87	-0.35	0.26	-0.13
3-Year G-Sec Yield	1.34	-0.57	0.32	-0.10
5-Year G-Sec Yield	1.05	-0.84	0.20	-0.04
10- Year G-Sec Yield	0.64	-1.10	0.34	-0.05
Median Term Deposit Rate	**2.31**	**0.00**	**0.07**	**-0.39**
Median Base Rate*	**2.75**	**-0.35**	**0.25**	**-0.30**
WALR (Outstanding Loans)	**2.13**	**-0.44**	**-0.10**	**-0.17#**
WALR (Fresh Rupee Loans)	**-**	**-**	**0.13**	**-0.51#**

Source: Bloomberg and the Reserve Bank of India.
*: Base rate system was introduced from July 1, 2010. **: Data are till Aug 14, 2015.
@: CRR was cut to create the desirable liquidity conditions ahead of the repo rate cuts in the next easing phase.
- : Not Available. #: End-point relates to June 2015. WALR: Weighted average lending rate.
$: Including off-market deals effected by co-operative banks.
Note : (i) Policy rate, deposit and base rates are at end-month while money and bond market rates are the monthly average.
(ii) Data on WALR are provisional.

Table III.2: Deposit and Lending Rates of SCBs (Excluding RRBs)

(Per cent)

Month-end	Repo Rate	Term Deposit Rates		WALR	
		Median	WADTDR	Outstanding Rupee Loans	Fresh Rupee Loans
1	2	3	4	5	6
Mar-14	8.00	7.74	8.79	12.21	11.64
Jun-14	8.00	7.74	8.73	12.21	11.68
Sep-14	8.00	7.72	8.70	12.12	11.59
Dec-14	8.00	7.55	8.64	12.11	11.59
Mar-15	7.50	7.50	8.57	12.06	11.25
June-15	7.25	7.22	8.43	11.94	11.08
Aug 14,15	7.25	7.14	-	-	-
Variation (Percentage Points) (since Jan 15, 2015)	**-0.75**	**-0.39**	**-0.21**	**-0.17**	**-0.51**

-: Not available.
WADTDR: Weighted average domestic term deposit rate.
Note: Data on WADTDR and WALR are provisional.

management framework in September 2014 was reflected in a decline in deposit and lending rates of banks. The decline in deposit rates was, however, not fully reflected in the weighted average lending rates (WALR) of banks, indicating their efforts to maintain net interest margins (NIMs) in an environment characterised by weak credit demand and risk aversion amidst rising non-performing loans (NPAs). The WALR on fresh rupee loans sanctioned by banks declined by 51 bps to 11.08 per cent since the first round of reduction in the repo rate (Table III.2). WALR on outstanding rupee loans, however, declined by only 17 bps during the same period as the interest rates on loans disbursed earlier are reset with a time lag.

III.26 While the response of commercial banks to a reduction in the policy rate by 75 bps is still unfolding, the movement of lending rates across various sectors is uneven, presumably reflecting the differential risk assessment of banks (Table III.3).

III.27 The base rate system introduced in 2010 has been an improvement over the benchmark prime lending rate (BPLR) system, disallowing sanctioning of a large proportion of the loans at sub-prime rates. Banks are free to determine their lending rates based on cost of funds or any other relevant market based benchmark. Base rates have converged to a narrow range of 9.70-10.15 per cent for public sector banks (PSBs). However, the base rates are found to be sticky and impeding transmission of monetary policy.

Table III.3: Weighted Average Lending Rates of SCBs (Excluding RRBs)* - Select Sectors
(at which 60 per cent or more business is contracted)

(Per cent)

End-Month	**Agriculture**	**Industry** (Large)	**MSME**	**Infrastructure**	**Personal Loans**			
					Housing	**Vehicle**	**Education**	**Credit Card**
1	2	3	4	5	6	7	8	9
Mar-14	10.70	13.06	13.10	13.09	10.85	12.38	12.96	35.46
Jun-14	10.79	13.05	13.04	13.05	10.61	12.09	12.91	36.70
Sep-14	10.79	13.01	13.09	13.02	10.52	11.97	12.90	38.23
Dec-14	10.93	12.95	13.05	13.05	10.76	11.83	12.90	37.86
Mar-15	10.96	12.80	12.91	12.89	10.99	11.62	12.87	37.88
June-15	10.76	12.62	12.36	12.24	10.81	11.39	12.58	37.87
Variation (Percentage Points) (Jun15-15 over Jan-15)	**-0.17**	**-0.33**	**-0.69**	**-0.81**	**0.05**	**-0.44**	**-0.32**	**0.01**

