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Indian Monetary Policy
in the Time of Inflation Targeting and Demonetization

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**Indian Monetary Policy
in the Time of Inflation Targeting and Demonetization**

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Abstract: This paper provides a narrative of Indian monetary policy since the North Atlantic Financial Crisis (NAFC) in the mid-2008 till the current period. The period 2009-13 was dominated by the joint monetary and fiscal stimuli of the Indian authorities prompted by the NAFC. These, along with some structural shocks and a hands-off attitude in forex market intervention, could have had their role in rising inflation and external account instability (leading up to the taper tantrum episode). In such a backdrop, after considerable discussion during 2013-2014, a Monetary Policy Framework Agreement (MPFA) was signed between the Government of India and the Reserve Bank of India (RBI) on February 20, 2015 that formally adopted flexible inflation targeting (IT) in India. Under the new statutory IT framework, a six-member MPC met for the first time on October 3 and 4, 2016. While the IT regime so far has coincided with significant reduction in inflation in India, the atmosphere has been benign. Now that fuel prices have started moving in the north-east direction, the government has proposed a revised framework for the MSP in the Union Budget for 2018-19 and fiscal slippages have started happening, it remains to be seen whether IT can wither more rough weather in the days to come. Finally, in recent years, Indian monetary policy has been dominated by two significant events: the emergence of significant deterioration of Indian public sector balance sheets, and the demonetization episode in November 2016. Monetary policy in both of these periods wrestled with fashioning an appropriate strategy for managing the impossible trinity.

Key words: Monetary Policy, India, Inflation Targeting, Demonetization, Capital Inflows

JEL Classification: E52, E58, O53

Indian Monetary Policy in the Time of Inflation Targeting and Demonetization

1. Introduction

The story of Indian monetary policy and financial sector reforms from the early 1990s to 2009 has been chronicled in some detail by both the authors.¹ During this period, a financially repressed economy, characterised by high statutory pre-emption, sectoral credit targets, administered interest rates and fiscal dominance, traversed a sea change in its financial sector structure, conduct and performance through a comprehensive reform process. As financial repression was progressively dismantled, interest rates deregulated, the banking sector liberalised, financial and money markets developed and fiscal dominance reduced, the Indian financial sector emerged as a market oriented modern system by the mid-2000s.

Monetary policy reform was a key element of this process. Till about the mid-1980s, monetary policy in India was more appropriately characterised as “credit planning”, whereby the main objective was to channel credit at cheap administered rates for the developmental needs of the economy with public sector banks acting as the key intermediaries. Inflation was dominated by structural shocks like flood, drought or changes in oil prices. The first break in monetary policy formulation came about in the mid-1980s when monetary targeting was adopted, wherein the targeted path of monetary expansion was designed to fund the '*desired* growth of GDP in nominal terms', i.e., growth after accounting for tolerable inflation. Though the Reserve Bank of India (RBI) had introduced a number of money market instruments in the late 1980s, together with deregulation of interest rates on existing money market instruments, these were mostly at the periphery. Thus, in the absence of a well-functioning money market and predominance of RBI credit to the central government, the primary tool of monetary policy was the traditional cash reserve ratio (CRR) that aimed at controlling overall money supply to contain inflationary pressures while also keeping in mind the objective of providing bank credit to commercial sector. Besides, fiscal dominance through significant automatic monetisation of budget deficits deprived the RBI of operational autonomy.

Monetary policy started to become operationally independent when the practice of automatic monetisation through creation of ad hoc treasury bills was completely eliminated in April 1997². Just as monetary targeting had lost favour in advanced economies, its effectiveness in India began to be questioned in the mid-1990s. Consequently, the RBI announced in April 1998 that it would switch to a “multiple indicators approach”, wherein “besides broad money, which remains as an information variable, a host of macroeconomic indicators including interest rates or rates of return in different markets (money, capital, and government securities markets) along with such data as on currency, credit extended by banks and financial institutions, fiscal position, trade, capital flows, inflation rate, exchange rate, refinancing and transactions in foreign exchange available on high frequency basis are juxtaposed with output data for drawing policy perspectives in the process of monetary policy formulation” (Mohan, 2008).

The monetary policy operating framework was simultaneously modernized so that the money market could operate effectively. A Liquidity Adjustment Facility (LAF) was set up in 2000, which enabled the RBI to use the repo and reverse repo rates as the key policy signalling rates providing a corridor for overnight money market rates. This combination of

¹ See Mohan (2008) for a summary. Mohan (2009), Mohan (2011) and Ray (2011) provide detailed narratives of the reform process design and implementation over this period.

² Later in 2003, with the passing of the Fiscal Responsibility and Budget Management Act (FRBM) RBI is now not legally allowed to lend directly to the government.

the multiple indicator approach and monetary operations through LAF has constituted the operating framework of Indian monetary policy ever since late 2013.

In this paper we chronicle Indian monetary policy since the North Atlantic Financial Crisis (NAFC) in the mid-2008 till the current period.^{3,4} The period 2009-13 was dominated by the joint monetary and fiscal stimuli prompted by the NAFC, and their consequences in rising inflation and external account instability leading up to the taper tantrum episode. Indian monetary policy after 2013 has been dominated by three significant events: the adoption of inflation targeting in 2014, the emergence of significant deterioration of Indian public sector balance sheets, and the demonetization episode in November 2016. Policy in both of these periods wrestled with fashioning an appropriate strategy for managing the impossible trinity.

This paper is an account of some of these issues and shocks concerning Indian monetary policy since the emergence of the NAFC in late 2008. For ease of expository convenience, the rest of the paper is organized as follows. Section 2 gives a perspective of monetary policy making in India till the NAFC. Section 3 is devoted to a discussion of Indian monetary policy after the NAFC. The evolution and adoption of India's IT regime is taken up in Section 4. Section 5 is devoted to three contemporary challenges of Indian monetary policy, viz., (a) demonetization; (b) spurt of non-performing assets and (c) strategy of intervention in the forex market. Section 6 concludes.

2. Monetary Policy in India in the New Millennium till the NAFC

The new millennium witnessed the introduction of modern monetary policy making in India whereby monetary policy is signalled through periodic modification of policy interest rates. The RBI's operating framework moved to the management of daily excess (or shortage of) liquidity in the money market: primarily through open market operations, outright or reverse repos/repos. This was implemented through operation of the Liquidity Adjustment Facility (LAF) in 2000:

- Under the announced repo and reverse repo rates RBI carries out repo/reverse repo operations, thereby anchoring overnight money market rates within this corridor.
- The LAF has settled into a fixed rate overnight auction mode since April 2004.
- LAF operations continue to be supplemented by access to the RBI's standing facilities linked to the LAF repo rate – export credit refinance to banks and standing liquidity facility to the primary dealers.⁵

A major challenge of monetary policy during this period was the flood of capital inflows into India resulting from the push of accommodative monetary policy in the advanced economies (AEs) and pull of the fast growing Indian economy (Table 1). To manage the sterilization needed to handle the liquidity impact of such inflows, a major monetary policy innovation in the Indian context was introduction of the Market Stabilization Scheme (MSS) in early 2004. Under this scheme, "The Government agreed to allow the RBI to issue Treasury bills and dated securities under a new Market Stabilization Scheme (MSS) where the proceeds of MSS bonds are held by the government in a separate identifiable cash

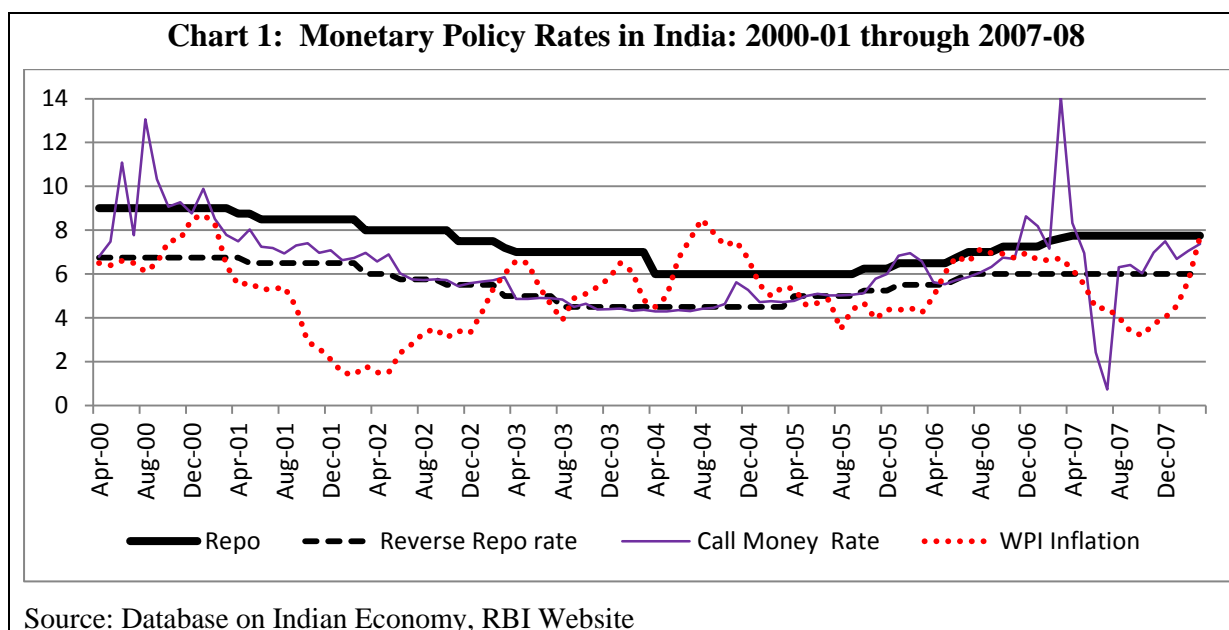
³ Our choice of the term NAFC, in contrast to the more popular usage of global financial crisis (GFC), has been conscious and has been prompted by (a) the origin of the crisis; and (b) its uneven spread across the globe beyond the North Atlantic.

⁴ Mohan (2008) has covered the period up to 2008.

⁵ The LAF has helped to stabilize overnight call rates within a specified corridor. The LAF is also effective in modulating liquidity in the economy, which is affected continuously by changes in government cash balances, and by the volatility in excess capital flows.

account maintained and operated by the RBI...the amounts credited into the MSS account are appropriated only for the purpose of redemption of these instruments" (Mohan, 2008).⁶ Apart from these instruments, India was one of the earliest users of macro prudential measures so as to attain the objective of financial stability. Continuous institutional deepening and market development have been the major features of financial sector development and reforms in monetary policy in India.

What were the outcomes of monetary policy in India during this period? Chart 1 plots the relevant monetary policy rates along with call money rate and inflation (as measured by wholesale price index, WPI) during 2000-01 through 2007-08.⁷



In this context it is instructive to turn to Mohan (2008) who noted:

"In the final analysis, the efficacy of monetary policy has to be evaluated in terms of its success or otherwise in achieving the ultimate goals of price stability and moderation in the variability of the growth path. In terms of the variability of real GDP growth, India outperformed most EMEs and developed economies during the 1990s. While variability of output growth has increased modestly during 2000–2007, India continues to experience stability in growth conditions along with some developed countries and EMEs that have adopted inflation targeting as a common feature. Of course, the stability in the growth conditions cannot be attributed entirely to the conduct of monetary policy; it is also attributable to other key developments, such as better inventory management by firms, growing use of information technology, rising share of the services sector activity in output, and overall stability in the policy framework. Furthermore, it is important to note that India's growth is largely driven by domestic consumption.In terms of inflation volatility, the Indian experience has been more rewarding. Over the 1990s and up to the recent period, variability of inflation in India has been low, attesting to the effectiveness of monetary policy in reducing the inflation-risk premium. During this period, improvement in the fiscal scenario has also contributed towards the moderation in inflation and inflation expectations. The

⁶ These securities have all the attributes of existing Treasury bills and dated securities and indistinguishable from regular government securities in the hands of the creditors. They are serviced like any other marketable government securities but their interest costs are shown separately in the budget. At the same time, there is an increase in the holdings of the RBI's foreign currency assets, which leads to higher earnings for the RBI and these are mirrored in higher surplus profit transfers to the central government from the RBI. Thus, the interest expenses incurred by the government on account of issuances under the MSS are offset by higher transfers from the RBI.

⁷ Indian financial year spans over April of the previous year to March of the current year, i.e., 2000-01 indicates the period April 2000 through March 2001.

significant turnaround in the inflation outcome reflected the improved monetary–fiscal interface during this period" (Mohan, 2008, pp. 230-232).

In this backdrop the rest of paper presents a narrative of the Indian monetary policy since the NAFC in end 2008.

3. Monetary Policy in the aftermath of the NAFC in India (2008 - 2013)

It is important to recall the economic and monetary context that existed in India when the NAFC broke in 2008. The initial impact of the crisis on the Indian economy was rather muted. Following the cuts in the US Fed Funds rate in August 2007, there was a massive jump in net capital inflows into the country, amounting to almost 10 per cent of GDP in 2007-08. Despite the measures taken by the Reserve Bank to sterilise the liquidity impact of consequent large foreign exchange purchases in 2007-08, inflationary pressures emanated from both strong domestic demand and elevated global commodity prices.⁸ The concern at that time was clearly with elevated inflation.

Whereas the direct effect of the sub-prime crisis on Indian banks/financial sector was almost negligible because of limited exposure to complex derivatives and other macro prudential policies put in place by the Reserve Bank, some elements of stress did emerge on both Indian financial markets and real sector. Following the Lehman failure in September 2008, the external environment witnessed a classic sudden stop. After the unprecedented \$108 billion net capital inflows in 2007-08, they fell to just \$ 9 billion during 2008-09. While foreign direct investment flows exhibited resilience, access to external commercial borrowings and trade credits was rendered somewhat difficult. Furthermore, as in the case of other major emerging market economies (EMEs), there was a sell-off in domestic equity markets by foreign portfolio investors reflecting deleveraging in their home markets. This led to large capital outflows during September-October 2008, with concomitant pressures in the foreign exchange market necessitating substantial usage of foreign exchange reserves by the RBI, and a consequent squeeze on domestic rupee liquidity.

Consistent with global economic impact of the NAFC through trade and financial channels, the Indian economy also witnessed moderation in growth in the second half of 2008–09 after consistent high growth in the preceding five years (8.8 per cent per annum). Industrial output exhibited a decline in Q4 2008-09 for the first time since the mid-1990s.

To ease both domestic and foreign exchange liquidity contraction the RBI announced a series of measures starting mid-September 2008, encompassing both monetary policy and proactive liquidity management measures.⁹ First, monetary policy was eased substantially: the repo rate was reduced from 9 to 4.75 per cent and the reverse repo rate from 6 to 3.25 per cent between August 2008 and April 2009. The effective policy rate actually swung from 9 to 3.25 per cent as the economy moved to an excess liquidity from a shortage situation. Second, a range of measures were taken between October 2008 and April 2009 to forestall any potential liquidity pressures throughout the financial system. The RBI adopted both conventional measures, such as reduction of the cash reserve ratio (CRR), as well as a range of unconventional measures. The following may be mentioned in particular:

⁸ Press Release, Macroeconomic and Monetary Developments First Quarter Review 2008-09, July 28, 2008, available at https://www.rbi.org.in/scripts/BS_PressReleaseDisplay.aspx?prid=18883 (accessed in February 2018).

