In the aftermath of the Great Financial Crisis, major developed countries pursued ultra-accommodative monetary policies to fight off recession. This paper delves into the FX impact of monetary policy and the results suggest that it has been growing significantly. The paper uses a high-frequency event study of the joint response of fixed income instruments and exchange rates to monetary policy news from seven major central banks spanning 2004-2015. News affecting short maturity bonds has the strongest impact, highlighting the relevance of communication regarding the path of future policy. The FX impact of monetary policy is state-dependent and is stronger the lower the level of interest rates. A greater adjustment burden falls onto the exchange rate, as rates are increasingly constrained by the effective lower bound.

Much has changed in financial markets over the past decade that could alter the relationship between monetary policy and exchange rates. Central banks have taken their policy rates to record, even negative, lows. As a result, many central banks, including all of the major central banks, have engaged in various forms of unconventional monetary policy. Most financial markets - including foreign exchange, money and debt markets - have experienced periods of heightened volatility and shifts in liquidity conditions. There has been a change in the mix of assets available to investors, with a reduced supply of safe assets. And, there have been substantial swings in risk aversion as well as a strengthening of bank regulation. In this paper, the authors show how the impact of monetary policy on the exchange rate has evolved against this backdrop.

They investigate this important issue with an event study using high-frequency interest rate and exchange rate data for seven advanced economies.

The paper has three major conclusions. First, the sensitivity of the exchange rate to monetary policy has increased significantly over time. This result is not just a function of the magnitude of unconventional policies that have been used in recent years, as the finding applies even in countries and periods when the policy rate was above the effective lower bound (ELB) and conventional monetary policy was implemented with the overnight policy rate. Second, the responsiveness of the exchange rate to monetary policy varies with economic and financial market conditions. In particular, the drop of interest rates to historical lows in some major economies has contributed to the increased sensitivity. As the ELB becomes increasingly binding, the exchange rate bears more and more the burden of adjustment. Third, the sensitivity of the exchange rate to unconventional monetary policy, including forward guidance, is in fact quite conventional in that, conditioning on interest rate effects, it is broadly similar as the sensitivity to conventional monetary policy.

The data set used in the paper includes three types of monetary policy announcements: scheduled monetary policy decisions regarding the policy interest rate that follow the meeting of the policy committee; announcements about unconventional monetary policy (UMP) facilities including key speeches by the central bank governor; and the release of minutes of the policy committee meeting. Because other market-wide developments will also affect interest rates, the authors use a tight window
around the monetary policy announcement when measuring the change in the interest rate. This ensures that they capture the news content of the monetary policy announcement with as little noise as possible. They measure the interest rate before and after the announcement as a 15-minute average to smooth any noise in the minute-by-minute data.

The minute-by-minute absolute changes in the 1-month Overnight-Index Swap (OIS) interest rate and 2-year bond yield - averaged across a large number of events and across the seven countries in the sample - highlights that the monetary policy announcement results in a rapid and sizable change in interest rates and the changes in interest rates occur continuously throughout the day. The change in the 1-month OIS ('target') in the event window tends to be much smaller than the average change in actual policy rate, indicating that most policy changes are to a large extent anticipated ahead of the announcement. Thus, the full magnitude of the change does not represent news to the market. A 10 basis point surprise increase in the target policy rate would appreciate the exchange rate by 0.40-0.60%.

Monetary shocks that move 2-year yields have a considerable impact on the exchange rate for all the countries (except Japan). This suggests that expectations related to monetary policy are a key driver of the exchange rate response. The orthogonalised component of the 10-year bond is significant for all economies, except Canada and Japan, suggesting that changes in term premia are an important conduit for low monetary policy transmits to the exchange rate. Overall, monetary shocks that lead to a repricing of 2-year bonds have the most powerful impact on the exchange rate. This highlights the significance of central bank communication and forward guidance which tend to primarily influence the shorter end of the yield curve.

Unconventional policies have been credited with having a large impact on exchange rates in the period since the financial crisis, but it is not clear whether these policies actually have an impact that differs from that of conventional monetary policy actions. Differentiating by the type of the monetary policy event, the authors find that UMP events only had an additional impact on the exchange rate in the US and not in the euro area or UK. For the US, this effect is statistically and economically significant. These findings suggest that UMP events are indeed special in their impact on the exchange rate, despite the fact that authors are controlling for the magnitude in the interest rate response. For the euro area and United Kingdom, the authors find that the impact of UMP events is insignificantly different from that of conventional monetary policy decisions.