*: Based on outstanding rupee loans.
MSME: Micro, Small, and Medium Enterprises

III.28 As highlighted in the Report of the Expert Committee, the sluggish transmission to credit markets reflects the interaction of several factors. The major factors impeding transmission include rigidities in re-pricing for fixed deposits, high volume of government borrowing, practice of yearly resetting of administered interest rates on small savings (including public provident fund) linked to G-sec yields, interest rate subventions, high level of NPAs and a significant presence of informal finance. There could also be risks emanating from a possible migration of deposits to alternative financial assets, as well as physical savings yielding higher expected real rates of return. Further, in the calculation of the base rate, the repo rate does not enter directly, operating only through the costs of wholesale funding which are sensitive to changes in the repo rate.

III.29 In an easing phase, banks tweak the spread over the base rate while pricing loans instead of changing the base rate itself. This is an opaque practice that leads to discrimination among new and old borrowers. The issue was highlighted by the Working Group on Pricing of Credit and accordingly in January 2015, banks were allowed greater operational flexibility to price credit with the freedom to revise the methodology every three years instead of every five years as was done earlier.

III.30 Moreover, to address the issue of arbitrary charging of spread, banks were advised: (a) to have a board-approved policy, delineating the components of spread charged to a customer; and (b) to ensure that the spread charged to an existing borrower (other than a consortium and multiple banking arrangements) does not increase, except on account of deterioration in the credit risk profile of the customer or change in the tenor premium. Going forward, these measures are expected to improve transparency and fairness in the credit pricing framework in India.

III.31 In its first bi-monthly monetary policy statement for 2015-16 announced on April 7, 2015, the Reserve Bank stated that the base rate calculated on the basis of a marginal cost of funds should be more sensitive to changes in policy rate. In order to improve the efficiency of monetary policy transmission, the Reserve Bank will encourage banks to move to a marginal cost-of-funds-based determination of their base rates. Once the Financial Benchmark India Pvt. Ltd., an independent benchmark administrator, starts publishing various indices of market interest rates, the Reserve Bank will encourage banks to use the indices as an external benchmark for pricing bank products.

Projected and Actual Trajectories of Growth and Inflation

III.32 The Reserve Bank's growth and inflation projections are prepared under considerable uncertainty and shifting balance of risks. While common assumptions (covering some of the key determinants of inflation and growth) are used to generate the baseline projected paths, upside/ downside risks and the resultant likely deviations of the inflation and growth paths from the baseline are presented as part of the assessment of balance of risks in the MPRs.

III.33 The actual inflation path during Q4 of 2014-15 turned out to be significantly below what was indicated in the September 2014 MPR in view of the large changes in underlying conditions which were widely unanticipated. Two major factors, *inter alia*, necessitated this revision. First, in February 2015, the CSO updated the all India CPI-Combined series base from 2010=100 to 2012=100. As per CSO, inflation on an average in 2014 in the new series was 50 bps lower than what was recorded in the old series. The divergence varied from (+) 0.04 to (-) 1.11 percentage points in different months. Second, crude prices registered a sharp

fall between September 2014 and January 2015 and, on an average, crude oil prices were 36 per cent lower than what was considered as part of the baseline assumptions in the MPR of September 2014. The release of the new series on national accounts by the CSO in January 2015 was another major exogenous shock to the Reserve Bank's projections. Growth projection for 2014-15 was retained unchanged at 5.5 per cent since January 2014 till the revised national accounts numbers were released by the CSO in January/February 2015. The stronger than anticipated growth momentum in the CSO data (new base) relative to the data as per the old base was the key factor behind the deviation of the Reserve Bank's projected output growth for 2014-15 from CSO's estimates. The Reserve Bank is continuously engaged in refining and modernising its analysis and forecasting capacities so as to improve precision and stability. These efforts notwithstanding, improving projection performance in the face of major data revisions and large magnitudes of supply/external shocks will remain a key challenge for forward looking conduct of monetary policy.

