

# Revisiting the Framework of Macroprudential Policy: From Financial Stability Theory to Policy Practice

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## ABSTRACT

The Global Financial Crisis has revived the concept of macro-prudential regulation and has given way to the introduction of many new instruments. Today, the framework stands as an overarching public policy that aims towards achievement of financial stability across the globe. It has become an effective tool to combat the imbalances that arise due to interconnected balance sheets of financial institutions and has emerged as a complement to the traditional micro-prudential regulatory apparatus. The framework has exclusive measures to counter any unprecedented growth in credit, liquidity and capital components of the financial intermediaries. The present study discusses these measures rigorously. Many Emerging Market Economies have been using this toolkit since 1997 and have hence stayed insulated against the repercussions of the global recession. India, in particular, has a long-standing experience with the operation of the policy instruments particularly to contain the credit cycle and mitigate the systemic tendency of any financial risk. It has witnessed the exercise of the policy framework without any conflict with its macroeconomic goals like price stability and GDP growth. However, macroprudential policy is an infant regulatory framework. So, policy makers should take into account the limitations of the policy and make it work in conjunction with other major policies for effective functioning of an economy.

**JEL Classification and Key Words:** E58, E44, G28, G01, G18, G21, H12, Central Banking, Banks, Banking Regulation

## INTRODUCTION

Before the Global Financial Crisis, the central bankers all over the world ignored the financial stability mandate in their regulatory framework. There was a large scale belief that the concept of financial stability is a potential distraction which could influence the central banker's focus on price and output stability. Hence much emphasis was laid upon maintenance of price stability and achievement of key macro-economic goals exclusively. As a part of their financial regulation, central bankers only exercised micro-prudential policy tools to control the entire banking system. They did not take into cognizance the importance of the inter-connections between the individual financial intermediaries and thus, overlooked the likelihood of the spillovers due to such inter-linkages.

Recent studies find evidence that the financial crisis could have been prevented by subtle regulatory instruments. However, no binding financial standards were set out either by the central banks or the global institutions like the International Monetary Fund (IMF), Bank for International Settlement (BIS) and the Financial Stability Forum etc. who were assigned the sole responsibility of maintenance of global financial stability (Abdelal, 2007). Additionally, the capital requirement as codified by the BIS exclusively focused upon the risk management of individual banks instead of the entire banking network. However, the aftermath of the financial crisis showed all together a new picture to the world. There was a sea change in the consensus of the policymakers regarding the regulation of a financial economy. They started realizing that although micro-prudential policy regulation is a necessary condition but it is not sufficient for financial stability.

Relying solely on the micro-prudential norms for bank regulation can make the system less stable and a systemic risk cannot entirely be prevented. For e.g., under the micro-prudential regulatory framework, increase in bank's capital ratio (calibrated as a percentage of its total assets) is held to be favorable and necessary without any specific regard as to how the bank will achieve it. Basically, to increase its capital ratio, a bank has to either increase its new capital base or reduce its assets. This is in contrast to the situation of an economic recession, when the capital ratios of the banks are falling and there are no prospects of investment and income. In such a case, decreasing the bank's assets for the sake of increasing its capital base would contract the credit and shrink the economy even more. Due to complexity of the financial system, regulatory actions at the level of individual banks may not prove effective for the overall economic system. This is because banks are interrelated to financial markets as well as other financial institutions (Hanson, Kashyap and Stein (2010)). Micro-prudential norms also tend to be complacent for institutions like investment banks that primarily function through the wholesale markets where there is also a possibility of potential loss to the retail depositors. The policy framework takes into account the overall financial stability as the sum of individually stable banks. It does not really recognize that behavior of individual institutions can be a potential threat to other financial institutions in the system.

Since, the regulation of the financial system through micro-prudential instruments could not prevent the global recession in 2008, policymakers gradually shifted their focus towards addressing the systemic regulation and overall risk management rather than exercise of individual bank regulatory norms. Thus a more comprehensive policy tool that would address the concern of systemic risk on one hand and correct the financial imbalances by scrutinizing the entire banking system on the other, was recommended by central bankers. Such a toolkit is known as the "Macro-prudential Policy".

