

**Government securities market: Price discovery and the cost of Indian government
borrowing**

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The motivation for talking about the government securities (G-Secs) market is first that it is little understood, yet has substantial effects on other markets as the producer of risk-free interest rates that serve as benchmarks for bonds more generally. Price discovery in the longer term G-Secs gives an estimate of macroeconomic variables such as expected inflation and growth. It has a major role in monetary management. The RBI conducts open market operations (OMOs) in G-Secs, that is, sale to or purchase from the market in order to adjust long-term or durable rupee liquidity. Sale of securities aims to suck out rupee liquidity when it is in excess; while buying securities from the market releases liquidity into the market, when liquidity conditions are tight. Finally, it also determines the price of market borrowing for government. It can be argued that the RBI should not worry about this and focus only on monetary management. But G-Secs rates are becoming more important in monetary transmission as the share of bank credit goes down and that of market borrowings goes up. Interest rate spreads affect monetary transmission.

Second, 10 year G-Secs threw up an interesting puzzle last year. There was a sharp rise in interest rates unrelated to fundamentals. Exploring its causes sheds light of the working of G-Secs markets in India, and on pitfalls of monetary management in an emerging market. I would like to point out, especially for young people in the audience that identifying and working on such puzzles is a good strategy to make research relevant as well as rigorous. It can be interesting detective work to try to isolate the culprit.

The following figures give a quick overview of the G-Secs market and put the sources of government financing in context. On December 17, 2018 all G-Secs totaled to Rs 54.43 tr. Commercial banks were the major holders with 26 tr in 2016. In end November 2018 the RBI held only 7.85 tr of this, which itself was up from 4.74 tr in end March, while foreign institutional investors held Rs 1.91 tr. Other holders and players include insurance companies-- provident and pension funds, co-operative banks, regional rural banks, mutual funds and corporates. Retail at present has a minor share, although there are continuing attempts to develop retail markets. Stock exchanges have launched debt trading platforms (G-Secs as well as corporate bonds) for retail investors, with access through broker banks.

The main players in G-Sec markets at present are commercial banks. Some of these as well as a few NBFCs function as primary dealers. These are market makers providing both buy and sell executable quotes. There are sustained improvements in market microstructure, such as the development of transparent electronic trading and reporting platforms.

The 10-year G-sec is the most traded. Average daily turnover over 2015-18 was about 4tr (7% of the stock) but ranged from a low of 1.5 to a high of 15tr. We will focus on this G-Sec from now on.

After the August 2017 cut in Repo rate from 6.25% to 6%, the policy stance hardened and the cost of government paper rose sharply. The historical spread between the Repo and the 10 year G-Sec since 2011 was about 60 basis points, but the yield on the 10-year benchmark paper rose from 6.4% to peak at 8.18% on 11 September 2018 before coming down towards 7. At the shorter end also G-Sec yields rose. Over the same period the rise in policy Repo rates was only 0.5%. Why did G-Sec yields rise by almost 2%?

Under the expectations theory of interest rates long-rates are the sum of expected short-rates, plus a time varying term risk premium that depends on investor preferences. Real components and inflation components underlie the nominal yields, the nominal term premium and the path for nominal expected short rates. The standard explanation for a rise in long-term bond yields is market expectations of rising inflation and growth. Underlying this could be factors that push-up demand like rising fiscal deficits, or supply shocks like rising crude prices that affect inflation. In such conditions policy rates would be expected to rise over time. Demand and supply of securities affect price, but are themselves linked to fundamental factors. Policy rates directly affect short rates.

But examining each of the standard variables shows them to be inadequate to explain the rise in Indian bond yields in this period. Therefore, we turn to special features of Indian G-Secs markets. RBI provision of short-term liquidity is automatic under the liquidity adjustment facility (LAF). But large persistent deficits indicate a shortage of durable liquidity. An emerging market (EM) like India with a sizable informal sector is subject to major autonomous shocks in durable

liquidity from fluctuations in foreign inflows as well as from the demand for cash. These affect banks demand for G-Secs, which goes down as liquidity dries up. Sources of durable liquidity can be the RBI's holdings of G-Secs, which also raise demand for G-Secs, or its holdings of foreign securities acquired through foreign exchange intervention. We find that in addition to policy rates, the provision of durable liquidity and its components also affect G-Sec yields.