⁹ The advent and transmission of NAFC to India almost coincided with a change of guard in both the Reserve Bank of India, and the Ministry of Finance. D Subbarao took over from Y. V. Reddy as RBI Governor on September 6, 2008, and Pranab Mukherjee became the Finance Minister of India on January 24, 2009, succeeding P Chidambaram who had been in office since mid-2004.

Enhancement of broad market liquidity

- Significant reduction in the CRR from 9 per cent to 4.75 per cent (as on April 21, 2009);
- Unwinding the market stabilisation scheme (MSS) securities.

Special unconventional facilities for specified financial institutions

- Introduction of a special repo window under the liquidity adjustment facility (LAF) for banks for on-lending to mutual funds, non-banking financial companies (NBFCs) and housing finance companies (HFCs);
- Institution of a special purpose vehicle (SPV) set up to provide liquidity support to non-banking financial companies; Introduction of a special refinance facility that banks can access without any collateral;

Facilities for forex liquidity

- Substantial forex market intervention through use of foreign exchange reserves.
- Upward adjustment of the interest rate ceilings on different types of foreign currency non-resident deposits;
- Relaxation of the external commercial borrowings regime,
- Allowing NBFCs/HFCs access to foreign borrowing and allowing corporates to buy back foreign currency convertible bonds; and
- Institutions of a rupee-dollar swap facility for banks with overseas branches.

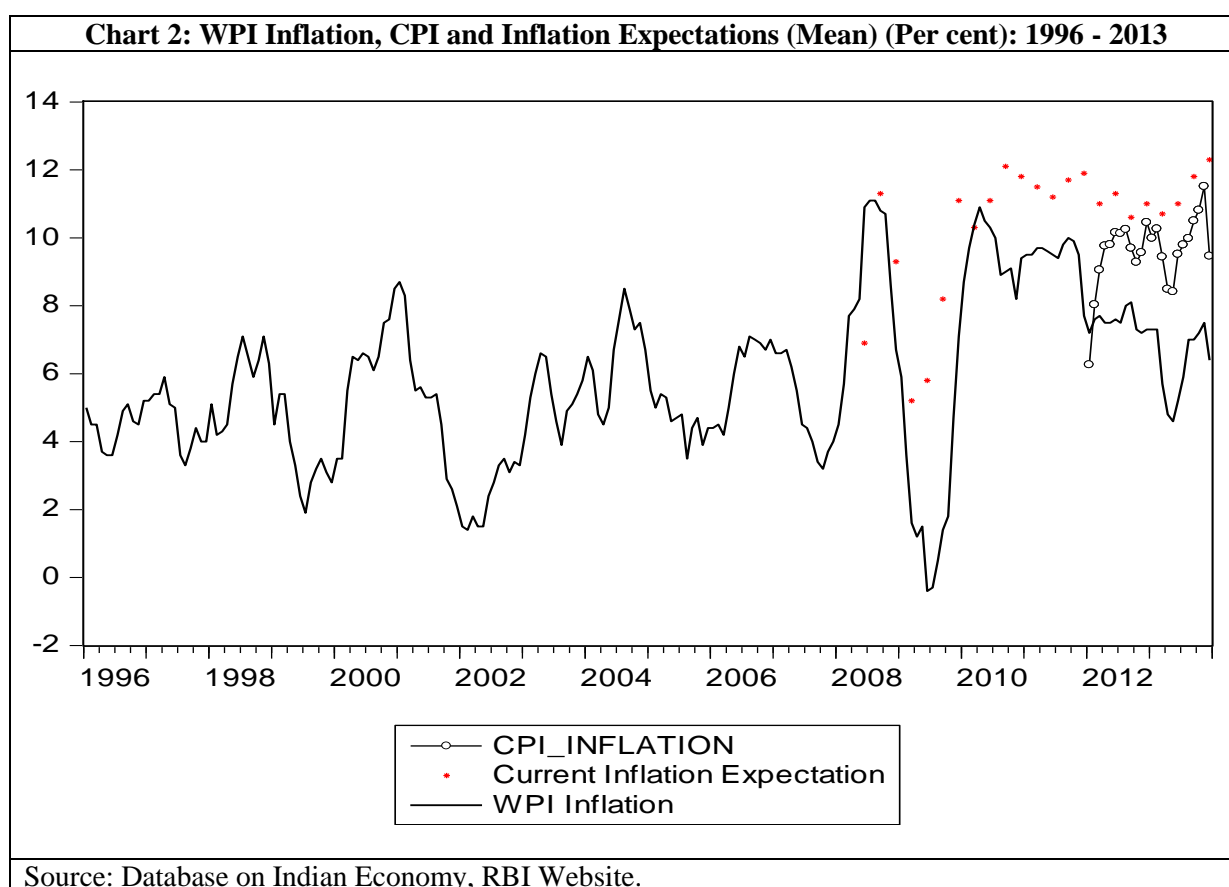
These measure resulted in augmentation of potential liquidity of over Rs.5.85 trillion (Table 1), thereby easing the liquidity position (possibly excessively) starting mid-November 2008 and injecting confidence in domestic financial markets.¹⁰

Table 1: Liquidity Injection/ Availability during September 2008 - September 2009		
Measure/Facility	Amount (Rs. Billion)	% of GDP (2008-09)
1. CRR Reduction	1,600	2.9
2. Unwinding/Buyback/De-sequestering of MSS Securities	1,590	2.9
3. Open Market Operations (purchases) *	1,041	1.9
4. Term Repo Facility	600	1.1
5. Increase in Export Credit Refinance	223	0.4
6. Special Refinance Facility for SCBs (Non-RRBs)	385	0.7
7. Refinance Facility for SIDBI/NHB/EXIM Bank**	160	0.3
8. Liquidity Facility for NBFCs through Special Purpose Vehicle @	250	0.4
9. Total (1 to 8)	5,850	10.5
Memo: Statutory Liquidity Ratio (SLR) Reduction	400	0.7
* Includes Rs575 billion of OMO purchases against the proposed OMO purchases of Rs.800 billion during the first half of 2009-10.		
**: SIDBI: Small Industrial Development Bank of India; NHB: National Housing Bank of India.		
@ Includes an option of Rs.50 billion.		
Source: Reserve Bank of India (2010): Report on Currency & Finance, 2008-09.		

¹⁰ By October 2009 a process of exit from many of these unconventional measures had started. The statutory liquidity ratio (SLR), which was reduced from 25 per cent of demand and time liabilities to 24 per cent, was restored to 25 per cent. The limit for export credit refinance facility, which was raised to 50 per cent of eligible outstanding export credit, was returned to the pre-crisis level of 15 per cent. Besides, the two non-standard refinance facilities: (a) special refinance facility for scheduled commercial banks; and (b) special term repo facility for scheduled commercial banks (for funding to mutual funds, non-banking financial companies, and housing finance companies) were also discontinued. See, RBI's *Second Quarter Review of Monetary Policy for the Year 2009-10* for details (available at <https://www.rbi.org.in/scripts/Annualpolicy.aspx>).

In response to the fiscal and monetary stimuli put in place, and in contrast to the prevailing pessimistic global outlook, real Indian GDP growth recovered in 2009-10 and 2010-11 to 8.6 and 8.9 per cent respectively. However, this strong recovery started getting mirrored in rising inflation: initially in food inflation (by end-2009) followed by underlying inflation by April 2010. Elevated international commodity prices, domestic problems related to the availability of select domestic food items (pulses and other protein items), increasing administered food grain prices, and enhanced rural wage growth resulting from employment programmes¹¹, contributed to these inflationary pressures (e.g., Khundrakpam, 2008; Joshi and Acharya, 2011; Kapur, 2013; Patra & others, 2014; Ball & others, 2014).

It is useful to examine the inflationary trends over a relatively longer period (Chart 2). Inflationary pressures had begun to emerge just before the NAFC but then reversed immediately after the crisis. Inflation expectations responded in like fashion but became persistently high only after early 2010.¹²



As inflationary pressures became increasingly evident monetary policy was tightened gradually from April 2010 to late 2013 (Chart 3a and 3b). However, the pace of tightening was probably too gradual, as real policy rates remained in negative territory and monetary accommodation thus continued till early 2013. In contrast to the rather benign period of

¹¹ Under the Mahatma Gandhi National Rural Employment Guarantee Act.

¹² The RBI has been conducting Inflation Expectations Survey of Households (IESH) on a quarterly basis since September 2005. The Survey seeks qualitative responses from households on price changes (general prices as well as prices of specific product groups) in the next three months as well as in the next one year and quantitative responses on current, three-month ahead and one-year ahead inflation rates. The results of this Survey are being used as one of the important inputs to the monetary policy formulation.

relatively low inflation (and muted expectations) during the previous 15 years or so, CPI inflation and inflation expectations became elevated, reaching near double digits between 2010 and 2013. This inflation process quickly became generalised as strong demand pressures along with rising input costs, through wages and raw-material prices, quickly transmitted to output prices of goods and services leading to sharp increases in underlying inflation (Table 2) (Benes & others, 2016). This extended period of high inflation and inflation expectations contributed to the adoption of inflation targeting in 2014.

An important criticism of monetary policy of this period is whether Indian monetary expansion during 2008 and 2010 was consistent with the Indian economic conditions of the time or whether it was influenced excessively the global bandwagon of expansionary monetary and fiscal policy. Given that the Indian banking system had little exposure of the so-called subprime toxic assets, and that domestic consumption continued to play a significant role in demand generation in India, such criticism cannot be rejected.

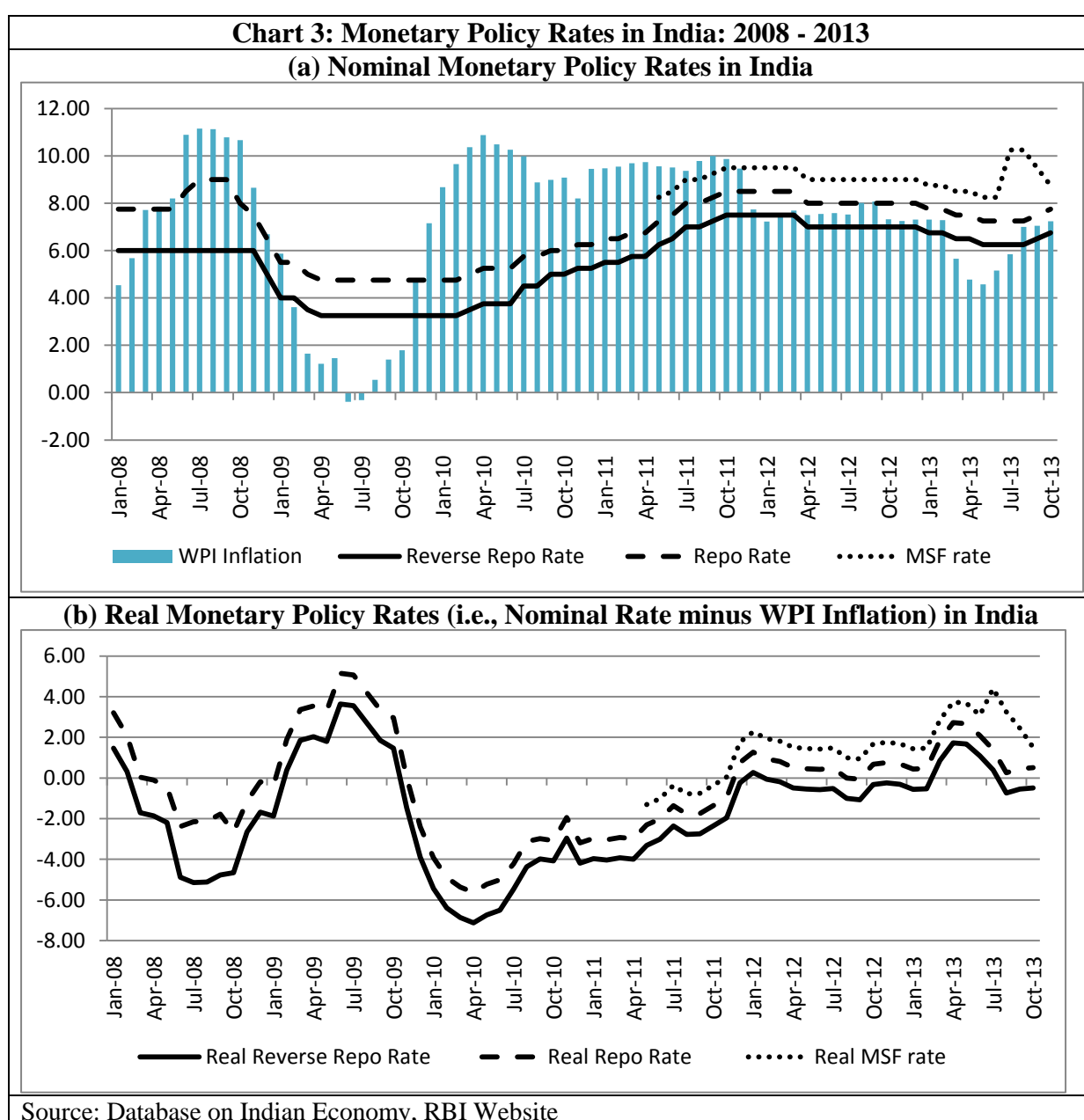


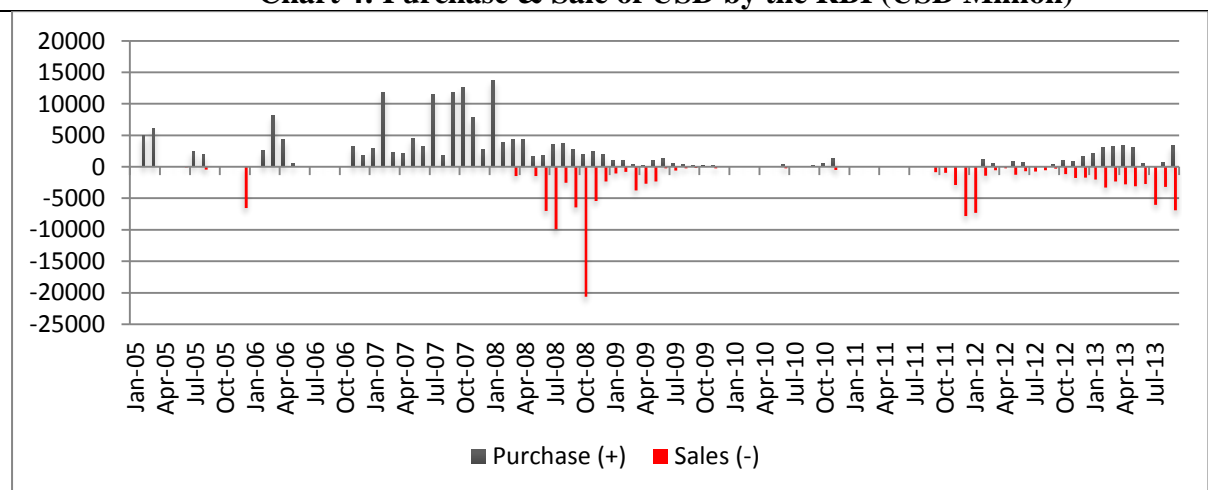
Table 2: Inflation Rates based on Wholesale Price Index (2004-05 = 100) (Per cent per annum)

	All Commodities	Primary Articles	Food Articles	Non-Food Articles	Fuel and Power	Manufactured Products
2005-06	4.4	4.3	5.4	-3.3	13.6	2.4
2006-07	6.6	9.6	9.6	5.8	6.5	5.7
2007-08	4.7	8.3	7.0	11.9	0.0	4.8
2008-09	8.1	11.0	9.1	12.9	11.6	6.2
2009-10	3.8	12.7	15.3	5.5	-2.1	2.2
2010-11	9.6	17.7	15.6	22.3	12.3	5.7
2011-12	8.9	9.8	7.3	9.6	14.0	7.3
2012-13	7.4	9.8	9.9	10.5	10.3	5.4
2013-14	6.0	9.8	12.8	5.6	10.2	3.0

Source: Database on Indian Economy, RBI Website (accessed February 2018).