The Financial Stability Board (FSB), IMF, and the BIS, in their update to the G20 in February 2011, defined the macro-prudential policy as a toolkit that uses certain measures to reduce the system-wide financial risk and to limit the possibilities of disruption in the provision of primary financial services to the real economy. The policy is designed to fill up the gaps that exist in the traditional micro-prudential regulation and reduce the macroeconomic costs of a financial crisis.

## **MACRO-PRUDENTIAL POLICY AND THE BASEL ACCORDS**

Macro-prudential approach is two dimensional in nature with significant policy implications. One dimension deals with the evolution of risk over time. Under this dimension, the policy measures target at the system-wide risk which arises due to the pro-cyclicality of the financial system. This element is known as the time-dimension. It addresses the requirement of building up of cushions during economic prosperity which can be drawn down during a downturn, thus acting as stabilizers to the shocks. The second dimension deals with the dissemination of risk over the system at any point of time and focuses on the mutual connectivity between the financial institutions. It signifies the application of specific prudential measures suitable to the systemic significance of every institution. This dimension is known as the cross-sectional dimension. The policy measures under this dimension aim at curtailing the systemic risk that results out of the inter-linkages of the financial institutions that can give rise to their joint failure. In this regard the institutions whose failure is likely to disrupt the entire system are made to undergo tighter regulatory standards.

The cross sectional dimension was at the center-stage of policy debates after the crisis as financial distress in some systemically important institutions rapidly propagated over different countries of the world and collapsed their economic systems. It was observed that during the crisis, the banking sector was highly leveraged and had insufficient liquidity buffers. Basel I and II norms proved to be inadequate to control the crisis due to complexity in asset securitization positions, trading book exposures as well as off-balance sheet vehicles. Although Basel II improved upon the Basel I accords in calibration and pricing of the credit risk but it miserably failed to account for different other forms of financial risk. Since the accord allowed the systemically important banks (SIBs) to use their respective internal models of risk assessment and decide upon the amount of regulatory capital buffers, banks primarily competed to maximize their return on equity and in this run-up, minimized their capital requirements. In this way, the joint exposure of banks to risk went unscrutinised.

As a response to this issue, the Basel III regulatory framework was designed to cut short the interdependencies between the systemically important financial institutions (SIFIs) and eliminate the corresponding negative externalities (Altunbas et al., 2017). The accord was formulated to improve the ability of the banking system to deal with the financial risk, promote operational transparency and strengthen the risk management strategies. It encourages the bank disclosures and validity of their reported capital ratios, while maintaining the lending provision to the real economy. The Basel III improved upon the earlier accords on various grounds. Whereas Basel II imposed a minimum total capital adequacy ratio of 8% on banks, Basel III stressed that the minimum capital ratio that a bank should maintain must be 8% of its Risk-Weighted Assets (RWA), while maintaining a minimum Tier 1 capital ratio of 6% as compared to 4% in Basel II. Unlike Basel II, it even eliminated from its calculation the riskier tier of capital - Tier III.

The reforms in Basel III reflect a macro-prudential overlay. The accord primarily focuses on promoting financial stability and reducing systemic risk. In this regard, it introduced the countercyclical capital buffers which require the banks to maintain additional reserves as rainy-day funds. These buffers were meant to be imposed on the banks during an economic expansion ranging from 0% to 2.5% of their risk-weighted assets. In this way, the banks would be strong enough to absorb the losses during a contractionary phase. More importantly, the accord requires that these buffers should entirely constitute of a bank's Tier 1 assets. This encourages the banks to constrain their discretionary distributions in times of a financial stress. Moreover, the Basel III introduced a capital surcharge for global systemically important banks (G-SIBs) with an aim to reduce the possibility of failure of these large, complex organizations in an economy. The accord also imposed total loss-absorbing capacity (TLAC) requirement amounting to 16% of their risk-weighted assets (RWAs), or 6% of the leverage exposure measure, which would ensure that a G-SIB has sufficient loss absorption capacity.