Over the period there was a large swing in RBI positions from selling G-Secs to sterilize acquisition of foreign currency to buying above 60 per cent of net government borrowing through OMOs. Durable liquidity was largely in deficit. In the Indian system where only commercial banks can access the LAF window sustained periods of liquidity deficit increase the leakage of cash, as informal rates of interest rise, thus making the deficit worse. These and other regulatory actions offer more satisfactory explanations for distortions in yields that reduced markets ability to successfully discover price, so that G-Sec yields deviated from fundamentals. Finally, implications for policy are drawn out.

The standard explanations

Inflation and growth expectations

In the 2016-18 period inflation remained within the inflation targeting band, first undershooting then briefly overshooting and finally again undershooting RBI projections. Thus inflation was low in the beginning of the period, rose and then fell again. Growth rates showed a similar pattern.

Since both growth and inflation showed soft patches, and their expected values were reflected in Repo rates rises, it is unlikely they were responsible for the extent to which yields hardened above Repo rates. These were not our culprits.

Fiscal Deficit

Mild fiscal slippages compared to the Fiscal Responsibility and Budget Management (FRBM) path announced occurred in both the 2017 and 2018 budgets (3.5% versus 3.2% and 3.3% versus 3%). The FRBM path itself, however, allowed some deviation from the path in a year of major

tax reform such as GST. While the number of tax payers and direct tax payments have gone up, GST itself is running slightly below target, although the longer term potential remains excellent.

The 2018 budget had a proposal to ensure minimum support price of kharif crops 50% higher than cost of production, as well as a partially funded health scheme. On 2 February, a day after the 2018 budget, the 10-year paper yield fluctuated between 7.48% and 7.68%, 10 times the normal market volatility, as the market worried about managing government's Rs 6.06 trillion gross market borrowing with the additional schemes in 2018-19. It welcomed a later announcement of cuts in borrowing with a softening of yields.

But again, the changes in government borrowing were not sufficient to warrant a 2% rise in G-Sec yields.

US Federal Fund Rate

Bond yields rose in most developed markets during this period as monetary policy moved towards normalization after the GFC stimulus. Even so, since inflation itself did not rise, and neither did long-term sustainable growth, the bear market in bonds was not expected to intensify.

As Trump tax cuts over-stimulated the economy near the top of its growth cycle and the US Fed raised rates, US 10 year yields rose to touch 3% from 1.5% in mid- 2016. Even so, short-term yields rose more than the long rate. The flattening yield curve suggested markets were pricing earlier monetary tightening, rather than a greater overall amount of tightening by the end of the cycle. The term premium increased as the end of global quantitative easing was fully priced in. But it was mostly due to the inflation component. As the recovery in real output growth in early 2016 reduced a fear of future deflation markets had priced into bonds, the inflation risk premium returned to a normal level of about zero, raising yields and explaining the bear market in bonds.

As commodity prices soften and the US growth shows signs of peaking, any further sharp rise in global bond markets yields is unlikely. An escalating bond bear market requires either a continued upward adjustment in the expected path of Fed rate hikes, or an increase in the term risk premium on long bonds. The US Fed Chairman also indicated in November 2018 that real

Fed rates were approaching neutral. Traders slashed bets on Fed interest rate rises. Futures had priced in the US central bank move in December but indicated it might pause in 2019.

Moreover, Indian policy rates had not remained low commensurately with US interest rates after the GFC. They had been raised substantially on the inflation targeting path after 2013, so the differential between Indian and US rates stayed high enough not to require a further sharp rise in Indian rates.

Since none of these standard explanations are satisfactory we next turn to the Indian context.

The Indian context

Special features of Indian markets

Large volatility in bond prices led to extremely thin markets in 2018 where the volume of trading was less than one-fourth of the previous year. On several days after February it was below Rs 2 tr. There were few buyers and RBI had to cancel or devolve bond auctions. The sharp fall in yields, led to large treasury losses. Banks and fixed income funds did not want to buy government paper for fear of such losses. But by November 2018 rates were falling. Turnover was back at a respectable 6 tr in December.