Using a comprehensive and carefully designed event study to account for different types of monetary policy and to control for the endogeneity of interest rates and exchange rates, the authors show that despite the substantial changes in financial markets and the implementation of monetary policy over the past decade, monetary policy continues to exert a strong impact on exchange rates. Unconventional policy affects the exchange rate in much the same way as does conventional monetary policy, through the expected path of monetary policy and longer-term interest rates. Indeed, the authors find that the impact of unconventional monetary policy on the exchange rate is in most cases broadly similar to that of conventional monetary policy.

Source: www.bis.org
What Explains Call Money Rate Spread in India?
Sunil Kumar, Anand Prakash, Krishna M Kushawaha; RBI working paper, April 2017

The study focuses on various drivers of overnight inter-bank rate spread under the new liquidity management framework during July 2013 to December 2016. As the overnight inter-bank rate is the starting point of monetary policy transmission, study of its behavior becomes important from RBI's perspective. A change in the overnight rate is expected to get transmitted to the entire spectrum of term structure of interest rates, eventually affecting the investment and savings decisions of economic agents. RBI has also brought about several changes in the liquidity framework since July 2013 whereby liquidity available through fixed rate overnight repo under liquidity adjustment facility (LAF) has been restricted along with introduction of variable rate repos and reverse repos of various tenors. Hence, the overnight inter-bank rate is determined by various factors, which impact demand for and supply of liquidity in the banking system, including central bank's net supply of liquidity. The most important drivers of overnight spread identified in literature are liquidity conditions, policy rate expectations, and end-of-period effects.

Over the last decade, as the authors observe, the share of call money has declined significantly with market participants, including banks, increasingly relying on collateralised overnight segments, especially CBLO, for their overnight liquidity requirements. As a major part of the overnight funding from the market is met by CBLO, it could pose a challenge for monetary policy transmission if CBLO rate is not synchronized with call money rate (operating target). An analysis of synchronization among various segments of the overnight money market shows that synchronization between call money and other overnight segments witnessed significant improvement and remained at elevated level before weakening in 2015-16. The high share of banks in borrowing from CBLO segment, as observed, may suggest that they may be using part of this borrowing for lending in call money market in order to exploit the arbitrage opportunity, if any. In a nutshell, the structure of the overnight money market is tilted towards the collateralised segments where a larger part of the overnight funding takes place.

The new liquidity management framework, which entails far-reaching changes in the liquidity support provided by the RBI under LAF, has been devised for operationalising monetary policy framework effectively, i.e., to properly align the operating target (WACR) with the policy rate (repo rate). A comparative analysis of movements in WACR and its spread over repo rate during the old liquidity management framework (LMF) and the new LMF (NLMF) illustrates that the spread over the policy rate as well as volatility in the WACR were quite low during the old LMF, represented by the period April 1 2012 to July 16, 2013, as compared to new LMF. Availability of unlimited liquidity at a fixed rate and greater flexibility in reserve maintenance requirement led to low spread and less volatility but also stymied the development of the money market, especially the term segment. However, against the backdrop of intense volatility in the domestic foreign exchange market, far-reaching changes were introduced in RBI's liquidity management operations during July-October 2013. These changes led to a sharp increase in both spread and volatility of WACR during sub-period 1 (July 17, 2013-October 25, 2013) of the transition period (July 17, 2013 to March 31, 2014). However, with the restoration of orderly conditions in the forex market, phased normalization of monetary
policy was carried out during sub-period 2 (October 27, 2013-March 31, 2014) of the transition phase leading to sharp decline in both spread and volatility of WACR. Further revisions to NLMF were carried out on September 5, 2014, and again in April 2016. All these changes in NLMF have had a salutary effect on both spread and volatility of the WACR, which have declined sharply and have come closer to the levels witnessed during the old LMF.