Basel III also initiated new liquidity and leverage requirements on the banks to safeguard the banking institutions against risky and uncontrolled lending and ensure that they are equipped with enough liquidity during financial stress. For e.g., the liquidity coverage ratio, as per the accord, requires banks to have a sufficient reserve of High-Quality Liquid Assets to withstand a liquidity stress lasting upto 30 calendar days. Banks were also required to maintain a Net Stable Funding Ratio of 100% in order to incentivize them to fund their activities by using more stable sources of funds rather than cheap short-term wholesale funding. The accord also stressed upon a leverage ratio of minimum 3% for the G-SIBs (BCBS report, 2020).

Unlike the previous accords, Basel III is macro-prudential in its focus and aims at promoting the resilience and solvency of the entire banking system rather than individual financial units. The accord marks a rudimentary shift in the way of conducting banking regulation and supervision. It also overcomes many shortcomings of the micro-prudential supervision with the introduction of macro-prudential approach to financial stability that would make the system more resilient in the long run.

However, as fact suggests, higher resilience at the individual bank level reduces the risk of system wide shocks, micro and macro prudential reforms are complement to each other. In this regard, the Basel Committee on Banking Supervision (BCBS) has repeatedly focused on the necessity of the macro-prudential toolkit for financial regulation in association with the micro-prudential policy framework. Both the policies aim towards limiting the buildup of risk from specific sources and minimizing the resulting financial distortions. But the key point of distinction between the two policies is that the macro prudential policies attempt to limit the probabilities of financial imbalances that could cause loss in real output of the entire economy and the micro prudential policies lessen the financial distress only at the individual institutional level. Unlike micro prudential policy, the macro prudential policy intends to develop better statistics to scrutinize the financial system imbalances by the development of indicators (Macro prudential Indicators) to evaluate financial vulnerabilities. Some points of difference between the two policies are mentioned in the following table-

**Table 1: Difference between Microprudential and Macroprudential Policy Toolkits**

<b>POINTS-OF-DIFFERENCE</b>	<b>MICROPRUDENTIAL POLICY</b>	<b>MACROPRUDENTIAL POLICY</b>
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1.Ultimate Aim	Reduces the distress level at individual financial institutions.  Aims at consumer protection.	Reduces the distress of the entire financial system.  Aims at containing cost due to financial vulnerability.
2. Feature of Risk	Exogenous	Endogenous
3.Correlation Among Institutions	Irrelevant	Relevant
4.Nature of Prudential Control	In terms of risk transmission at individual bank level with bottom- up approach.	In terms of wide- ranging risk with top- down approach.

**SOURCE: BORIO (2003)**

Despite the notable differences that are mentioned above, the policies usually reinforce and complement each other in view of their objectives. If the classification of the respective policy goal, functions and instruments are done exclusively, then the likelihood of the synergies between the two policies increases and there is gradual minimization of the adverse impacts of the policy interactions. Even if tensions arise at certain stages of the credit cycles between the two policies, still, their joint interaction can be beneficial by clear assignment of powers, joint analysis of risk, information sharing and general dialogue between the authorities of both the policy frameworks (Osinski et al., 2011). This can, in turn bolster the confidence of the investors within the economy as the ease of doing business and prospects of profit maximizes with the increasing volume of economic activities.

With the above views in backdrop, this study attempts to provide a clear understanding on the concept of macro-prudential policy and its regulatory framework. An elaborated note on the classification and the policy instruments is provided in Section III. Section IV provides details on the country level experiences of their respective macro-prudential regulations and the stand of India in this regard is provided in sections V. Section VI concludes.

**The Macro - prudential Toolkit and its Classification**

Macro-prudential polices ensure a stable financial system by targeting the source of risk before it hits the real economy. The policy framework attempts to control the systemic risk via a wide range of tools which are capable to dampen the extent of a financial vulnerability. These tools are related to capital, credit and liquidity within an economy and the choice of appropriate tools depends on the degree to which an economy is financially developed. The classification of the instruments have been done according to the kind of systemic risk they are supposed to mitigate, mainly-

- a. Risks emerging due to sharp credit growth and credit-driven asset price increase (Credit- Related Instrument).
- b. Risks generated from excessive leverage and consequent de-leveraging (Liquidity - Related Instrument).
- c. Risks related to excessive volatile capital flows inclusive of foreign currency lending. (Capital-Related Instrument).