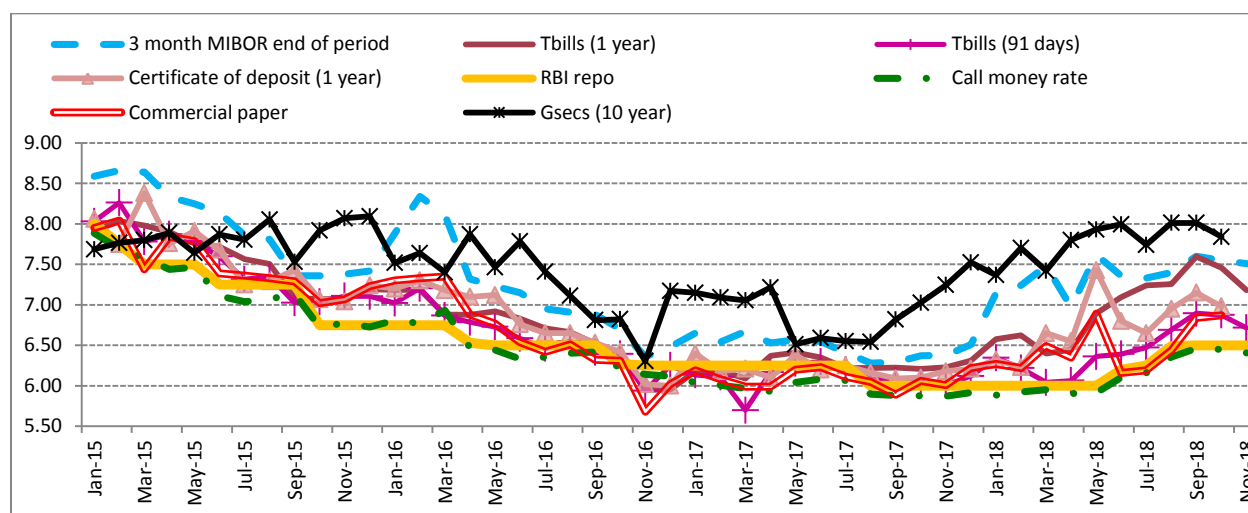
Liquidity

Banks meet the funding needs of households, corporates, and non-banking financial companies through primary liquidity (deposits) and by accessing funding liquidity (collateralised and uncollateralised from the money market), market liquidity (using liquid assets in their portfolio to raise funds) and central bank liquidity. Liquidity mismatch is fully accommodated through banks' exclusive access to the RBI's LAF. Autonomous liquidity shocks (such as currency demand of households, liquidity impact of forex market interventions of the RBI, and changes in government's cash balances maintained with the RBI) as well as non-LAF discretionary liquidity management operations (such as the Open Market Operations (OMOs), and changes in the CRR), which are targeted to meet the durable liquidity needs of a growing economy affect the LAF demand¹.

¹See paper https://rbi.org.in/scripts/Bs_viewcontent.aspx?Id=3479, for an extended discussion.

From 2011 it was decided to keep the LAF in deficit even in easing cycles, as is the practice in many AEs, as this was thought to aid monetary transmission. But given major autonomous shocks in the Indian system this led to large recurring liquidity deficits. Although the call money rate (CMR), which is the operational target, remained within the LAF band, spreads rose for other rates (Figure 1), and there were periodic complaints from markets. Repos and term repos are alright to smooth transient liquidity shocks but are inadequate to address durable shortages. In the absence of clear benchmarks, banks were not confident about rates in the interbank market. In 2016, therefore, it was decided to keep liquidity in neutral. Yet 2017 again saw complaints of liquidity shortages from markets.

Figure 1: Interest rate spreads



Following excess liquidity as cash flooded the banking system after the 2016 demonetization, the RBI was in a liquidity absorption mode. In the first half of 2017, bonds yields were low because of adequate liquidity in the system. The total absorption of durable liquidity in the 2017-18 financial year till November was Rs 1.9 trillion² as the RBI sought to absorb not only demonetization related excess liquidity but also that from acquisition of excess foreign inflows that came in through 2017. The markets blamed this for a shortage of liquidity. Banks that were

² G-Sec holdings of FIIs were also 1.91 tr in 2018, fully utilizing the cap.

lending began to face liquidity deficit. State Bank of India raised bulk deposit rates by 50-140 basis points and a few banks raised loan rates, even before Repo rates were raised.