Factors affecting the call money spread could be derived taking into account both demand and supply of liquidity. The factors identified are liquidity related (viz. liquidity conditions, liquidity uncertainty, liquidity distribution, demand for reserve maintenance and interest rate expectations), and dummy variables representing structural changes and some recurring phenomenon with regard to liquidity requirement. The authors have taken ratio of net liquidity provided under LAF (including overnight repo, term repo, reverse repo and MSF) to the required reserve maintenance as indicator of the daily liquidity condition in their empirical analysis. Increase in this ratio would signify tightening of liquidity conditions and would lead to an increase in WACR spread and vice versa. Next, the ratio of volume in inter-bank call money to the total volume in the overnight market has been assumed as representative of the distribution of central bank liquidity among banks. A rise in this ratio is likely to result in increase in WACR spread. The relationship between cumulative reserve maintenance ratio with a lag and call money spread is supposed to be negative as higher cumulative average reserve fulfilment would mean lower future reserve pressure. In this paper, the cumulative average of reserve maintenance ratio during the reserve maintenance period with a lag has been taken as representative indicator of demand for reserve. The authors have used one year interest rate swap (IRS) as an indicator to represent the interest rate expectations. Finally, liquidity uncertainty has been derived as conditional variance (volatility) of cumulative reserve maintenance ratio.

Some autonomous factors, which might be impacting the overnight rates, may be difficult to quantify. Impact of such factors on overnight rates may be captured best by dummy variables. One such factor that could be impacting the demand for overnight liquidity and thereby interest rates may be the banks’ tendency to build up cash balances at the quarter-end mainly for balance sheet management. This means that lendable funds in the overnight market get reduced significantly at the quarter-end due to the banks’ unwillingness to lend, despite having surplus liquidity, leading to spike in overnight interest rates. In order to represent this behavior of banks, the authors have included a dummy variable by assigning value 1 for each quarter-end in the analysis. Further, Most of the changes in the liquidity management framework were normalized by end-October 2013 but some of them continued and assumed structural nature. These changes appear to have reduced flexibility and increased banks' demand for overnight liquidity impacting the overnight spread adversely. Thus, the changes which were normalized by end-October 2013 have been captured by introducing another dummy variable (DUM2) in the analysis by taking value 1 for each day from July 17, 2013 to October 28, 2013 and zero for other days.

Another important change in the liquidity management framework during the study period was the introduction of fine turning liquidity management operation with variable rate reverse repo and repo auctions of various tenors from September 5, 2014. The fine-tuning operations have helped to deal with liquidity shocks uncertainty, eventually enhancing the alignment of the WACR.
with the policy rate. This change in the analysis has been captured by including a dummy variable by taking value one for each day from September 5, 2014 onwards.

The authors have used daily data from July 17, 2013 to December 31, 2016 as the objective of our study is to analyse the factors driving the WACR spread under the NLMF. They have used all the variables as discussed above, assumed to be affecting the WACR spread. Through the empirical analysis, the authors have found that tightening of liquidity conditions lead to hardening of WACR. Similarly, the skewed distribution of liquidity has been found impacting the call money spread adversely. The impact of both liquidity conditions and liquidity distribution has, however, been found to be very small, reflecting marksmanship in liquidity management by the central bank. However, increase in liquidity uncertainty leads to rise in call money spread. This appears to have come down though with the introduction of fine tuning operations with effect from September 5, 2014 and, accordingly, its impact on call money spread has moderated. The fine tuning liquidity management operations aimed at proactively meeting evolving systemic liquidity requirements, captured through a dummy variable, have been found to be reducing the call money spread.

Based on their analysis, the authors suggest that greater flexibility in averaging the reserve maintenance during the maintenance period may further reduce the stress on overnight liquidity and, eventually, may help in bringing down the liquidity uncertainty. Further, the authors feel that there is also a need to have greater alignment between various money market rates for more efficient transmission of the monetary policy signals, and other frictional elements such as higher repo rates vis-à-vis call money rates, also need to be addressed.

Source: www.rbi.org.in
The recent great financial crisis revealed a lot of gaping loopholes in the functioning of credit (CRAs) rating agencies, prompting a slew of measures in the Basel Framework to cope with the changing demands of the global financial architecture. CRAs play a vital role in ensuring financial stability by providing cogent ratings to various financial products. Over the years there has been erosion in the credibility of these ratings. The paper attempts to find out whether the credit risk regulatory capital of Indian banks is commensurate with the default experience associated with ratings assigned by the Indian rating agencies.

Till 2007, the domain of rating agencies was restricted to rating corporate bonds and niche areas like assessment of small scale industries, small and medium enterprises, individual credit, etc. This scenario changed with the introduction of Basel II framework of the Basel Committee on Banking Supervision (BCBS) in India in 2007. Banks in India were required to comply with Standardised Approach (SA) of computation of capital for credit risk as specified in the Basel framework either by March 2008 or March 2009 depending on international presence. Banks' computation of capital requirement for credit risk under the SA of Basel framework depends on the rating provided by Reserve Bank of India (RBI) accredited CRAs and the corresponding risk weight (RW) thereof. As all the banks in India are presently under the SA, majority of bank loans came under the ambit of credit rating.