External Management

There was a significant change during 2009-2013 in the RBI's capital account management and foreign exchange market intervention policies. The RBI seems to have practised a hands-off approach during this period (Chart 3) even though there was no announced change in Indian exchange rate policy.¹³ The results can be seen in Chart 4: both the nominal and real exchange rates appreciated, accompanied by a widening trade and current account deficit until late 2011, but there was no corresponding foreign exchange intervention. This hands-off approach to forex market intervention by the RBI during this period was also accompanied by loosening of restrictions on foreign portfolio investment in the domestic government securities and corporate debt markets: with falling global interest rates debt portfolio inflows amounted to between 1.5 and 2 per cent of GDP in 2012 and 2013, until the taper tantrum. These flows added to the upward pressure on the exchange rate in the absence of intervention.

Chart 4: Purchase & Sale of USD by the RBI (USD Million)

Source: Database on Indian Economy, RBI Website (accessed February 2018).

¹³ This policy is best captured in following statement of Governor Janan, “RBI does not have a fixed ‘target’ for the exchange rate which it tries to defend or pursue over time; RBI is prepared to intervene in the market to dampen excessive volatility as and when necessary; RBI’s purchases or sales of foreign currency are undertaken through a number of banks and are generally discrete and smooth; and market operations and exchange rate movement should, in principle, be transaction-oriented rather than purely speculative in nature.” (Janan, 2003).

The RBI finally changed its intervention strategy after being bitten by the taper tantrum which also coincided with a change of guard in RBI with Raghuram Rajan taking over as RBI Governor on September 5, 2013.

The appreciating exchange rate, accompanied by high domestic demand, and loosening of restrictions on the import of gold into India, all contributed to continuing deterioration in the current account, and consequent loss of confidence. India then got included in the “fragile five” during the “taper tantrum”. As capital outflows from India accelerated on account of both debt and equity,¹⁴ (though predominantly from the recently opened domestic debt markets) the rupee-US dollar (INR-USD) exchange rate came down from 56.8 to 67.9 during June and August 2013, indicating a depreciation of nearly 16 per cent over just three months (Chart 5).¹⁵ Admittedly, various factors can be held responsible behind such a widening of current account deficit, such as (a) sluggish global growth since 2009 that has impacted India’s export markets; (b) despite sluggish global growth, elevated levels of international commodity prices (perhaps supported by accommodative monetary policies of the advanced economies, abundant global liquidity and near zero interest rates); and (c) domestic supply and policy constraints leading to increase in imports of coal (from around 0.5 per cent of GDP during 2004-08 to 0.9 per cent in 2011-12) or restrictions on iron ore mining activity since 2010-11 (Kapur and Mohan, 2014). This period was also associated with steep depreciation of nominal exchange rate of Indian rupee-USD (Chart 5c). Even in terms of real exchange rate there was a depreciating trend (despite some gyrations) since January 2011 - the depreciating trend in very stark since January 2013 (Chart 5b).

Operating Framework

Although RBI’s operating framework remained broadly stable some changes were indeed put into operation in May 2011. The RBI reduced its forex intervention drastically after 2009 liquidity switched to the deficit mode. The operation of the liquidity adjustment facility (LAF) of the RBI was now modified. Consequent to acceptance of the recommendations of the RBI Working Group on Operating Procedure of Monetary Policy (2011) following changes were made effective:

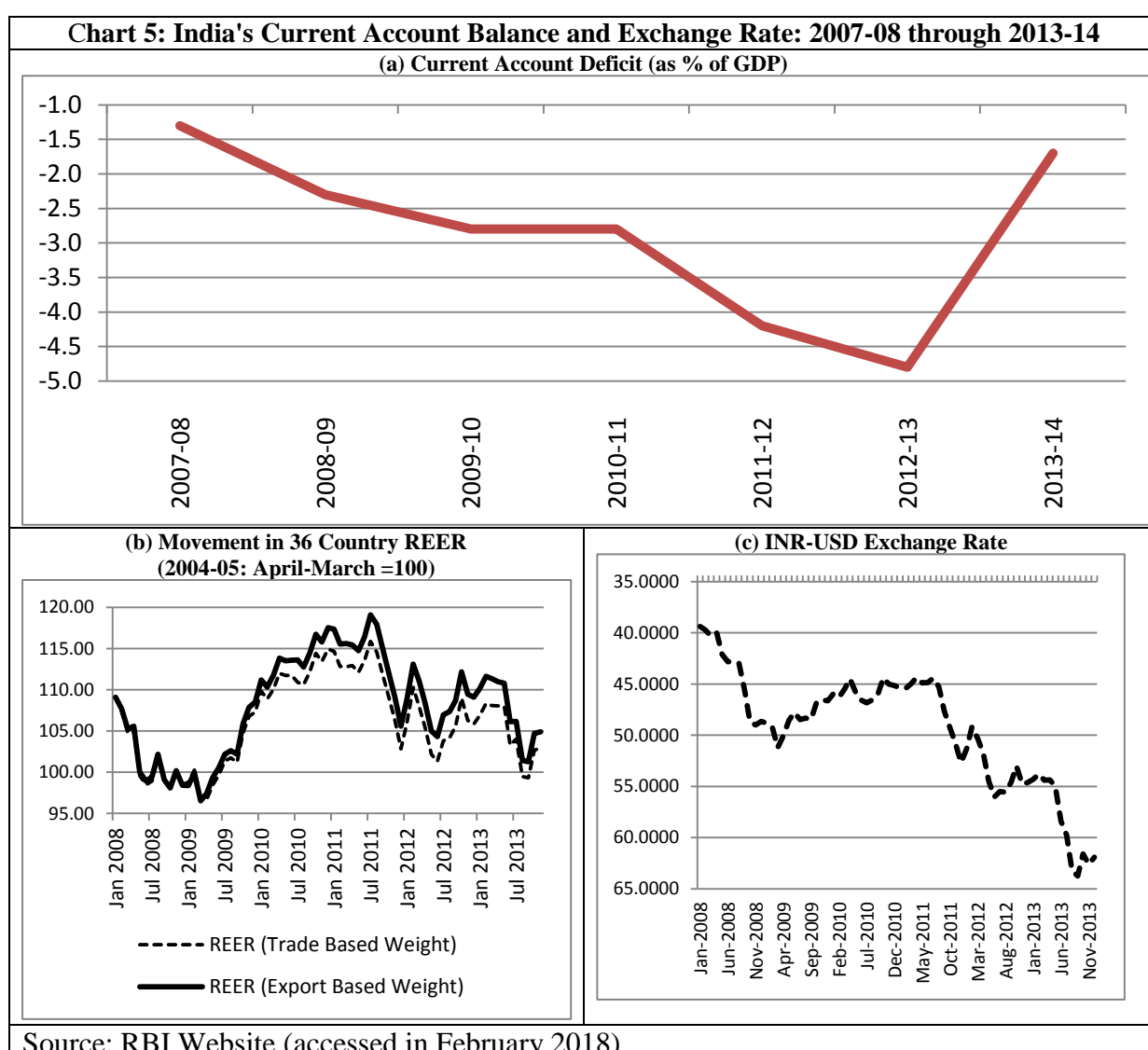
- The weighted average overnight call money rate (WACMR), the only one independently varying policy rate, became the operating target of monetary policy.
- The reverse repo rate continued to be operative but it was pegged at a fixed 100 basis points below the repo rate.
- A new Marginal Standing Facility (MSF) was instituted from which banks can borrow overnight (on a non-collateralized basis) up to one per cent of their respective NDTL; the rate of interest on amount accessed from this facility was 100 basis points above the repo rate.

¹⁴ On May 22, 2013, US Fed Chairman Ben Bernanke made the following statement in his testimony before the US Congress: “Over the nearly four years since the recovery began, the economy has been held back by a number of headwinds. Some of these headwinds have begun to dissipate recently, in part because of the Federal Reserve’s highly accommodative monetary policy”. This statement was largely interpreted by the financial market players as a hint that the US Fed may soon start tapering off the size of the bond-buying programme.

¹⁵ The Finance Minister in a statement on August 23, 2013 is reported to have said, “The panic that has gripped the currency market is unwarranted; we believe that the rupee is undervalued and has overshot what is generally believed to be a reasonable and appropriate level” (*The Economic Times*, August 23, 2013); available at http://articles.economictimes.indiatimes.com/2013-08-23/news/41440810_1_subbarao-rbi-governor-exchange-rate.

- As per the above scheme, the revised corridor would have a fixed width of 200 basis points. The repo rate will be in the middle. The reverse repo rate will be 100 basis points below it and the MSF rate 100 basis points above it.
- While the width of the corridor is fixed at 200 basis points, the RBI would have the flexibility to change the corridor, should monetary conditions so warrant.

What was the performance of Indian monetary policy during this period? While India's macroeconomic stability was similar to the leading emerging markets until the late 1990s and between 2003 and 2007, a recent report from the World Bank has noted, "India experienced significantly lower and deteriorating levels of macroeconomic stability between 2008 and 2012.... While growth revived momentarily after the GFC, this was at the expense of high budget and current account deficits and high inflation, putting the sustainability of India's post-crisis growth experience into question (World Bank, 2018).¹⁶



¹⁶ An index of macroeconomic stability was constructed as an average of the standardized indexes of CPI inflation, current account deficit (per cent of GDP), and fiscal deficit (per cent of GDP).

4. Monetary Policy after the Taper Tantrum: Towards Inflation Targeting (IT) (2013-18)

Backdrop

RBI's approach to monetary policy during November 1997 to September 2013¹⁷ was characterised as a "multiple indicators approach".¹⁸ Inflation was of course a key element among the vector of variables that were included under the multiple indicator approach. As then Governor Reddy indicated, the RBI – instead of a formal inflation target – set out an outlook for inflation in each monetary policy statement which served in some ways as a target under the circumstances. He described his approach to inflation at that time as “self-imposed, indicative inflation targeting, consistent with global trends, and the compulsions of maintaining growth momentum” (Reddy, 2017).

Why had the RBI not adopted inflation targeting earlier? First, unlike many other developing countries, India had a record of moderate inflation, with double digit inflation being the exception, and which is otherwise largely socially unacceptable. Inflation targeting has been especially useful in countries that have experienced high inflation prior to the adoption of inflation targeting. Second, inflation targeting requires an efficient monetary transmission mechanism through the operation of efficient financial markets and absence of interest rate distortions. In India, although the money market, government and corporate debt and forex markets have indeed developed in recent years, they still have some way to go. Moreover, a number of administered interest rates continue to exist. Third, as we have seen, inflationary pressures often emanate from significant exogenous supply shocks, particularly from energy and food price sources. Targeting some theoretical "core inflation" rate, which excludes a significant portion of any inflation index in a low income economy, was felt to have little utility. Fourth, till very recently India did not have a pan-India consumer price index (CPI).¹⁹

The emphasis on inflation targeting appeared officially for the first time in the Report of the Committee on Financial Sector Reforms (CFSR), constituted by the Government of India (Planning Commission) and chaired by Raghuram Rajan (then Professor of University of Chicago).²⁰ The Committee argued that the RBI "can best serve the cause of growth by focusing on controlling inflation", and explicitly recommended, "The RBI should formally have a single objective, to stay close to a low inflation number, or within a range, in the medium term, and move steadily to a single instrument, the short-term interest rate (repo and reverse repo) to achieve it" (Government of India, 2007; p. 5). Subsequently, the Financial Sector Legislative Reforms Commission (FSLRC) (Government of India, March 2013) also endorsed this view. Further, the FSLRC explicitly recommended formation of a Monetary Policy Committee (MPC). Until 2013 there was a consistent explicit difference of opinion on the desirability of inflation targeting (IT) in India: while views from Government and some academics tended to favour IT, the RBI for all practical purpose was against it for the reasons given above. Until 2009 RBI's multiple indicators approach had been successful: inflation had been contained in mid-single digits for almost 15 years since the mid-1990s. However,

¹⁷ This covers the regimes of Governors Jalan, Reddy and Subbarao.

¹⁸ As already noted, Governor Jalan was credited to have been the initiator of this approach. In his monetary policy statement of April 1998, making a departure of the erstwhile practice of monetary targeting, the RBI announced that it would switch to a multiple indicators approach “to widen the range of variables that could be taken into account for monetary policy purposes rather than rely solely on a single instrument variable such as growth in broad money (M3)”.

¹⁹ In fact, Governors Jalan, Reddy and Subbarao were on record in speaking against IT; see for example, Reddy (2008), Jalan (2017) and Subbarao (2011).

²⁰ Interestingly, this Committee did not have any representation from the RBI.

the emergence of sustained double digit inflation (and enhanced inflation expectations) between 2009 and 2013 brought more support for the adoption of inflation targeting.

RBI's view changed as Raghuram Rajan took over as RBI Governor in September 2013. In his opening statement, taking support from the preamble to the RBI Act²¹ he said, "The primary role of the central bank, as the Act suggests, is monetary stability, that is, to sustain confidence in the value of the country's money.... Ultimately, this means low and stable expectations of inflation, whether that inflation stems from domestic sources or from changes in the value of the currency, from supply constraints or demand pressures. I have asked Deputy Governor Urjit Patel, together with a panel he will constitute of outside experts and RBI staff, to come up with suggestions in three months on what needs to be done to revise and strengthen our monetary policy framework".²²

The Patel Committee²³ submitted its report on January 21, 2014 and stated:

"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. Subject to the establishment and achievement of the nominal anchor, monetary policy conduct should be consistent with a sustainable growth trajectory and financial stability" (RBI, 2014; p. 11; emphasis added).