Although the RBI's stated aim since 2016 was to keep liquidity neutral, its MPC statements record that ever since December 2017 liquidity fluctuated between surplus and deficit. They preferred to use overnight and term repos to inject short-run liquidity rather than provide long term liquidity, choosing to fine-tune variable rate auctions of both repos and reverse repos, in addition to the regular operations.

The situation worsened in mid-October 2018 when the cash deficit or net core liquidity (availability of cash in the system considering Government cash balance auctions) deficit in financial markets reached 1.4 Rs tr compared to a small surplus in the first week, and was expected to reach 2.5 tr by March 2019. In the 5 months between April and August the RBI sold \$18.6 bn in the currency market as foreign portfolio investments began to exit. This reduced rupee cash in the system. There was also the festival demand for cash.

Currency in circulation had risen by 6tr in 2017 and 3.3 tr in 2018. Goyal and Kumar (2018)³ argue when liquidity is tight, informal rates rise and as a result there is more cash leakage from the banking to the informal sector. Liquidity was tight over 2017 and 2018. They also find in an estimated DSGE model for India that money significantly affects demand in addition to interest rates, unlike in advanced economies. The income elasticity of narrow money is three times that of broad money. Therefore both money supply and its composition matter for an economy like India. It is not enough just to target Repo or call money rates⁴.

³ Goyal A. and A. Kumar. 2018. 'Active Monetary Policy and the Slowdown: Evidence from DSGE based Indian aggregate demand and supply', *The Journal of Economic Asymmetries*, 17: 21-40. June. DOI: <https://doi.org/10.1016/j.jeca.2018.01.001>.

⁴ Dr. Rangarajan, visiting IGIDR for a book release function in December 2018, remarked in private conversation that the MPC should rather be called RPC (rate policy committee), since they do not assess monetary aggregates at all. It is a common view among those with practical experience of Indian monetary policy making that the composition of money supply matters.

The components of reserve money are liabilities of the RBI. These are currency in circulation, bankers' deposits and other deposits with the RBI. The main sources of this reserve money⁵ are net RBI credit to Government and its net holdings of FX reserves. RBI holding of treasury bills and dated securities constitute the major part of RBI credit to Central Government while government cash balances with the RBI are deducted from it. FX intervention such as purchase of dollars adds to reserve money, unless sterilized by a sale of G-Secs held on the RBI balance sheet.

FX Intervention

India followed a carefully sequenced process of capital account convertibility. Equity inflows, which are risk-sharing, were liberalized earlier, while caps remained on debt inflows. These were lifted slowly. At first, equity inflows dominated because of caps on debt inflows. Imperatives of financing the CAD lead to relaxations in debt flows, after 2011. India could absorb larger absolute amounts now as its GDP had risen. As caps on debt flows were lifted upto \$19 billion came in over 2017-2018, taking up all space available, because they gained both from India's much higher interest rates and from currency appreciation.

These inflows did not, however, reduce the cost of government borrowing since the RBI was forced to buy US treasuries at zero interest from the excess inflows it accumulated as reserves and to decrease its holdings of Indian G-Secs. For example, as open market operations that had injected long-term liquidity in 2016 withdrew it in 2017, Indian G-Sec yields shot up to 8 per cent. Therefore the composition of durable liquidity also seems to matter, whether its source is foreign or domestic government securities held on the RBI balance sheet. The share of G-Secs to foreign securities in the RBI balance sheet became negative in periods of large inflows, and these were also periods when G-Sec yields rose. The ratio reached a low of 0.15 on 23 February 2018 while G-Sec yields rose. The RBI earns much lower interest rates on foreign securities.

⁵ Exactly they are net RBI credit to Government, to banks and the commercial sector, RBI's net holdings of FX reserves, Government's currency liabilities to the public – RBI's net non-monetary liabilities. The last are all those liabilities which do not create any monetary impact. They include RBI capital, various reserves, provisions etc. minus the other assets of RBI. Net RBI credit to Central Government = Loans and advances to the Centre + holding of Treasury Bills + Dated securities + Rupee coins + Small coins - Net of Centre's cash balances with the Reserve Bank.