Under the Basel framework, two broad methodologies are available for banks to measure their credit risk capital charge for regulatory purposes, viz., Standardised Approach (SA) and Internal Rating Based (IRB) Approach, based on preparedness of the banks in areas of credit risk measurement and management. Even with the advent of Basel III after the financial crisis, this framework of external rating and corresponding RW based capital calculation under the SA framework has not changed. Of the two approaches SA is simpler as compared to the IRB. Under SA of Basel framework different RWs have been prescribed for banks' exposures to various entities based on the external credit rating assigned to those entities/ exposures by CRAs accredited by the national supervisors.

RBI has so far accredited six domestic CRAs and banks are required to use the ratings assigned by any of these CRAs to RW their exposures under the SA for credit risk capital computation. The RBI guidelines permit banks to use ratings of the international credit rating agencies, viz., Standard and Poor's, Moody's and Fitch for risk weighting their claims for capital adequacy purpose. As per the Basel framework, national supervisors are responsible for assigning eligible External Credit Rating Agencies' (ECAs') or CRAs' ratings to the RWs prescribed under the SA, i.e., deciding which assessment categories (or rating grades) correspond to which RWs. From the above, it is evident that the role of supervisor is very crucial in ensuring mapping of appropriate RWs to rating grades of the domestic rating agencies so that undercapitalisation is avoided.

For the purpose of evaluation by national supervisors, 10 year long run average of three years' Cumulative Default Rate (CDR) of different rating grades of individual domestic agencies are recommended to be compared with BCBS prescribed 'reference' CDRs. Also, most recent
three years' CDR of different rating grades of rating agencies need to be compared with BCBS prescribed 'benchmark' CDRs. Under this 'benchmark' CDRs, BCBS has prescribed 'monitoring' level CDRs and 'trigger' level CDRs. The 'reference' and 'benchmark' rates have been calibrated for Basel framework based on historical default rates from major international rating agencies. What these essentially imply is that if the most recent three years' CDR of a particular rating agency for a particular rating grade is higher than 'monitoring/trigger' level prescribed by BCBS, the current default experience for that rating grade for that agency is above international historical default experience for that rating grade.

From the data obtained on annual default studies published by the domestic CRAs, it is observed that the CDRs of RBI accredited rating agencies are above the long run 'reference' level CDRs (which is more for guidance). The CDRs for Indian agencies are also above the 'trigger' and 'monitoring' level of 'benchmark' CDRs, especially for rating grades below AA, where the major concentration of borrowers exist. The differences between various CDRs mentioned in Basel framework and Indian agencies' observed CDRs suggest that the mapping of external ratings with RWs, as prescribed by Basel framework, may not be reflective of the default experience of Indian rating agencies and this may lead to undercapitalisation for credit risk in Indian banks vis-à-vis Basel framework. This potentially also affects the international level playing field under SA for credit risk.

It is required to take into consideration the fact that number of years of data available with Indian rating agencies as well as the rated borrower base may be considerably less as compared to established major international rating agencies and hence the CDRs might not have got stabilised for Indian rating agencies. However, the possibility of undercapitalisation on this count cannot be completely ignored. Therefore, against this very backdrop, higher minimum 9% regulatory capital requirement, as was prescribed by RBI (as against 8% prescription made in the Basel framework) provides comfort.

It is evident from the analysis that Indian rating agencies need to improve upon the default experience of rated exposures/entities in various grades, especially below rating grade AA, so that the observed default rates are within the 'trigger' and 'monitoring' level prescribed in Basel framework. Till then, the possibility of undercapitalisation of the banks cannot be completely ruled out due to application of same RW as prescribed in Basel framework despite much higher CDRs in case of Indian rating agencies.

Source: www.rbi.org.in
India witnessed large divergence in the Consumer Price Index (CPI) and Wholesale Price Index (WPI) inflation during 2015-16. The CPI-WPI divergence resulted in considerable debate amongst policy makers and academia on its causes and its implications for monetary policy. In this context, this paper provides a comparative assessment of CPI and WPI in terms of its key characteristics, particularly on the method of compilation, distributional properties and measures of underlying inflation. The paper further attempts a full reconciliation of this inflation divergence with particular emphasis on 2015-16. The analysis shows that differences in weight for similar items as well as differences in composition played a crucial role in determining the level and duration of observed divergence between the retail and wholesale prices inflation.