After considerable discussion a Monetary Policy Framework Agreement (MPFA) was finally signed between the Government of India and the RBI on February 20 2015 specifying the following:

- Government has set a target for RBI to bring down inflation below 6 per cent by January 2016, 4 per cent for financial year and all subsequent years with band of +/- 2 percent;
- If RBI fails to meet the target, it will report to the government with the reasons for the failure to achieve the target and propose remedial actions to be taken;
- The RBI will further estimate the time period within which the failed target would be achieved.

Flexible inflation targeting was formally adopted in India with the signing of the MPFA. Subsequently, the RBI Act was amended on May 14, 2016 to give the key provisions in the MPFA a statutory basis, Accordingly, the Central Government, in consultation with the Reserve Bank, notified the inflation target of 4.0 per cent (with 6.0 per cent and 2.0 per cent as the upper and lower tolerance levels, respectively) formally in August 2016. This inflation target is applicable for the period from August 5, 2016 to March 31, 2021. Moreover, "factors that constitute a failure to achieve the inflation target – i.e., if the average inflation is more/less than the upper/lower tolerance level for three consecutive quarters – have also been defined and notified in the Official Gazette on June 27, 2016" (RBI, 2016).²⁴

²¹ The RBI Act preamble stated RBI's objective : ""to regulate the issue of Bank notes and the keeping of reserves with a view to securing monetary stability in India and generally to operate the currency any credit system of the country to its advantage"

²² "Statement by Dr. Raghuram Rajan on taking office on September 4, 2013", available at https://rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=29479

²³ Urjit Patel later succeeded Raghuram Rajan as Governor of the RBI in September 2016.

²⁴ Interestingly, while formally IT has been adopted since May 2015, for all practical purpose the monetary policy framework of the RBI became tilted towards IT ever since Rajan took over as Governor in September

Later a six-member Monetary Policy Committee (MPC) was formed in September 2016.²⁵ Nine meetings of the Monetary Policy Committee (MPC) have been held since then till February 2018. Now, the MPC determines the policy interest rate required to achieve the inflation target. The voting pattern of the MPC meetings and the minutes reveal an interesting regularity. There was complete unanimity among the members in the first four meetings but there has been evidence of some dissent from the majority view (in both directions) since then.

Conduct of Monetary Policy under IT

How was monetary policy conducted in India after adoption of IT? In 2013-14, monetary policy was torn between concerns about the slowdown in growth and external sector shock following the announcement of the tapering of the unconventional monetary policy in the US. The RBI reduced the repo rate by 25 basis points (bps) to 7.25 per cent in May 2013 in view of the steep deceleration of growth (more than halving from 9.2 per cent in Q4 of 2010-11 to 4.5 per cent in Q3 of 2012-13), and the RBI's prevailing assessment of subdued activity.

Consistent with inflation targeting, monetary policy went into a tightening mode soon after Raghuram Rajan took charge as Governor in early September 2013. In the aftermath of the taper tantrum and the ensuing global and domestic financial market volatility, and rising inflationary concerns (fuelled primarily by fuel price increases) RBI increased the repo rate to 7.5 per cent. With an aim to break inflation persistence, key policy rates were increased further in January 2014 reinforcing the earlier hikes in the second half of 2013.

With the move towards flexible IT, the RBI set out a formal framework in 2014 to guide monetary policy operations with two key components: (a) announcement of "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"; and (b) introduction of "a revised liquidity management framework which aimed at strengthening transmission in the money market by anchoring the weighted average call rate (WACR) at or closely aligned to the repo rate" in September 2014 (RBI, 2015). By January 2015, the rate of inflation turned out to be nearly 3 per cent below the then target of 8 per cent. Interestingly, by the third quarter of 2014-15 a revised liquidity management framework was implemented.²⁶ With the institution of the

2013. The RBI started publishing a bi-annual Monetary Policy Report from September 2014, which provides forecasts of inflation and growth as well as an assessment of the overall macroeconomic conditions.

²⁵ Out of the six members of MPC, three ex-officio members are from RBI (Governor - Chairperson, Deputy Governor in charge of Monetary Policy and One officer of the RBI (currently, the Executive Director in Charge of Monetary Policy), and three non-official external academicians. The non-official / academic Members will hold office for a period of four years or until further orders, whichever is earlier. Before the constitution of the MPC, a Technical Advisory Committee (TAC) on monetary policy with experts from monetary economics, central banking, financial markets and public finance used to advise the RBI on the stance of monetary policy. However, its role was only advisory in nature. With the formation of MPC, the TAC on Monetary Policy ceased to exist.

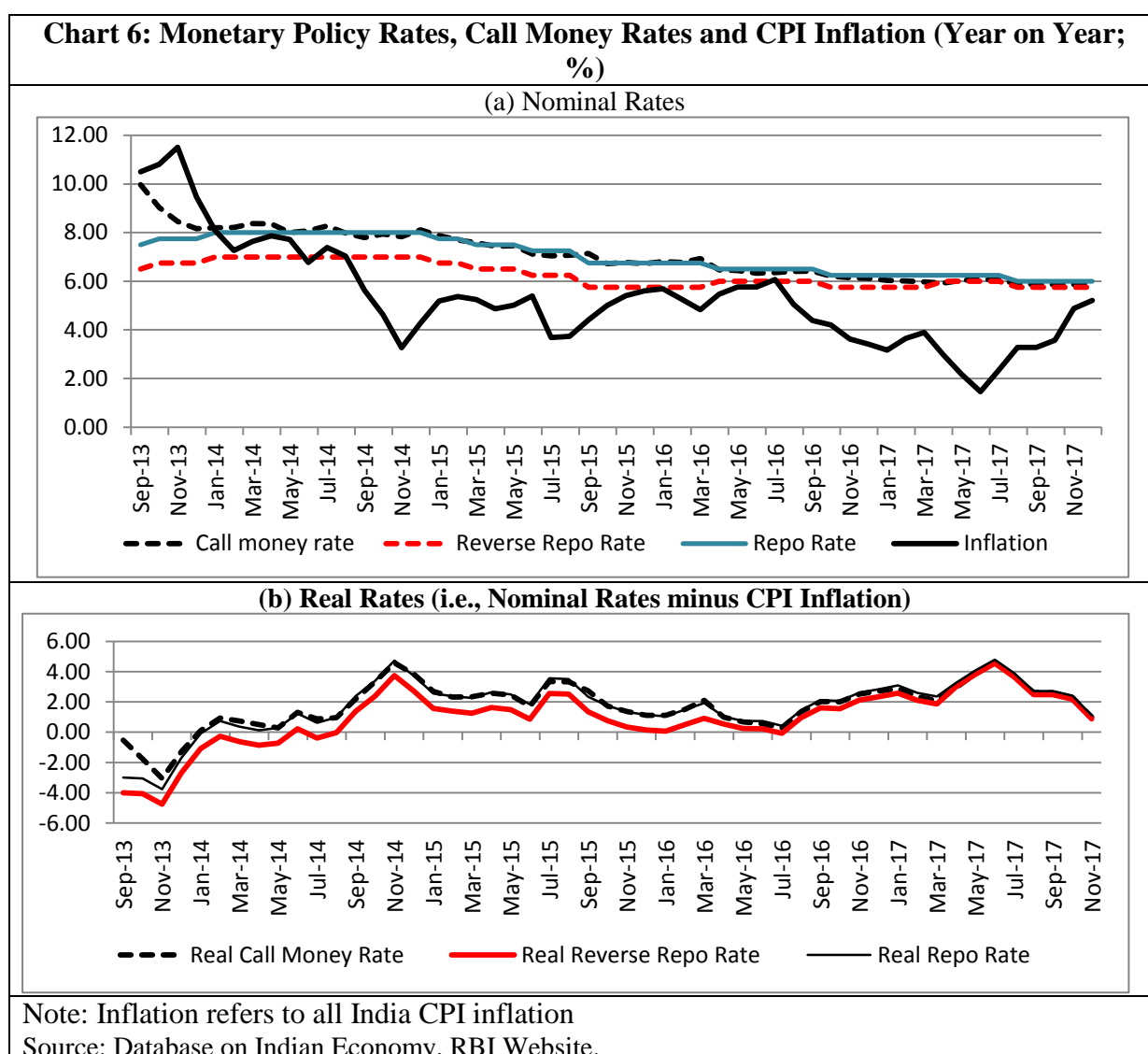
²⁶ The revised liquidity management framework had four main features:

- a) subject to availability of excess SLR securities, assured access to central bank liquidity of 1 per cent of banks' net demand and time liabilities was provided through overnight fixed rate repo / 14-day variable rate term repo;
- b) fine-tuning of operations through variable rate repo/reverse repo auctions of maturities ranging from overnight to 28 days;
- c) outright open market operations to manage enduring liquidity mismatches; and
- d) overnight marginal standing facility (MSF) up to excess statutory liquidity ratio (SLR) plus 2 per cent below SLR of individual banks.

revised liquidity management framework, the role of term repo auctions under the liquidity adjustment facility (LAF) has become significant.

In April 2016, the liquidity management framework was further revised so as "to progressively lower the average ex ante liquidity deficit to a position closer to neutrality". Accordingly, the Reserve Bank injected permanent liquidity through open market operations (outright), to minimize volatility in WACR it narrowed the policy rate corridor around the repo rate from +/-100 bps to +/- 50 bps and reduces the minimum daily maintenance of the cash reserve ratio (CRR) from 95 per cent of the requirement to 90 per cent.

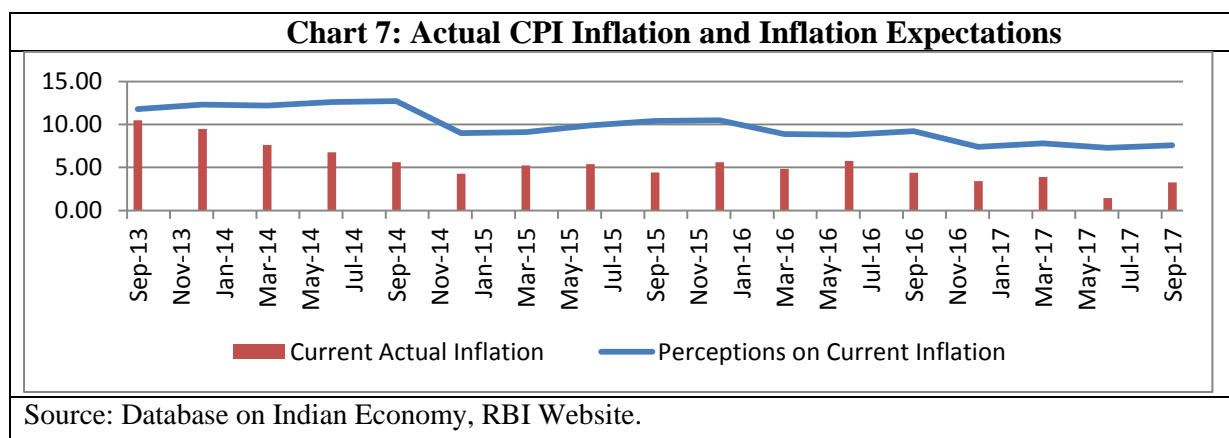
Under the new statutory IT framework, the six-member MPC met for the first time on October 3 and 4, 2016. The MPC unanimously voted for a reduction in the key policy rate by 25 bps and assessed that inflation would remain within 5 per cent by Q4 of 2016-17 (Chart 6a). Subsequently, the MPC's decision not to tinker with the repo rate in late 2016 and early 2017 rate was marked by the phenomenon of "heightened uncertainty around the outlook for growth and inflation in the aftermath of demonetisation" (RBI, 2017).



With the successful achievement of its below 6 per cent target for January 2016 the RBI set a target for CPI inflation at 5 per cent by March 2017 with an eventual aim to move towards 4 per cent CPI inflation by the end of 2017-18.

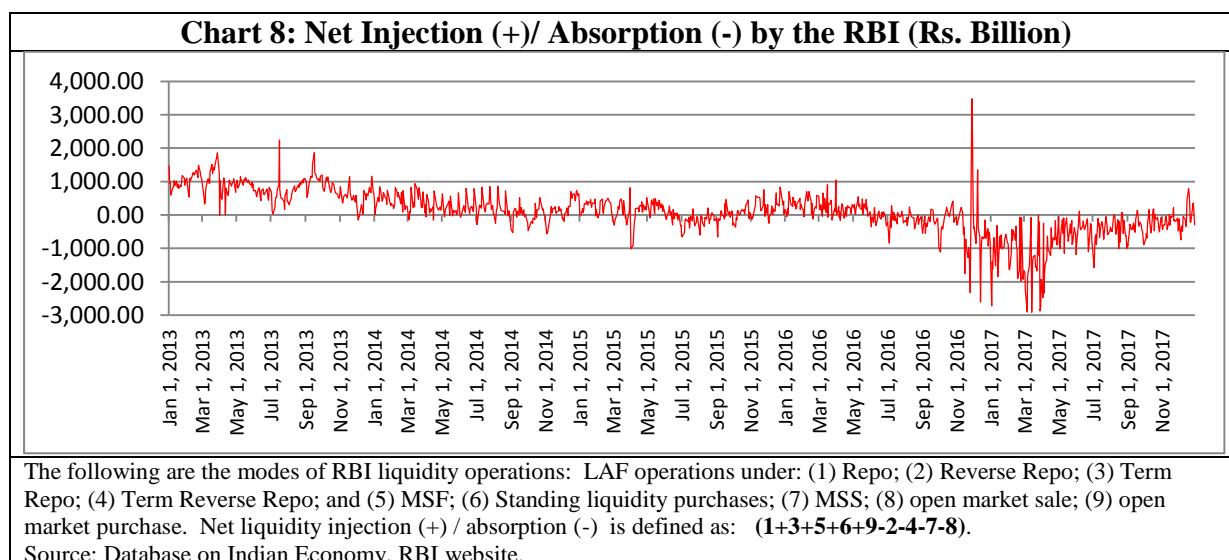
Performance of IT in India

What has been the performance of the IT framework in India? The performance on inflation control front has been impressive. First, CPI inflation has followed the glide path specified in official documents and has come down secularly.²⁷ Second, inflation has been reasonably range bound within the norm of 4 per cent \pm 2 per cent. Third, the call money rate had remained within narrower corridor between repo and reverse repo rates (Chart 6a). Fourth, inflation expectations have been on a downward trend, as measured by the mean perception on current inflation in RBI's inflation expectations survey (Chart 7). Expected inflation is, however, still significantly higher than the inflation target.



Operating Framework (2014-18)

How did the RBI conduct its monetary policy operations during this period? The money market in general was in deficit mode as posited by policy, until the initiation of the demonetization process on November 8, 2016 when the money market turned into surplus and remained in this mode until late 2017. The RBI influences liquidity in the money market through a battery of operations (Chart 8).



²⁷ Chief Economic Adviser Arvind Subramanian is reported to have put forward a “plausible alternative macroeconomic assessment” which is different from RBI's assessment. As per this alternative view, the inflation outlook has been encouraging by an appreciating exchange rate, a good monsoon and a capping oil prices by structural shifts in which economic conditions and the outlook warranted substantial monetary policy easing; see <https://scroll.in/latest/840042/rbi-repo-rate-arvind-subramanian-says-economic-condition-warrants-policy-easing> for details.