Although foreign institutional investors (FIIs) are an additional source of finance and contribute to developing markets they add volatility especially in thin markets. In September 2013, even after relaxation in debt caps, the share of debt securities was still small at 36 per cent of equity securities and 6 per cent of total liabilities. The rise in yields that year was driven more by unnecessary policy tightening, not the debt outflows, in the Indian context⁶. But in March 2018 these numbers had increased to 75.5 per cent and 11 per cent respectively. Debt security liabilities now totaled USD 117 bn compared to reserves at USD 425 bn. Thus a low cap of 5 per cent of domestic debt leads to debt stocks being too large a share of foreign liabilities. This share should also be capped.

There were also periods of sudden stops and outflows. Sustained outflows in 2013 and slowdowns in late 2017 were largely in the debt component due to global risk-off. In both periods Indian market positions were largely long in government debt as interest rates were in a downward phase. As policy raised rates partly to mitigate debt outflows, bond values fell creating large domestic market losses, and shrinking domestic institutional and retail participation in debt, further raising G-Sec rates. Moreover, if the policy Repo rate is forced to more closely follow the rise in US Fed rates, it can hurt the domestic cycle. Capital flow management, such as caps on debt, prudential regulation, a more flexible exchange rate, and reserve accumulation and use are ways to retain some policy independence⁷.

The US Treasury, however, would like all EM adjustment to be in exchange rates since local currency appreciation will help expand US exports. It dislikes market interventions, and threatens to label a country as a ‘currency manipulator’ and pressurize it to appreciate its currency. A prior step is putting it on a watch-list based on 3 criteria: a bilateral trade surplus with US of at least \$20bn; CA surplus of at least 3% of GDP; persistent one-sided FX intervention of at least 2% of GDP over 12 months. These grounds are flimsy since bilateral

⁶ Debt outflows over May 22-August 26th in 2013 were 868 USD million for Indonesia, where foreign funding of domestic currency sovereign bonds had been liberalized considerably, compared to 35 USD million for India. So Indonesia had to raise policy rates 175 basis points post taper-on. The share of foreign bond investors in Indonesia’s bond markets was 38% in 2014 compared to 4% for India.

⁷ While Helene Rey argues that flexible exchange rates are not adequate to protect EMs from global shocks and they need capital controls, Joshua Aizenman believes a balanced combination of policies can work.

surpluses are inadequate measures of trade distortion. They could arise from value-added chains. Intervention must also be seen in the context of excess volatility of capital flows.

It has not yet named any country a currency manipulator although among its major trading partners six countries were on the April 2018 Monitoring List: China, Japan, Korea, Germany, and Switzerland with India as a new addition. In 2017 Indian purchase of foreign exchange was USD 56 bn coming to 2.2 per cent of India's GDP. The US Treasury (2018) pointed to this and the bilateral goods trade surplus of USD 23 bn. But it also noted India's overall CAD and that its currency was not deemed under-valued by the IMF. In Treasury's view, however, India did not need more foreign exchange reserves since it still had some capital controls. But India needed to intervene more precisely because it relaxed capital controls such as debt caps. All the more reason, therefore, for India to go slow in relaxing such controls.

Open market operations in G-Secs

The surge in debt flows in 2016 because of relaxing debt caps and keeping interest differentials high necessitated sales of G-Secs by the RBI in order to sterilize the effect of large dollar purchases on the money supply. As a result, G-Sec yields began to rise. Tight liquidity encouraged cash leakages further reducing durable liquidity. Then in mid-2018 a rise in oil prices and global instability led to a reversal of foreign portfolio flows. RBI's estimated sale of US\$ 22-25 bn in the spot market further reduced reserve money. Therefore it began to do OMO G-Sec purchases. Beginning in May, these amounted to ₹500 billion during H1:2018-19. In end September it began a practice of announcing a calendar of future OMOs for every month.