Inflation in India, as measured by annual changes in wholesale and retail prices, averaged 7.20% and 8.0%, respectively, in the last four and a half decades, which in comparison with other emerging market economies is noteworthy, and by developed country standards relatively high. The high and rising inflation persistence set the stage for an intense debate on nature of post-crisis inflation in India and its implications for macro-stability and policy. This culminated with the setting up of the Expert Committee to revise and strengthen the Monetary Policy Framework with a mandate, inter alia, to recommend an appropriate nominal anchor for the conduct of monetary policy. The Committee recommended headline CPI-combined as the nominal anchor for monetary policy and set out a glide path to bring down inflation.

In the context of the shift in monetary policy framework towards flexible inflation targeting with a nominal anchor based on CPI, the period from late 2014 onwards also saw a sustained divergence in inflation as measured by the WPI and the CPI. While CPI inflation moderated in line with the disinflation glide path and reached 5.20% by January 2015; since November 2014, WPI turned into deflation territory, resulting in the average gap between wholesale and retail inflation, which was historically less than one percentage point, to rise to as high as 8 percentage points during 2015. The stark divergence in WPI and CPI inflation invited considerable debate on its implication for macro-economic policy, particularly monetary policy.

There are differences in the scope and coverage of retail and wholesale indices. On the one hand, WPI collects price quotations from 5½ thousand first points of bulk sale, while on the other, CPI-combined covers 2300 rural and urban centres and collects 5½ lakh price quotations from various retail outlets. A quarter of CPI-combined consists of non-tradable like services that are not included in WPI. On the other hand, about 60% of WPI consist of either non-food manufactured products (including intermediate goods, capital goods, etc.), or commodities such as minerals and crude petroleum. With a share of 48-72%, food items dominate the CPI basket; its share in WPI is way lower. Within food group, the weights for similar food groups differ considerably in the wholesale and retail indices.

There also exists difference in the price collection methodology between the two indices. In case of CPI-combined, prices are collected for those specification of items, which are popular and reflect the buying behaviour of most of the consumers from (i) local outlets i.e. licensed/unlicensed markets, street vendors as well as shops by price collector by visiting, or by telephonic enquiry; and (ii) regulatory authorities in case of
items where prices are regulated without the need for field work. On the other hand, for WPI, prices are mostly collected at first point of bulk sale in the domestic market - both by online reporting as well as field visit. Thus the point of data collection could cause variation in prices.

The focus in the paper is to quantify the divergence to a set of effects, which are highlighted in various studies that cause overall inflation rates measured by different indices to vary at a point in time. These effects include inter alia: a) Formula Effect: Formula effects arise from difference in the choice of index used for aggregation of the most disaggregated elementary price indices to higher level indices. b) Weight Effect: Two price indices can also show divergence if the relative weights assigned to comparable items differ on account of different data sources. c) Price Effect: The price effect captures the divergence on account of price movement for the same item after adjusting for differences in weights. d) Scope Effect: The scope effect, calculated separately for CPI and WPI, measures the contribution of inflation coming from items that are included only in CPI but not WPI and vice versa to the observed divergence in overall inflation. The analysis reveals that during the periods of large movements in inflation, price effects become significant indicating that the rate of change in margins varies with the inflation cycles. In case of CPI-combined, price effects were observed to be prevalent across the major sub-groups.

Even if the divergence between CPI and WPI at an aggregate level, at a point in time, turns out to be zero, the analysis points out that this is more of an unstable “knife-edge” equilibrium rather than an enduring process brought about by congruence of underlying factors. These observations have large implications on the choice of appropriate index for monetary policy formulation. First, it reinforces the appropriateness of the adoption of CPI (the all-India CPI-combined) inflation as the nominal anchor for monetary policy formulation in India recently. The analysis brings out the inherent price stickiness in CPI scope items and its importance in explaining inflation divergence. For monetary policy purposes, scope CPI-combined carries more information on the most persistent price components or underlying inflationary pressures and inflation expectations. Furthermore, given the growing evidence of persistence in food and fuel prices and its importance for understanding underlying inflation, CPI offers a better way for capturing its transmission to non-food non-fuel categories, given the finding that food items and to a lesser extent fuel items exhibit considerable similarity between CPI and WPI.

Source: www.rbi.org.in