Anchoring Inflation Expectations

III.34 The monetary policy framework of the Reserve Bank aims at anchoring inflation expectations as close as possible to the target. During 2014-15, anchoring expectations, especially breaking the rigidities that had set in from the experience of 2009-13 turned out to be a major challenge.

III.35 Large divergence between the wholesale price index (WPI) and CPI inflation in the first half of 2015 also posed a major challenge for monetary policy communication, given the formal adoption of CPI-C inflation jointly by the government and the Reserve Bank to set the inflation target against the backdrop of growing expectations of a highly accommodative monetary policy stance based on deflationary WPI. The Expert Committee had examined all the policy relevant issues involving WPI and CPI, and also reviewed the choice of a relevant measure of inflation in other advanced and emerging economies for the conduct of monetary policy. The coverage of items in the two price indices – CPI-C and WPI - is different. The weight of food in the CPI-C basket is higher at about 46 per cent, as against about 24 per cent in WPI. Nearly a quarter of CPI-C is composed of services whereas this component is not covered in WPI. CPI-C, therefore, is the most representative of available measures of price indices in India. The decline in WPI in the last 9 months has been driven by the sharp fall in global commodity prices, including crude petroleum and industrial raw materials, such as metals and chemicals. Generally, divergent inflation trends as per different price indices do not persist for long. Even if such divergences persist, anchoring the expectations of all agents in the economy as per the CPI-C inflation target will be important, even though divergent trends may entail differential welfare effects on different sections of the population depending on their own consumption baskets and range of inputs used in the production processes.

Uncertain and Time Varying Macro-dynamics

III.36 Modern day monetary policy operating frameworks focus on price stability under dynamic liquidity and financial conditions. Macro-financial linkages can, however, change significantly, and the conduct of monetary policy should recognise this and respond in a timely manner. An assessment of the natural real rate of interest assumes critical importance in this context under the explicit recognition that it is not static and may vary over time. Model-based estimates of natural real interest rate for India in Q4 of 2014-15 suggest a range of 0.6 per cent to 3.1 per cent, with +/- one standard error of about 50 bps (Box III.2).

III.37 There were, however, some challenges that were not fully addressed during 2014-15. First,

Box III.2
Time-varying Natural Interest Rate in India

The natural rate of interest propounded by Wicksell (1898) has become a standard reference point in assessing the monetary policy stance of central banks since the 1990s, particularly after the growing popularity of flexible inflation targeting (FIT) and the use of Taylor type interest rate rules. While it was originally conceptualised as an equilibrium real rate at which desired saving equals desired investment, in its modern day formulation it is equated with the real rate of interest that is consistent with a zero output gap and inflation stable around its target over the business cycle. In any Taylor rule type assessment of a monetary policy stance, the natural real interest rate is often assumed as constant, even though in reality it may vary over time in response to supply and demand side shocks, which could be large and persistent.

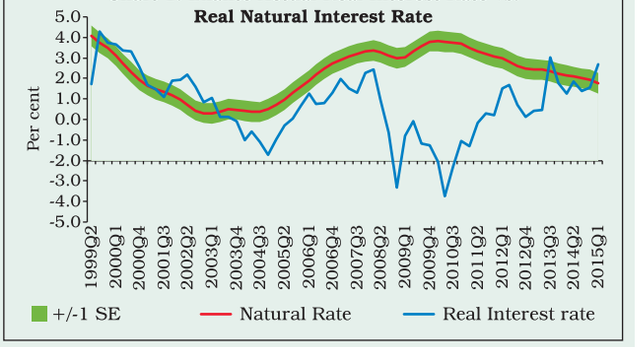
Trend changes in productivity, population growth and households' time preference in terms of consumption and saving decisions over their life cycle have been the conventional determinants of the natural real interest rate. The global saving glut that preceded the global financial crisis had already imparted a significant downward pressure to global natural real interest rates. After the global crisis, the collapse of investment demand and subsequent deleveraging by corporations and households seem to have amplified the downward pressure on natural real interest rates in advanced economies (AEs).

Estimates for the US economy suggest that the natural real interest rate which declined from about 3.5 per cent in 1990 to about 2 per cent in 2007, fell sharply to zero over the recession years of 2008 and 2009, and since then remained near zero for five years up to 2014 (Williams 2015). Secular stagnation is widely believed to keep the natural real interest rate near zero in the medium-run.