OMOs restored the confidence of banks and brought them back to the bond market. Treasury gains were once more on the horizon. 10Y GOI yields began to fall in November and were 7.45% in early December. The abnormal term premium was still elevated (above the average since 2011 of 60 bp) but was coming back to normal as durable liquidity outflow was compensated.

By end December RBI 2018-19 OMO purchases of Rs 1.76tn were 69% of the Rs 2.55 tn net central government issuance⁸. Critics regard this as a form of deficit financing that distorts markets, hurting their price discovery. For example the RBI inflation targeting report suggested large OMO purchases amounting to 20%-40% of the net government market borrowings over 2008-13 may have aimed to reduce G-Sec yields. But these OMOs were necessitated by global risk-off led outflows in this post global financial crisis period. And yields remained high because inflation was high.

The RBI now has freedom on when and how to do OMOs unlike with the earlier ad-hoc Treasury bills, which involved automatic financing of government deficits and were discontinued in the nineties. Therefore, OMOs do not amount to automatic financing of government deficits.

Moreover, Deuskar and Johnson (2016) present evidence that the market trading liquidity effects of large CB quantitative interventions are small, although yields are affected. They conclude market distortions of QE operations such as OMOs may be minimal.

Regulatory features

As we saw investments by commercial banks in G-Secs is the largest amounting to more than half the stock. Prior to the nineties reform the Statutory Liquidity Ratio (SLR) forced banks to hold 38.5% of Net Demand and Time Liabilities (NDTL) in G-Secs. Reforms aimed to reduce this financial repression and the SLR was steadily brought down. It was 25 for much of the 2000s and in 2018 was 19.5, moving towards convergence with the minimum Liquidity Coverage Ratio (LCR) required under Basel rules. LCR ensures banks have sufficient high-quality liquid assets to survive any stress for 30 days. In order to complete this alignment SLR is to reduce further by 25 basis points every calendar quarter until it reaches 18 per cent of NDTL, with the first reduction of 25 basis points in the January 2019 quarter.

But since 2000 banks generally chose to hold more than the statutory minimum, as market determined returns were attractive while credit growth was slow. Private and foreign banks

⁸ <http://www.cogencis.com/newssection/columnanantn-narayan-why-keep-it-simple-norm-wont-work-for-rbi/>

sometimes held more than PSBs. Foreign banks held 44% in 2015, which had come down to 33% in 2017. In 2018 the average level held was 29.5%.

As rates rise banks make capital losses on the longer duration bonds. But banks can opt to hold about 50% of SLR in a “Held to Maturity” category, which protects from valuation changes, since mark to market is not required. The limit of 25% of total investments under HTM category could be exceeded, if held in SLR securities and total SLR securities under HTM category are not more than 20.5% of NDTL. As SLR was reduced, this ceiling was also reduced to 19.5% over October, 2017 to March 31, 2018⁹. Unfortunately this was just the period when rates rose, inflicting heavy losses on sales and transfers from the HTM category. In the past, during such periods, regulatory forbearance had been forthcoming in the form of a rise in the HTM category, deferment of recognition of MTM valuation losses, or OMO operations that reduced yields.

This time, however, a speech by an RBI deputy governor (Acharya, 2018, January 15) aimed at encouraging banks to hedge risks, told banks not to expect help with interest rate risks. This increased banks reluctance to hold long-duration G-Secs. In India the interest rates swap market is still underdeveloped and most public sector banks (PSBs) lack the skills and expertise to use it. Moreover, banks are still on the path of reducing holdings of G-Secs away from financial repression. Pushing banks towards better managing interest rate risks is a laudable objective but is better done in good times not in bad. The RBI later¹⁰ (June 15) did allow them to stagger the provisioning for their MTM losses.

Banks had to maintain 90% LCR from January 2018, to reach 100% by January 1, 2019, in line with Basel norms. A broader range of high quality liquid assets could now be computed for LCR. Apart from G-Secs in excess of and within the mandatory SLR requirement, these included the 2% of NDTL allowed under the Marginal Standing Facility (MSF) and a Facility to Avail Liquidity for LCR (FALLCR) created, which was increased from 13 to 15% of the bank's NDTL from October 1, 2018. This broader range and reduction in SLR did not yet dent banks demand

⁹ <https://www.rbi.org.in/scripts/NotificationUser.aspx?Id=11136&Mode=0>

¹⁰ <https://rbi.org.in/scripts/NotificationUser.aspx?Id=11304&Mode=0>

for G-Secs, although the HTM reduction and capital losses made them reluctant to add to their stocks.