We have already seen that from January 2015, inflation conditions have evolved generally in accordance with the disinflation glide path reaching 5.7 per cent in January 2016 (below the target of 6 per cent), 3.2 percent in January 2017 and 5.1 per cent in January 2018.

It is probably too early to fully evaluate the performance of IT in India given its brief experience so far. However, it is pertinent to ask: how much of such lower inflation can be attributed to adoption of IT in India? To paraphrase Easterly and others (1993), how much of this success in inflation front is due to good policy and how much of it due to good luck?²⁸

One of the earlier apprehensions on the adoption of IT in India had stemmed from the multiplicity of price indices in the country. There are at least five major countrywide price indices in India (Table 5). Apart from the combined CPI²⁹ (introduced in 2011 and now formally adopted for inflation targeting), there is also a consumer price index (CPI) for industrial workers (CPI-IW), another one for agricultural labourers (CPI-AL), and yet another one for rural labourers (CPI-RL), in addition to a wholesale price index (WPI).

The weighting diagram of the combined CPI series, based on the Consumer Expenditure Survey (CES), 2004-05 is clearly dominated by four groups: (a) food & beverages; (b) housing; (c) fuel & light; and (d) a number of miscellaneous items (e.g., Household goods and services like furniture & household appliances; health; transport & communication; recreation & amusement; and education) (Table 5). Of these, the two largely exogenous segments of food and beverages and fuel and light cover over 50 per cent of the weight in the All India CPI.³⁰ Thus the impact of monetary policy actions on the CPI is likely to be muted, thereby reducing the efficacy of monetary policy transmission.

Thus, while assessing the performance of IT in India, downward trends in inflation on account of food and fuel prices appear to have incorporated some elements of good luck during the period under consideration. In fact, an early evaluation of the efficacy of monetary policy in India indicated some interesting factors behind the deflationary trends in 2013 - 2015 (Chinnoy, Kumar and Mishra, 2016). First, 20 per cent of the disinflation is due to a sharp decline in discretionary component of minimum support price (MSP). Second, the bulk of the disinflation can be attributed to a moderation in the historical dynamics of inflation (reflective of backward adaptive expectation) as well as by forward-looking expectations (45 per cent and 35 per cent, respectively). Third, global crude price and exchange seemed to have played some (but not necessarily large) role.

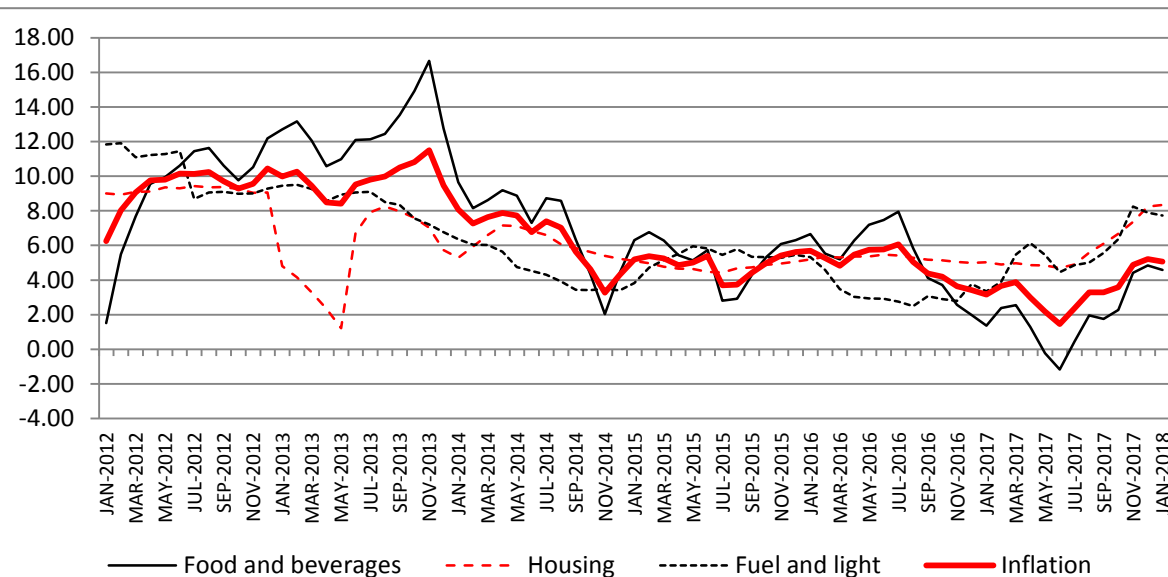
²⁸ Easterly, William, Michael Kremer, Lant Pritchett, and Lawrence H. Summers (1993): "Good Policy or Good Luck? Country Growth Performance and Temporary Shocks", *Journal of Monetary Economics*, Vol. 32, No. 3, pp/ 459 - 483.

²⁹ This series have been prepared using the Modified Mixed Reference Period (MMRP) data of Consumer Expenditure Survey (CES), 2011-12, of the 68th Round of National Sample Survey (NSS).

³⁰ In the US, the weights of energy in All Urban Consumers (CPI-U) is 8.030 while that in the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) is 9.792; see US Bureau of Labor Statistics (BLS) *BLS Handbook and Methods*, Chapter 17 on "The Consumer Price Index" (Updated 2-14-2018), available at <https://www.bls.gov/opub/hom/pdf/homch17.pdf>

Table 5: Description of Various Price Indices in India						
		Consumer Price Index (CPI) - Combined	CPI-Industrial Workers	CPI - Agricultural Labourers	CPI- Rural Labourers	Wholesale Price Index (WPI)
1	Base year	2012	2001	1986-87	1986-87	2011-12**
2	Universe	All India Rural & Urban Households	Households of Industrial workers	Households of Agricultural labourers	Households of Rural labourers	All transactions at first point of bulk sale
3	Centres/ price quotations	1181 village (268351 quotations) and 1114 urban (281001 quotations) markets covering all districts	Selected markets in 78 selected centres	Shops and markets catering to 20 States (600 villages)	Shops and markets catering to 20 States (600 villages)	8331 quotations
4	Items covered	299	393	182	182	697
5	Weights of major groups					
	Food, Beverages and Tobacco	48.24	48.47	72.94	70.47	22.62 (Primary articles)
	Fuel & Light	6.84	6.42	8.35	7.9	13.15
	Housing	10.07	15.29	–	–	64.23
	Clothing & Footwear	6.53	6.58	6.98	9.76	
	Miscellaneous	28.32	23.32	11.73	11.87	
	Total	100	100	100	100	100
6	Basis for Weighting Diagram	68th round Consumer Expenditure Survey (2011-12)	Working Class Family Income and Expenditure Survey (1999-2000)	38th Round of Consumer Expenditure Survey (1983) for agricultural labourer	38th Round of Consumer Expenditure Survey (1983) – for rural labourer	Gross Value of Output (GVO) at current prices, National Accounts Statistics (2011-12)
7	Methodology	Geometric mean for elementary item index and Laspeyres Index Formula for higher level index	Weighted arithmetic mean according to Laspeyres Index Formula	Weighted arithmetic mean according to Laspeyres Index Formula	Weighted arithmetic mean according to Laspeyres Index Formula	Weighted arithmetic mean according to Laspeyres Index Formula
8	Producer	Central Statistics Office, Government of India	Labour Bureau, Government of India	Labour Bureau, Government of India	Labour Bureau, Government of India	Ministry of Commerce & Industry, Government of India
<p>**In the new series of WPI, prices used for compilation do not include indirect taxes in order to remove impact of fiscal policy @ In WPI, FOOD has a weight of 24.38 per cent. Source: Das and George (2017) and Central Statistics Office.</p>						

Chart 9 reports the inflation rates of all these six sub-groups of all-India CPI. Food and beverages clearly exhibited a downward trend November 2013 - November 2014, and thereafter during June 2016 - May 2017. Fuel inflation was on a downward trajectory during November 2015 - July 2016, in tune with the fall in global price of petroleum. Thus the largely exogenous fall in food and fuel prices have dominated the observed fall in headline inflation.

Chart 9: Inflation of Major Components in CPI Basket (2012=100) (Year-on-Year, %)

Source: Database on Indian Economy, RBI Website

There are a number of inter-related critiques on RBI's strategy and implementation of IT.

First, some analysts have expressed doubts about the accuracy of RBI's inflation forecasts and expectations (Sharma and Bichhal, 2017 and Goyal, 2017) arguing that this affects RBI's credibility and hence effectiveness of IT.

Second, there have been concerns expressed, particularly the government, that the RBI IT strategy has been less mindful of the growth and investments imperatives of a growing economy like India. Chief Economic Adviser Arvind Subramanian (2015) showed that real policy rates (i.e., repo rate less inflation rate) have diverged significantly for consumers and producers, being unusually high for the latter which could have constrained growth.³¹

Third, Issues with transmission of monetary policy have continued even under the IT framework. RBI's internal Study Group to "Review the Working of the Marginal Cost of Funds Based Lending Rate System" (October 2017)³² revealed a number of interesting trends about the transmission of monetary policy: (a) the transmission has been slow and incomplete (although it has improved since November 2016 under the pressure of large surplus liquidity in the system post demonetisation); (b) it was significant on fresh loans, but muted for outstanding loans (base rate and Marginal Cost of Funds Based Lending Rate or MCLR); (c) it was uneven across borrowing categories; and (d) it was asymmetric over monetary policy

³¹ More recently in June 2017, Subramanian is reported to have said that the headline inflation has been running well below the target while growth in the real economy has decelerated from last July and that the outlook for growth is unlikely to warrant any serious concern about closing output gaps; see <https://www.thehindubusinessline.com/economy/ceas-comments-hint-at-brewing-finminrbi-tussle/article9722144.ece>. However, with recent surge in inflation much of this argument loses its punch and in end January 2016, Subramanian is reported to have said that the scope for monetary easing is now limited; see <http://www.livemint.com/Opinion/qxnGUxRWMujaTq86ceqUBI/Economic-Survey-Is-the-monetary-policy-debate-over.html>

³² <https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/MCLRCFF20B31A4A24D0487D8659079CF392B.PDF>

cycles (higher during the tightening phase and lower during the easing phase) (Table 6) (Acharya, 2017).

Period	Repo Rate	Term Deposit Rates		Lending Rates			
		Median Term Deposit Rate	Weighted Average Domestic Term Deposit Rate	Median Base Rate	Median Marginal Cost of Funds based Lending Rate (MCLR) (1-year)	Weighted Average Lending Rate - Outstanding Rupee Loans	Weighted Average Lending Rate - Fresh Rupee Loans
October 2017 over end-December 2014	-2.00	-1.66	-1.99	-0.75	*	-1.39	-1.92
October 2017 over April 1, 2016	-0.75	-0.94	-1.08	-0.15	-1.15	-0.75	-0.94
<i>Memo: Pre-Demonetisation</i>							
January 2015 to October 2016	-1.75	-0.99	-1.26	-0.61	*	-0.75	-0.97
April 1, 2016 to October 2016	-0.50	-0.27	-0.35	-0.01	-0.15	-0.11	0.01
<i>Memo: Post Demonetisation</i>							
November 2016 to October 2017	-0.25	-0.67	-0.73	-0.14	-1.00	-0.64	-0.95
*: MCLR (Marginal Cost of Funds based lending rate) system was put in place in April 2016. Source: Acharya (2017) & RBI(2017a)							

In all senses of the term, the IT regime in India is still in its infancy. The regime so far has seen a benign atmosphere - now that fuel prices have started moving in the north-east direction, the government has proposed a revised framework for the minimum support price for select food articles in the Union Budget for 2018-19 and fiscal slippages have started happening, it remains to be seen whether IT can wither more rough weather in the days to come.

5. Some Recent Challenges

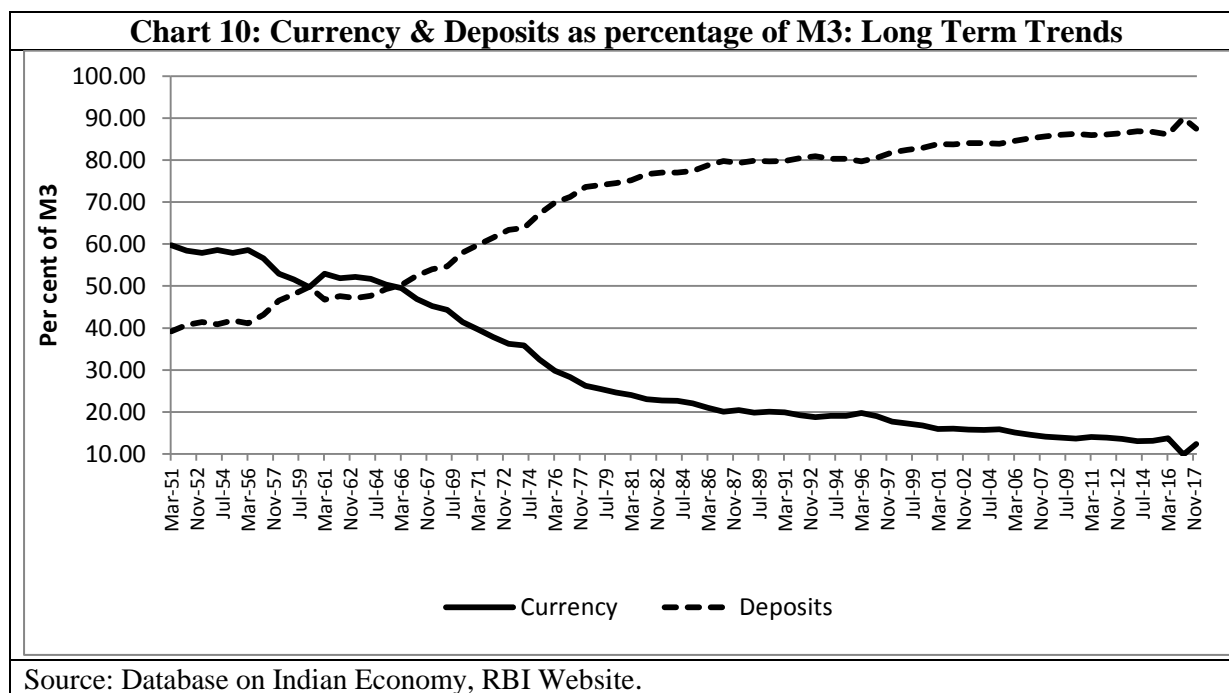
This section looks into three specific challenges that Indian monetary policy has addressed in recent times.