In India there has been a significant fall in total factor productivity after the global crisis which is a major structural factor pushing down the natural real interest rate. The sharp deceleration in the annual rate of increase in gross fixed capital formation over the six-year period 2009-10 to 2014-15 relative to the pre-crisis phase of high growth reflects the change in time preference of entrepreneurs, that is, to wait and delay new investment projects in the midst of elevated uncertainty. Households, in turn, had to face persistently high inflation in the midst of a weakening outlook for employment and income growth, and their preference for inflation hedges in the form of gold and real estate led to a decline in financial savings. Favourable demography and the associated shift in the pattern of demand for credit and saving behaviour over life-time to smooth consumption could also alter the natural rate.

When so many factors potentially alter the natural rate, the time varying natural rate for India, estimated using the Kalman filter (Laubach and Williams 2003), has moved in the range of 0.5 per cent to 4 per cent over time, and seems to have declined since 2010 gradually to about 2 per cent now (Chart 1). The estimation of the natural rate of interest is highly sensitive to the underlying model, choice of variables, assumptions used for approximating potential output, the representative measure of inflation expectations and even the inflation target (that is, 6 per cent *vis-à-vis* 4 per cent). Alternative estimates of the risk free natural real interest rate accordingly suggest a range of 0.6 per cent to 3.1 per cent for Q4 of 2014-15. Uncertainty about the true value of the natural rate is a challenge for the conduct of monetary policy.

Chart 1: Exante Actual Real Interest Rate vs. Real Natural Interest Rate



References:

Williams, John C. (2015), 'The Decline in the Natural Rate of Interest', Federal Reserve Bank of San Francisco, March 2.

Laubach, Thomas and John C. Williams (2003), 'Measuring the Natural rate of Interest', *Review of Economics and Statistics*, 85(4), November.

efforts for a better assessment of intra-day liquidity conditions to support more effective fine-tuning of liquidity operations were handicapped by the uncertainties involved in predicting government cash balances. Second, the capacity to assess the impact of external spillovers on the domestic economy was also limited owing to the suddenness characterising various international developments, particularly, blurred assessments worldwide on the magnitude and timing of these events. Third, the transmission of repo rate cut to deposit and lending rates remained incomplete, and credit growth

continued to be sluggish in an easing cycle of monetary policy. Besides the several factors mentioned earlier and the various steps taken by the Reserve Bank, the lower share of wholesale funding of banks in India has also partly hampered effective transmission of the policy rate to deposit and lending rates. Bank funding in India has a preponderance of retail deposits/savings that inhibits a seamless moderation in the cost of funds in response to reductions in the policy rate.

Agenda for 2015-16

III.38 In the context of the agenda set for 2014-15, the stance of monetary policy on the back of conducive supply management and the government's fiscal measures aided by favourable commodity prices helped in achieving sustained and significant disinflation to levels well below the set trajectory. The new liquidity management framework contributed to lower volatility in money market rates while allowing these rates to be determined through market forces in response to policy repo rate signals and day-to-day normal and fine-tuning liquidity operations. Two macro models were institutionalised for generating forecasts and scenario analyses, and the publication of two bi-annual MPRs contributed to strengthening communication with enhanced transparency on key aspects of the forward looking new monetary policy framework.

III.39 Going forward, the focus of the Reserve Bank's monetary policy stance during 2015-16 will be on fostering a gradual and durable disinflationary process towards the target of below 6 per cent by January 2016 in order to achieve the centrally projected rate of 4 per cent by the end of 2017-18. At the same time, the efficacy of the monetary policy transmission mechanism needs to improve since the pass-through of recent cuts in policy rate to the bank lending rate has been partial, reflecting constraints in transmission under the existing base rate system. Identifying the impediments in pass-through and implementing an alternative method, such as marginal cost based credit pricing or identifying an appropriate benchmark for the bank lending rate will be a priority for the Reserve Bank. In this regard, it is imperative to develop market based benchmarks by developing the term segment of the money market. Thus, liquidity support may have to be progressively provided through regular auctions of longer term repos with reduced dependence on overnight fixed-rate liquidity support. While doing so, it will also be important to dampen deviations of WACR and other money market rates such as CBLO rates from the repo rate in a narrow range. The Reserve Bank will continue to explore and augment its instruments of liquidity management, including standing deposit facility for absorption of surplus liquidity, as recommended by the Expert Committee.