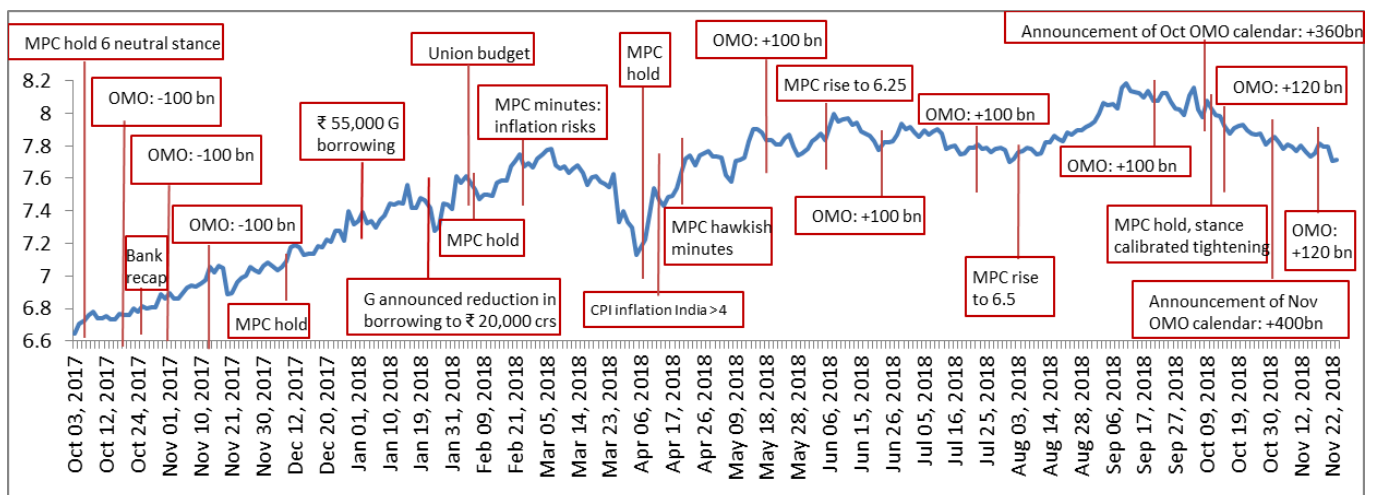
The rise in LCR, however, contributed to the liquidity issue for some banks. Although banks could use almost 50% of their SLR holdings (9% of 19.5%) for LCR, some new private banks had to rush to buy money for maintaining LCR raising rates in the term money market. One-year certificate of deposits rose above 7.5% even though the overnight call money market did not rise.

Thus poorly thought through announcements, over strict regulations, and regulatory flip-flops contributed to raising market yield spreads.

Event analysis

Figure 2 shows the steady rise in G-Secs yields in this period and the major events that impacted them. Calculating the basis points change in the yield one week before and one week after the event, shows the withdrawal of long-term liquidity through OMOs, as well as announcements of greater government borrowing, all raised yields. Announcements of reduction in government borrowing and the Union budget that did not increase borrowing requirement reduced yields.

Figure 2: Indian 10-Year Bond Yield Historical Data



Action by AE CBs did not necessarily affect Indian G-sec yields in the expected direction. The DGs speech on Jan 15, 2018, on no regulatory remission raised yields to 7.56 on Jan 16 from

7.44 by 12 basis points, although government announcement of reduced borrowing reduced yields soon after. While Indian CPI inflation rising above the MPC target raised yields in April, yields fell in May under similar conditions. But MPC warnings on inflation risks and hawkish minutes raised yields. MPC raising rates in June and August also raised yields. Active OMO purchases, starting in May, that injected durable liquidity reduced yields temporarily and on a durable basis by September. OMO calendars for the following months announced in end September and October also reduced yields. Thus liquidity injection and announcement through OMOs had the greatest impact on yields.