Handling the impact of Demonetization

In a surprise address to the nation, on November 7, 2016 Prime Minister Narendra Modi announced the scrapping of INR 500 and INR 1,000 currency notes. The move was aimed at combating the problems of black money, corruption and fake currencies that allegedly fund terrorism. In a televised address Prime Minister went on to say:

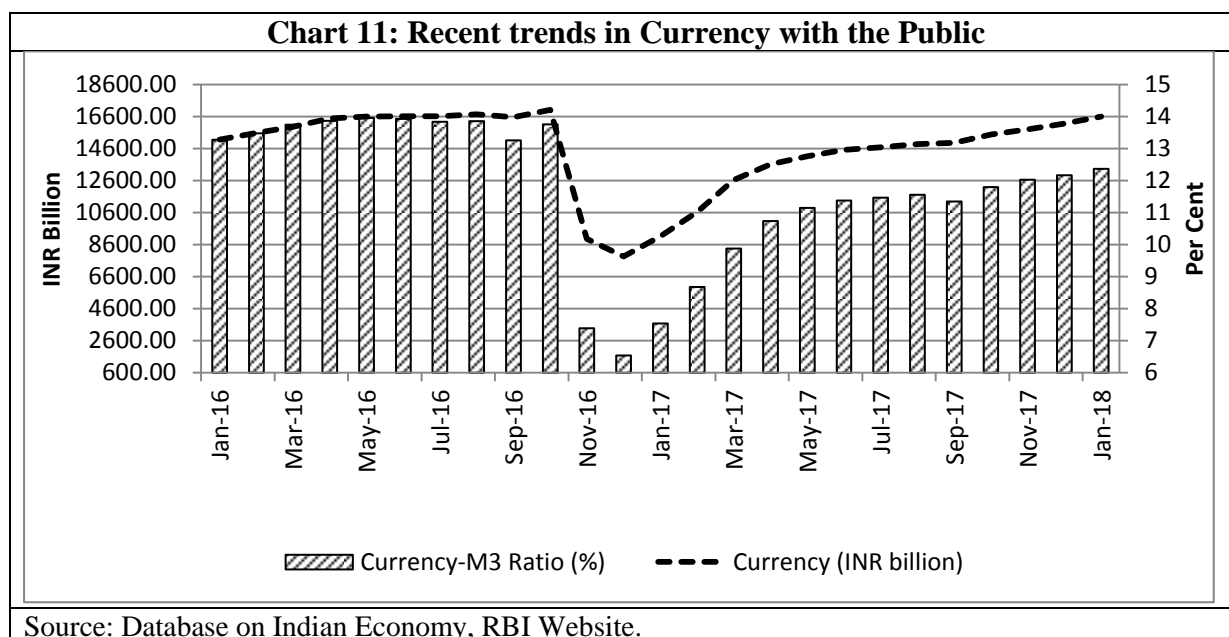
"To break the grip of corruption and black money, we have decided that the five hundred rupee and thousand rupee currency notes presently in use will no longer be legal tender from midnight tonight that is 8th November 2016. This means that these notes will not be acceptable for transactions from midnight onwards. The five hundred and thousand rupee notes hoarded by anti-national and anti-social elements will become just worthless pieces of paper. The rights and the interests of honest, hard-working people will be fully protected. Let me assure you that notes of one hundred, fifty, twenty, ten, five, two and one rupee and all coins will remain legal tender and will not be affected. ..This step will strengthen the hands of the common man in the fight against corruption, black money and fake currency".

Consequently, currency with public of around INR 14.18 trillion (nearly 86 per cent of currency with the public) was scrapped overnight.³³ Although demonetization was designed with broader structural objectives in mind, including fiscal consequences of flushing out hitherto unreported income, our concern here is with how the huge monetary shock was handled by the monetary policy authorities. First, like in other developing or emerging market economies, the share of currency in broad money (M3) has fallen continuously over the years; while the share of bank deposits to M3 has increased steadily (Chart 10). In this long term trend, the phenomenon of demonetization and the subsequent remonetisation can be seen as a small blip: *there was clearly no uptrend in the use of currency in recent years that required a correction.*



Second, in this context questions can be raised on the desirability of administering such a shock, which caused considerable daily inconvenience to the whole population and suffering to many, since a majority of the population in the Indian economy is engaged in agriculture or the informal sector where transactions are largely cash denominated. The withdrawal of 85 percent of existing currency and its replenishment in bank branches spread across the country was an extremely challenging logistics task for the RBI and its currency printing presses. It has taken almost 15 months for currency with the public to return to its previous level though currency as a proportion of M3 is still lower than it was (Chart 11).

³³ The idea that a society can move in favour of "less cash" by gradually phasing out big notes, has been put forward recently by Rogoff (2016). Henry (1980) in the US context has also argued for the withdrawal of \$ 100 and \$ 50 bills since their highest usage is by "drug dealers, tax evaders, arms merchants, corrupt politicians, gangsters, kickback contractors, ...to mention a few". While Rogoff is in general support of efforts to use less cash, he was critical of India's plan of remonetization through bigger denomination currency notes, replacing INR 1000 bills by INR 2000 bills.



Third, for monetary policy and liquidity management purposes the most significant consequence of demonetization was its sudden impact on banking aggregates such as aggregate deposits and their lending and investment pattern. Both deposits as well as non-food credit extended by scheduled commercial banks had exhibited low rates of expansion till October 2016.³⁴ Following demonetization there was a flood of deposits in banks as the demonetised currency had to be deposited by end December 2016. This obviously resulted in huge excess systemic liquidity, which had to be managed by the RBI. Since non-food credit could obviously not be increased significantly, banks naturally had to enhance their investment in government securities very substantially (Chart 12). In fact, non-food credit slowed significantly as many businesses took a hit from demonetisation.

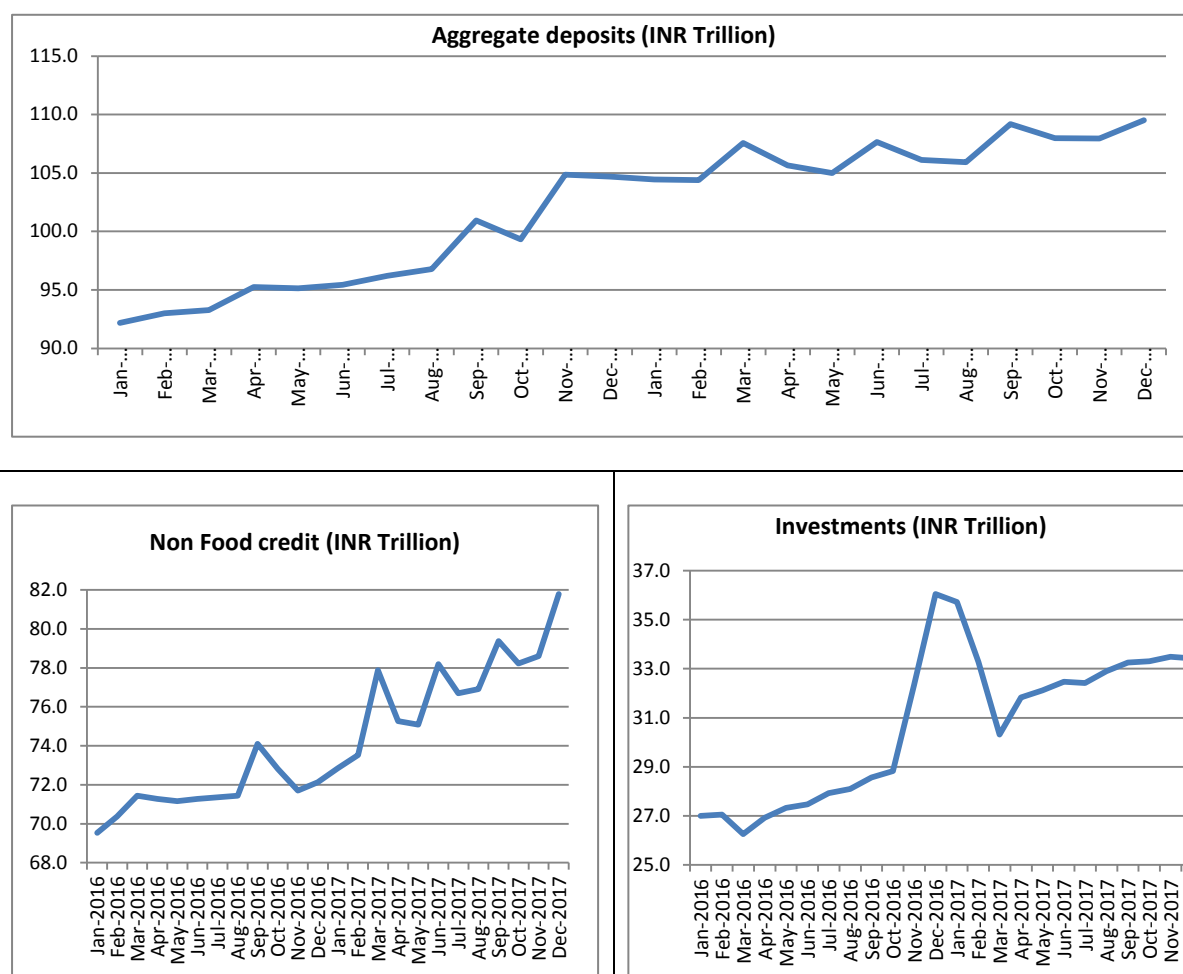
Fourth, if conceptually, x per cent of the currency with the public was from tax-evaded income (what in India is called black money), then *a priori* one would have expected that $1-x$ per cent of currency would have returned to the banking system in the form of deposits. As it happened, however, x turned out to be very small as nearly 99 per cent of Rs 500, Rs 1000 currency notes did come back to the banking system.³⁵ Consequently, as a result of demonetization, M3 was not eventually affected significantly and there was merely a temporary substitution from currency to bank deposits and consequent excess liquidity.

This turnaround from deficit to surplus liquidity with the banks posed considerable challenges to monetary policy and liquidity management.

³⁴ Non-food credit is defined as aggregate credit minus mandated credit for food procurement, which is extended primarily to the government food procuring agency, viz., Food Corporation of India.

³⁵ This does not mean that 99 per cent of currency is actually from tax-paid (or legally tax-exempted) income. The magnitude of tax evaded income that was deposited with the banks will get identified only after the tax authorities finish their very time consuming scrutiny of all these accounts. See *Annual Report* of the RBI, 2016-17 for details.

Chart 12: Outstanding Amount of Deposits, Non-Food Credit and Investments of Commercial Banks (January 2016 through November 2017)



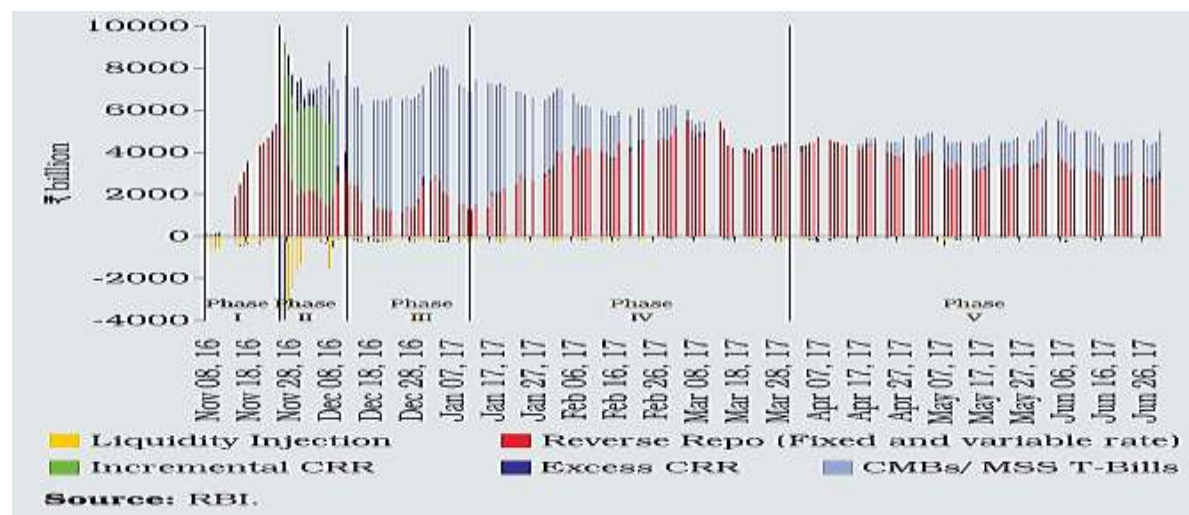
Source: Database on Indian Economy, RBI Website.

The post-demonetization period had five different phases of liquidity management (Chart 13; RBI, 2017):

- In the first phase (November 10 to November 25, 2016), the RBI extensively used variable rate reverse repos. The outstanding amount of surplus liquidity absorbed through reverse repos reached a peak of INR 5,242 billion on November 25, 2016.
- In the second phase (November 26 to December 9, 2016), 100 per cent incremental CRR was applied, which helped drain excess liquidity in the system to the extent of about INR 4,000 billion.
- In the third phase (December 10, 2016 to January 13, 2017), the surplus liquidity was managed through a mix of reverse repos and issuances of cash management bills (CMBs) under the MSS. The peak net outstanding liquidity absorbed was INR 7,956 billion on January 4, 2017 (out of which INR 2,568 billion absorbed through reverse repos and INR 5,466 billion through CMBs).

- In the fourth phase (January 14 to end-March 2017), the RBI returned to the conventional reverse repo operations as the key instrument to absorb surplus liquidity, particularly the liquidity released through the maturing CMBs under the MSS.
- In the fifth phase that began in April 2017 with the first auction of Treasury Bills (T-Bills) under the MSS, surplus liquidity was managed with a mix of issuance of T-Bills under the MSS and reverse repo auctions.

Chart 13: Daily Trends in Net Liquidity Absorption (-) / Injection (+) by the RBI in the post-Demonization Period (November 2016 through December 2017) - (INR Billion)



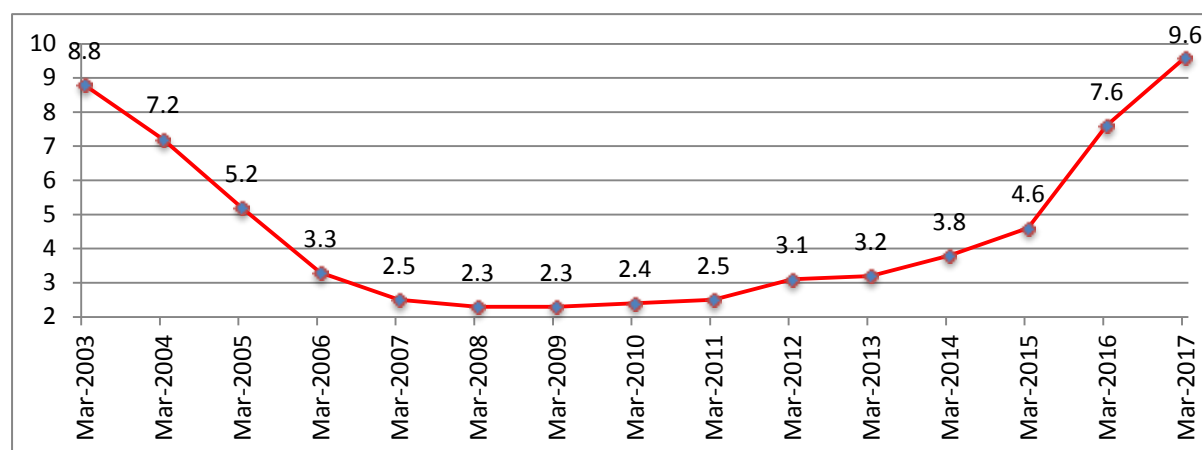
Do we have a sense of the costs of demonetization? In absence of detailed data, the following broad pointers may be noted from the RBI's income expenditure statement of 2016-17.

- RBI's profits went down from INR 659 billion (0.5 per cent of GDP) in 2015-16 to INR 307 billion (0.2 per cent of GDP) during 2016-17, consequently transfer from RBI to the Central Government came down by the same amount.
- Cost of printing notes went up to around INR 80 billion in 2016-17 from INR 34 billion in 2015-16.
- There was a substantial fall in interest income and net interest on LAF operations came down from INR 5 billion in 2015-16 to *minus* INR 174 billion in 2016-17.³⁶

Accumulation of Stressed Assets and Monetary Policy

Indian banking, led predominantly by public sector banks, had experienced a very substantial fall in "non-performing loans" (NPLs) from the late 1990s to around 2009, as a consequence of tightened regulation and supervision and high overall economic growth. This trend in NPLs got reversed after 2009, with NPLs increasing steadily to almost 10 per cent of total advances by March 2017 (Chart 14). More recent RBI data on stress tests indicates that even in the baseline scenario, NPLs may rise to 11.1 per cent of advances by September 2018 (RBI 2017a).

³⁶ Besides, there would be costs on account of CRR to banks, which reduced their profits.

Chart 14: Annual Trends in NPL of Indian Banking Sector (As % of Total Loans)

Source: Database on Indian Economy, RBI Website.

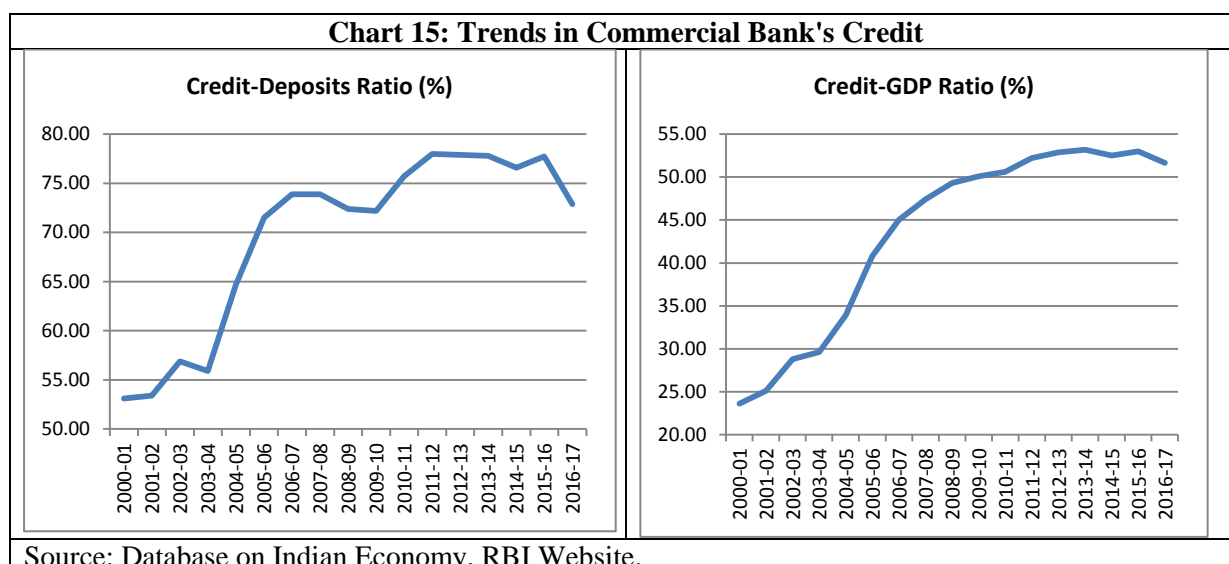
While accumulation of stressed assets does have important implications for stability of the financial / banking system, does the presence of NPA and associated capital constraint frustrate monetary policy actions? For the US, it has been found that declines in bank capital have contributed to the slowdown in lending (Bernanke and Lown, 1991). In a similar vein, the April 2017 Monetary Policy Report of the RBI noted for India, "it is found that the gross non-performing assets ... and capital to risk weighted assets ratio CRAR) significantly influence credit growth... While better capitalised banks exhibit higher credit growth, banks with higher GNPA's experience weaker credit growth" (RBI, 2017c). Thus in presence of increasing non-performing loans, banks might not be able to pass on the benefits of monetary policy actions designed to increase credit activity through lower policy rates.

There is an influential view that the seeds of NPA were sown much earlier..

"The origins of the NPA problem lie not in the events of the past few years, but much further back in time, in decisions taken during the mid-2000s. In the span of just three years, running from 2004-05 to 2008-09, the amount of non-food bank credit doubled. And this was just the credit from banks: there were also large inflows of funding from overseas..... All of this added up to an extraordinary increase in the debt of non-financial corporations" (Economic Survey, Government of India, 2016-17; pp. 85-96).

As it happens, however, most large NPLs originate from the expansionary monetary policy phase following the NAFC after 2009 when large corporate lending in particular expanded considerably. A closer examination of the data suggests a somewhat different and more complex explanation: (a) regulatory forbearance shown by the RBI in the aftermath of the NAFC; (b) sharp fall in global commodity prices leading to corresponding falls in profitability of sectors such as steel; (c) aggressive government promotion of public-private-partnership (PPP) for infrastructure that led to the entry of heavily leveraged companies, borrowing predominantly from public sector banks; and (d) governance issues with the management of select public sector banks (including inadequate due diligence and charges of corruption) (Mohan & Ray, 2017).

Overall, it would appear that the shock of demonetization coupled with the more medium term structural problem of the deteriorating balance sheets of public sector the commercial banks has had an impact on the efficiency of monetary policy transmission. As percentage of deposits, bank credit has reached a plateau since 2011-12; and experienced a sharp decline in 2016-17 (Chart 15).



Managing the Tensions of the Impossible Trinity

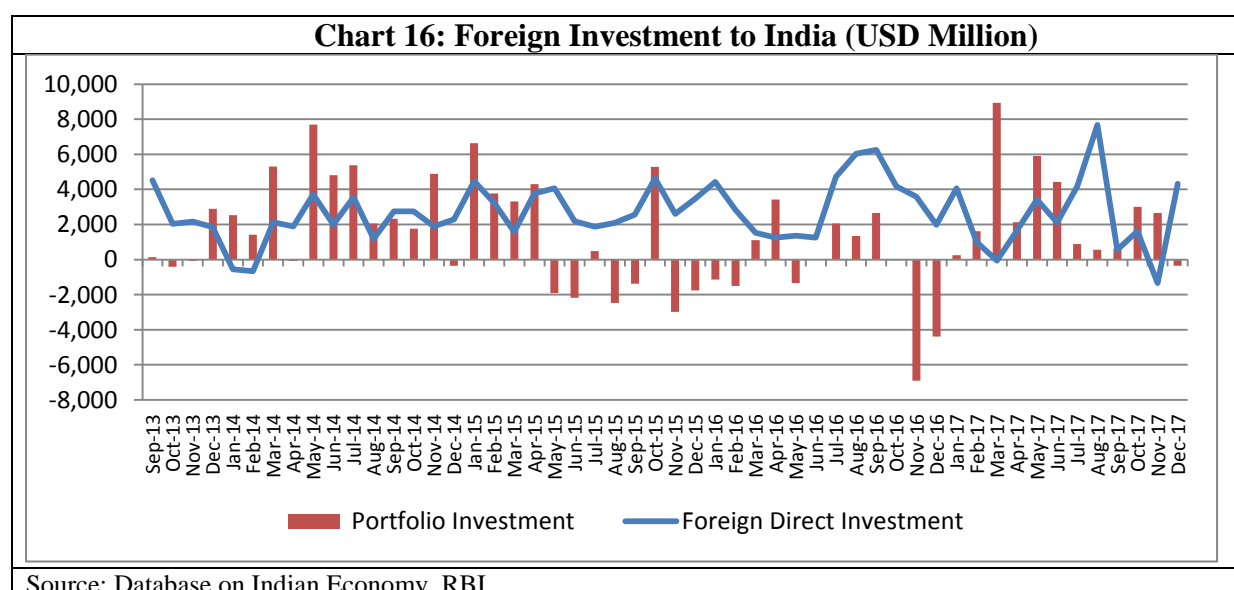
Like many other developing and emerging market economies, India, has to manage the tensions of the impossible trinity resulting from large and volatile capital inflows. India has traditionally managed its way “by moving away from the hard corners to middle solutions” (Mohan and Kapur, 2009) by placing itself away from the trinity corners. It has liberalized the capital account gradually while maintaining some capital account restrictions; and practised a managed but flexible largely market determined exchange rate with intervention designed mainly to dampen volatility. This has enabled it to enjoy an independent monetary policy, while maintaining risk adjusted interest rate and inflation differentials with respect to the major advanced countries. The hands-off approach of RBI intervention during 2010 – 2013 demonstrated the dangers of deviating from this management approach. The continued but volatile portfolio flows in this period led to instability in the exchange rate along with a trending real appreciation and rapidly widening current account deficit, which eventually led to a classic sudden stop in the context of the taper tantrum in 2013. How has the external account been managed in 2013-2017?

First, after the 2013 taper tantrum, the current account deficit (Table 10) has improved steadily from nearly 5 per cent of GDP in 2012-13 to less than one per cent in recent years, mainly reflecting improvements in the trade balance, partly due to the impact of falling petroleum prices. However, the surplus on account of invisibles (primarily on account inflows from software exports and inward remittances) has exhibited a downward trend. Second, this period has been characterised by significant episodes of volatility of foreign investment (Chart 16) particularly in foreign portfolio investment, whereas, as expected, foreign direct investment has been relatively stable. Third, unlike the hands-off attitude of the period following NAFC till August 2013, the period since then has witnessed the return of RBI interventions in the forex market (Chart 17).³⁷ In most of the quarters, there has been an accretion to forex reserves leading to India's reserves crossing USD 400 billion by December 2017. It remains an open question whether this intervention has been adequate for the purposes of maintaining growth with financial stability in the Indian economy.

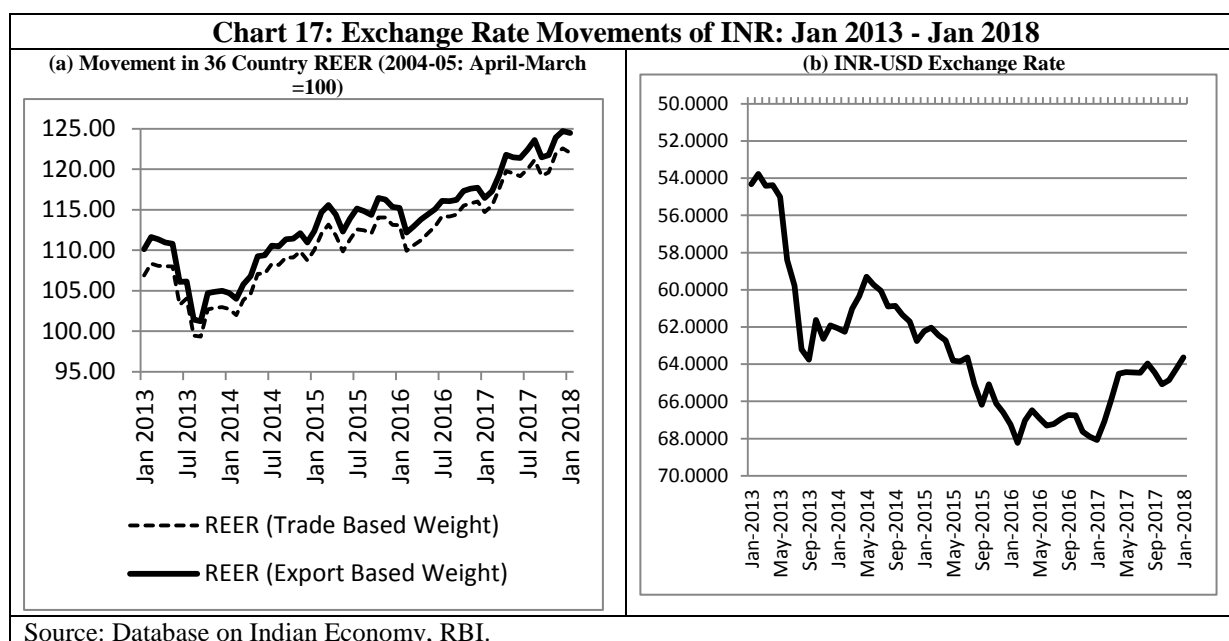
³⁷ Commenting on Raghuram Rajan's forex interventions strategy, Iyer (2016) in an interesting op-ed wrote: "As far as foreign exchange is concerned, he seems to have taken a leaf out of former governor Y.V. Reddy's book. The RBI has raised its forex interventions under Rajan even as uncertainty in global currency markets mounted. Between September 2013 and June 2016, the RBI was a net buyer of an aggregate \$87 billion".

Table 10: Select Items of India's Balance of Payments: 2013-14 through 2016-17				
(INR Billion)				
Item / Year	2013-14	2014-15	2015-16	2016-17
A) Current Account	-32.3	-26.9	-22.2	-15.3
A.1) Merchandise	-147.6	-144.9	-130.1	-112.4
A.2) Invisibles	115.3	118.1	107.9	97.1
o/w Software Services	67.0	70.4	71.5	70.1
o/w Private Transfers	65.5	66.3	63.1	56.6
B) Capital Account	48.8	89.3	41.1	36.5
B.1) Foreign Investment	26.4	73.5	31.9	43.2
o/w Foreign Direct Investment	21.6	31.3	36.0	35.6
o/w Foreign Portfolio Investment	4.8	42.2	-4.1	7.6
B.2) Commercial Borrowings	11.8	1.6	-4.5	-6.1
B.3) Banking Capital	25.4	11.6	10.6	-16.6
C) Change in Foreign Exchange Reserves (Increase - / Decrease +)	-15.5	-61.4	-17.9	-21.6
<i>D) Memo: Foreign Exchange Reserves</i> <i>(Outstanding)*</i>	304.2	341.6	360.2	370.0
<i>E) Memo: As % of GDP</i>				
<i>E1) Trade Balance</i>	-7.9	-7.1	-6.3	-4.9
<i>E2) Net Invisibles Balance</i>	6.2	5.8	5.2	4.3
<i>E3) Current Account Balance</i>	-1.7	-1.3	-1.1	-0.7
<i>E4) Foreign Investment</i>	1.9	3.8	2.0	2.2

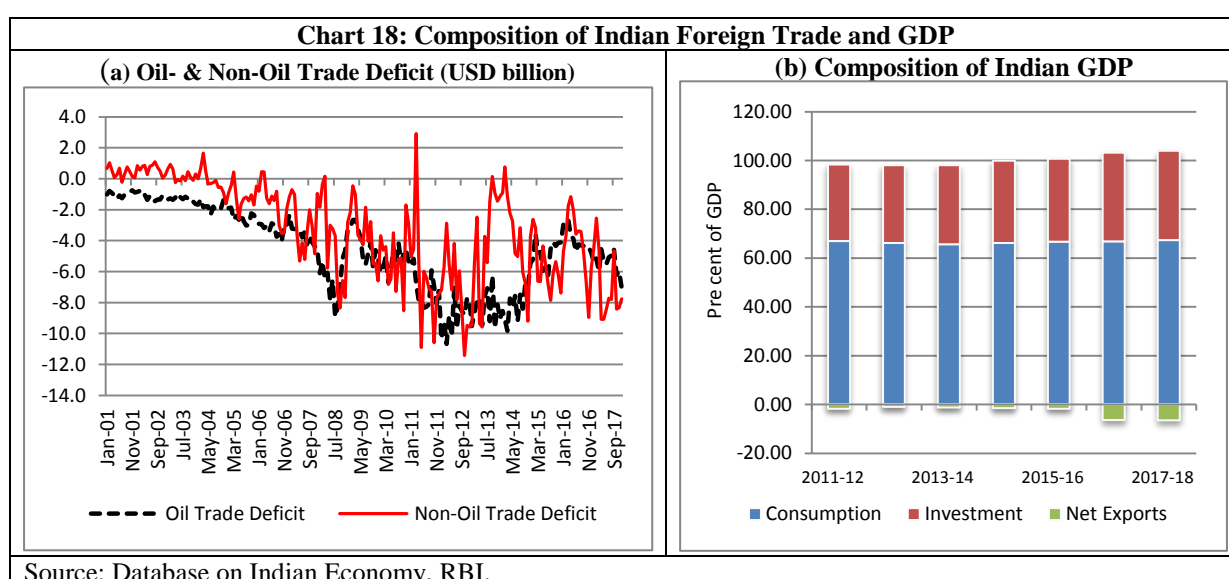
* : Forex reserves excludes US \$ 250.00 million invested in foreign currency denominated bonds issued by IIFC (UK) since March 20, 2009, excludes US \$ 380.00 million since September 16, 2011, US \$ 550.00 million since February 27, 2012 and US \$ 673 million since 30th March 2012 (as also its equivalent value in Indian Rupee).
Source: Database on Indian Economy, RBI Website.