Estimating G-Sec yields

The stylized facts above strongly support the importance of liquidity and its composition for G-Sec yields. Formal regressions of 10 year G-Sec yields on short rates and a number of control variables also support the hypothesis, since OMOs as a ratio of narrow money have the largest effect while FX intervention as a similar ratio is insignificant. A dummy variable for the period after October 2017 is also significant, suggesting that the contextual variables discussed help to explain the yield deviation. Yields change significantly with change in the Repo rate, US fed rates, DRepo and 91D yields supporting the rational expectations theory of interest rates.

Estimating the effect of debt inflows on interest rates

Regressions were also run to estimate the impact of portfolio debt flows on short and long term Indian interest rates. The results show the debt inflows affect short-term rates but not long, so that policy still has degrees of freedom to respond to the domestic cycle. Repo has a larger effect on short compared to long-rates. Domestic long-rates still have some protection from global volatility and policy action can increase that protection.

Conclusions

Our detective work identifies the culprit as the narrow focus of monetary operating procedures, which was inappropriate for many aspects of Indian structure. For example, large exogenous durable liquidity shocks require a more rapid adjustment of durable liquidity. The composition of liquidity, share of reserve money and its sources all matter. OMOs must not be seen as at present as only a residual durable liquidity management tool, but as affecting the spread of interest rates

and therefore the transmission of monetary policy. They should not be entirely replaced by RBI's acquisition of foreign securities. While development, deepening and stability of financial markets must remain a major objective, tightening of regulations should avoid being pro-cyclical. The price discovery function of G-Sec markets is impeded both by too little and too much of OMOs, so balance is required.

Many implications follow for policy. As SLR reduces and banks are encouraged to hold different kinds of securities and lend more to the private sector, the RBI will have to hold more G-Secs on its balance sheet. A threshold ratio of G-Secs to foreign securities should be worked out in terms of its impact on the market rate spreads and the ratio should not fall below that. Debt inflows do help to deepen debt markets but lifting of caps on debt inflows should be calibrated to the reserve accumulation and sterilization it would entail, as well as to the impact on the countries NIIP, not only as a share of domestic debt markets. The size of debt market is large but the turnover is still small. Alternatively, if inflows and reserve holdings are to rise, in the longer term the RBI can consider issuing its own bonds for sterilization, as the People's Bank of China does.

More widespread holding of G-Secs is also required and will happen as markets deepen. The retail share should rise as NSE and other stock exchanges provide platforms reducing transaction costs and raising awareness.

If government debt becomes more widely held and high GDP growth aids the FRBM path of debt reduction to East Asian levels there should be no problem in finding holders for G-Secs. But in transition holders are needed for net borrowings of around INR 2.5 tr expected in 2019-20. If foreign inflows remain restricted, the RBI will be able to hold much of this.

A public debate needs to take place on whether there should be an independent debt office or government debt management should remain with the RBI. The international debate that had earlier favoured independence in view of possible conflicts of interest has swung around to seeing CBs as the best debt managers after the GFC. Huge expansion in the balance sheets of AE CBs has made them large holders of debt. They have the advantage of strategic timing of placements and use of market intelligence. OMOs help them enhance monetary transmission by

acting on interest rate spreads. But if a CB is a government debt manager OMOs cannot be narrowly seen as only a residual monetary tool.

Reducing the cost of government borrowing is a function of the debt manager but need not imply automatic funding of deficits. The critical difference of freedom in use of OMOs remains, unlike the automatic ad-hoc treasury bills, which were discontinued in the nineties. Economists are used to working out optimal trade-offs between multiple objectives. Reducing elevated excess SLR holdings and rates risk in the banking system will require good management of public debt and strategic OMOs that reduce yields on G-Secs.

The MPC should expand its operational targets to consider reserve money and its sources. This would be consistent with flexible inflation targeting, since everything that affects the inflation target can be considered.

Attention should be paid to making micro and macro regulations more counter-cyclical and context based.

More sensitivity is required to the role that good communication can play.

Although some protection is still there given India's gradual path to capital account convertibility. The path should be calibrated further, and together with the other measures will help insulate domestic interest rates from global shocks.