How has the exchange rate behaved during this period? The nominal exchange rate exhibited a depreciating trend till around mid-2016, but has been relatively stable since then, even appreciating mildly since January 2017. The 36-country real effective exchange rate (REER), however, has been on an appreciating trajectory since the beginning of January 2013 (Chart 17). In fact, in the nine years after the NAFC, the REER has appreciated at a trend rate of about 2.5 per cent a year (Joshi, 2018). The monetary policy issue is whether this trend has been used as part of the inflation targeting regime.



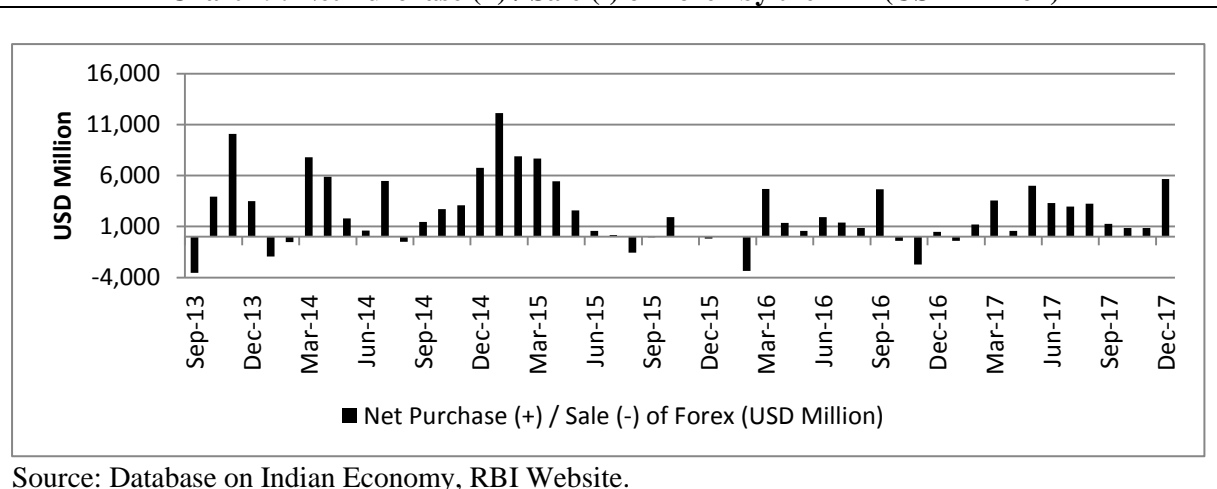
The impact of exchange rate movements on Indian macroeconomics is complex. First, because of the importance of net oil imports in India’s import basket, the net impact of exchange rate movements on India’s trade deficit is difficult to interpret. Second, as the share of domestic consumption (both private & government consumption) in GDP exceeds 60 per cent in India, there are limits of role of *net* exports in Indian macro aggregates (Chart 18).



However, given the imperatives of the need to maintain the competitiveness of exports, especially labour-intensive exports, an appreciating real exchange rate is not desirable for Indian manufacturing, whose growth has deteriorated in recent years. Thus, while a strongly appreciating real exchange rate may be consistent with the objectives of inflation targeting, it may not be beneficial for Indian economic growth (e.g. Joshi, 2018).

Of course given the fact that India has been a traditionally (and almost consistently) a current account deficit country, the diagnosis of Indian intervention in forex market as substantial in some quarters can be questioned (Chart 19).³⁸ But going forward RBI intervention in the forex market would have important implications for India's macroeconomics and political economy.

Chart 19: Net Purchase (+) / Sale (-) of Forex by the RBI (USD Million)



Source: Database on Indian Economy, RBI Website.

6. Concluding Observations

We have presented a chronicle of the contemporary history of Indian monetary policy with a focus on the period 2008 - 2017. We have argued that following the NAFC, Indian monetary policy could have tilted unduly towards the "easy" side and could have prolonged the expansionary monetary policy cycle for a longer period than what would have warranted. This, coupled with certain structural price shocks, could have made Indian inflationary trends moving upwards. Also this could have created the context of the adoption of flexible inflation targeting (which has been consistently been opposed in Indian monetary policy circles since then) in India since 2016. Independent of this change in monetary policy regime, we have also discussed monetary policy implications of three current challenges, viz., demonetization, build-up stressed assets in the banking sector, and capital flows. We have argued that Indian experience of handling massive capital inflows could have helped Indian monetary policy to adopt innovative instruments to handle the substantial liquidity impact of demonetization. It was further noted that despite the build-up of non-performing loans in Indian banking, the extent of transmission of Indian monetary policy across deposit and lending rates of the banking sector seemed to have improved in recent times. Needless to say, there may not be a sense of finality in our story of contemporary Indian monetary policy. But, that is an issue of living in the present!

³⁸ See US Treasury (2017) for such a view.

References (all URL's have been accessed during February - March 2018).

- Acharya, Viral V (2017): "Monetary Transmission in India: Why is it important and why hasn't it worked well?", Inaugural Aweek Guha Memorial Lecture at Tata Institute of Fundamental Research, available at https://rbi.org.in/scripts/BS_SpeechesView.aspx?Id=1049
- Ball, Laurence, Anusha Chari, and Prachi Mishra (2014): "Understanding Inflation in India", Shekhar Shah, Barry Bosworth and Arvind Panagariya (eds), *India Policy Forum 2013–14, Vol 10*, Delhi: Sage Publications.
- Benes, Jaromir, Kevin Clinton, Asish George, Joice John, Ondra Kamenik, Douglas Laxton, Pratik Mitra, G.V. Nadhanael, Hou Wang, and Fan Zhang (2017): "Inflation-Forecast Targeting for India: An Outline of the Analytical Framework", *IMF Working Paper*, WP/17/32.
- Benes, Jaromir, Kevin Clinton, Asish Thomas George, Joice John, Ondra Kamenik, Douglas Laxton, Pratik Mitra, G.V. Nadhanael, Hou Wang and Fan Zhang (2016): "Inflation-Forecast Targeting For India: An Outline of the Analytical Framework", *RBI Working Paper Series No. 07*.
- Bernanke, Ben S and Cara S Lown (1991), "The Credit Crunch", *Brooking Papers on Economic Activity*, 2.
- Chinoy, Sajjid Z., Pankaj Kumar and Prachi Mishra (2016): "What is responsible for India's sharp deflation?", in Chetan Ghate and Kenneth M Kletzer (eds.): *Monetary Policy in India: A Modern Macroeconomic Perspective*, Delhi: Springer.
- Das, Praggya Asish Thomas George (2017): "Comparison of Consumer and Wholesale Prices Indices in India: An Analysis of Properties and Sources of Divergence", *RBI Working Paper*, WPS (DEPR): 05 / 2017
- Government of India (2007): *A Hundred Small Steps: Report of the Committee on Financial Sector Reforms*, New Delhi: Sage.
- Government of India (2013): *Report of the Financial Sector Legislative Reforms Commission*, New Delhi: Government of India.
- Goyal, Ashima (2017): "An overdose of inflation targeting", *The Hindu Business Line*, April 2, available at <https://www.thehindubusinessline.com/opinion/an-overdose-of-inflation-targeting/article9612438.ece>
- Henry, James S (1980): "The Cash Connection: How to Make the Mob Miserable," *Washington Monthly*, available at <http://www.unz.com/print/WashingtonMonthly-1980jun-00054/>
- Iyer, Aparna (2016). "RBI raised forex interventions under Raghuram Rajan", Aug 12 2016, *LiveMint*, available at <http://www.livemint.com/Money/cB9b7J9DuqU9YBP69gKJIP/RBI-raised-forex-interventions-under-Raghuram-Rajan.html>
- Joshi, Ajit R and Debashis Acharya (2011): "Inflation Model for India in the Context of Open Economy," *South Asia Economic Journal*, Vol 12, No 1, pp 39–59.
- Joshi, Viay (2018): "India's Economic Reforms: Reflections on the Unfinished Agenda", Fifteenth L. K Jha Memorial lecture delivered at the Reserve Bank of India, Mumbai on December 11, 2017, *RBI Bulletin*, February.

- Kapur, M (2013): “Revisiting the Phillips Curve for India and Inflation Forecasting,” *Journal of Asian Economics*, Vol 25, pp 17–27.
- Kapur, Muneesh and Mohan, Rakesh (2014): “India’s Recent Macroeconomic Performance: An Assessment and Way Forward”, IMF Working Paper WP/14/68, (2014) Washington D.C.
- Khundrakpam, J K (2008): “How Persistent Is Indian Inflationary Process, Has It Changed?” *Reserve Bank of India Occasional Papers*, Vol 29, No 2, pp 23–45.
- Livemint (2017): "Inflation targeting can't work in India: Former RBI governor Bimal Jalan", available at <http://www.livemint.com/Politics/CIHp8EFSm9pxePjnJFbevK/Inflation-targeting-cant-work-in-India-Former-RBI-governor.html>).
- Mohan Rakesh (2008): "The Role of Fiscal and Monetary policies in Sustaining Growth with Stability in India", *Asian Economic Policy Review*, 3 (2), 209–236.
- Mohan, Rakesh (2009): *Monetary Policy in a Globalized Economy: A Practitioner’s View*, New Delhi: Oxford University Press.
- Mohan, Rakesh (2009a): "Global Financial Crisis: Causes, Impact, Policy Responses and Lessons", *RBI Bulletin*.
- Mohan, Rakesh (2011): *Growth with Financial Stability: Central Banking in an Emerging Market*, New Delhi: Oxford University Press.
- Mohan, Rakesh and Muneesh Kapur (2009): "Managing the Impossible Trinity: Volatile Capital Flows and Indian Monetary Policy", Stanford University, *SCID Working Paper* No. 401.
- Mohan, Rakesh and Partha Ray (2017): "Indian Financial Sector: Structure, Trends and Turns", *IMF Working Paper*, No. 17/7.
- Patra, M D, J K Khundrakpam and A T George (2014): “Post-global Crisis Inflation Dynamics in India: What Has Changed?” in Shekhar Shah, Barry Bosworth and Arvind Panagariya (eds), *India Policy Forum 2013–14*, Vol 10, Delhi: Sage Publications.
- Ray, Partha (2011): *Monetary Policy: Oxford India Short Introduction*, Delhi: Oxford University Press.
- RBI (2010): *Report on Currency and Finance*, Mumbai: RBI.
- RBI (2014): *Report of the Expert Committee to Revise and Strengthen the Monetary Policy Framework*, Mumbai: Reserve Bank of India.
- RBI (2014a): Annual Report: 2013-14, Mumbai: RBI.
- RBI (2015): Annual Report: 2013-14, Mumbai: RBI.
- RBI (2016): Annual Report: 2015-16, Mumbai: RBI.
- RBI (2017): Annual Report: 2016-17, Mumbai: RBI.
- RBI (2017a): *Financial Stability Report*, December 2017, Mumbai: RBI.
- RBI (2017b): *Report of the Internal Study Group to Review the Working of the Marginal Cost of Funds Based Lending Rate System*, available at <https://www.rbi.org.in/Scripts/PublicationReportDetails.aspx?UrlPage=&ID=878>
- RBI (2017c): Monetary Policy Report: April 2017, Mumbai: Reserve Bank of India.

- Reddy, Y V (2008): "The Virtues and Vices of Talking about Monetary Policy: Some Comments", available at https://www.rbi.org.in/Scripts/BS_SpeechesView.aspx?Id=395.
- Reddy, Y V (2017): *Advice & Dissent: My Life in Public Service*, Delhi: Harper Collins
- Rogoff, Ken (2016): *The Curse of Cash*, Princeton: Princeton University Press.
- Sharma, Naresh Kumar, and Motilal Bicchal (2017): "The properties of inflation expectations: Evidence for India", *Economia* (online version), available at https://ac.els-cdn.com/S1517758016301291/1-s2.0-S1517758016301291-main.pdf?_tid=spdf-6541b390-185f-4e4a-af93-2817bcc5c7dd&acdnat=1519877337_d8f8424e80eb524a63063392ff6aa820
- Subbarao, D (2011): "Central Bank Governance Issues: Some RBI Perspectives"; Comments at the meeting of the Central Bank Governance Group in Basel on May 9, 2011; available at https://rbi.org.in/Scripts/BS_SpeechesView.aspx?Id=563.
- Subramanian, Arvind (2015): "Indian monetary policy in unusual times, uncharted waters", Vox (CEPR's Policy Portal), available at <https://voxeu.org/article/indian-monetary-policy-unusual-times>
- US Treasury (2017): *Foreign Exchange Policies of Major Trading Partners of the United States*, Office Of International Affairs Report to the US Congress U.S. October 17, 2017, available at [https://www.treasury.gov/press-center/press-releases/Documents/2017-10-17%20\(Fall%202017%20FX%20Report\)%20FINAL.PDF](https://www.treasury.gov/press-center/press-releases/Documents/2017-10-17%20(Fall%202017%20FX%20Report)%20FINAL.PDF)
- World Bank (2018): *India Development Update*, March 2018.