The macro prudential tools can be grouped into several categories based on their operational target. Table 2 provides a brief description of the various tools-

**TABLE 2: Classification and Functional Definition of the Macroprudential Toolkit**

<b>MACRO-PRUDENTIAL TOOL</b>	<b>CONCEPTUAL RATIONALE</b>
1. CAPS ON LOAN-TO-VALUE RATIO	This constrains the down payment amount so that the capacity to borrow for households decreases abruptly. It limits the procyclicality of collateralized lending for housing loans as the house prices exhibit a procyclical alteration. This tool addresses systemic risk regardless of whether it is adjusted time-to-time. It is counter-cyclical in nature.
2. CAPS ON DEBT-TO—INCOME RATIO	It regulates prudentially the quality of assets of the banks. If this instrument is used jointly with the loan to value caps, it acts counter-cyclically as it addresses the time-dimension of the systemic risk. It imposes additional constraints on the collateralized lending and dampens the borrowing capacity of households.
3. CEILINGS ON CREDIT GROWTH	This instrument imposes a cap on either the gross lending or lending to only some specific sectors which have systemic importance. It deals with the time-dimension of systemic risk by constraining credit or asset price cycle when it caps the aggregate credit and, it deals with the cross-sectional dimension of the systemic risk by imposing a cap on lending to specific sectors only.
4. CAPS ON FOREIGN CURRENCY LENDING	If the loans are sanctioned in foreign currency, then, the unhedged borrowers are exposed to foreign exchange risks and this in turn affects the lender who also gets exposed to credit and default risk. The systemic risk may get amplified if the common exposure is enlarged. So caps such as risk-weights are imposed on foreign currency lending to curtail any systemic risk probability.
5. COUNTER-CYCLICAL CAPITAL BUFFERS	This instrument can be imposed in the form of ratios or risk-weights and can be raised during a boom to constrain the expansion in credit which can be used during a bust by the banks without a need to compromise the quality of their asset to meet the capital requirements.
6. TIME-VARYING/DYNAMIC PROVISIONINGS	It acts the same way as the counter-cyclical capital buffers do. The provisioning requirements are increased during good times to accumulate buffers and reduce the credit growth and during a bad time this buffer can be used up to expand the credit. This instrument can either be subject to a strict formula for implementation or can be exercised at the discretion of the policy makers to influence the bank-lending activities in a counter-cyclical fashion as per what the situation warrants.
7. RESTRICTIONS ON PROFIT DISTRIBUTIONS	This requirement aims to ensure the capital adequacy with the banks. The profits which are undistributed are added to the capital of the banks and the constraints on such profits create a capital cushion during a boom which can be used during a bust.

8. RESERVE REQUIREMENTS	This is a monetary policy tool which has a macro-prudential impact and can address the systemic risk issues. It has a direct influence on credit growth, dampening the credit cycle on one hand (time-dimension) and on the other, it provides a liquidity cushion that can curtail the probability of a liquidity crunch when the situation becomes adverse.
9. LIMITS ON CURRENCY MISMATCH	It hedges the banks against the foreign currency and credit risks and reduces the common exposure of the banks by limiting the sharp fluctuations in the exchange rate which can result out of convergence of sale and purchase of foreign exchange of banks.
10. LIMITS ON MATURITY MISMATCH	This instrument addresses the systemic risk because the choice of the asset or liability mismatch induces an externality such as fire sale of assets. This tool also helps banks to avoid the liquidation of their assets during a crisis when the banks fail to meet their short term obligations due to maturity mismatch of their assets and liabilities.
	<b>Credit- Related Instruments</b>
	<b>Capital- Related Instruments</b>
	<b>Liquidity- Related Instruments</b>

**Source: Lim et al (2011)**

The above measures can be applied to the economy at different phases of a financial cycle to enhance resilience of the economy or to dampen the effects of the cycle. For e.g., in the expansionary phase, time varying caps on DTI, LTV or haircuts can be applied to restrict the borrower activities. In order to restrict the balance sheets of the financial institutions during the same phase, reserve requirements can be tightened. Again, during a contractionary phase of the financial cycle, adjustments to specific loan loss provisions can be restricted. Similarly, limits can also be placed on liquidity coverage ratio and net stable funding ratios of the banks to prevent credit crunch in the economy. To limit contagion or shock propagation from systemically important financial institutions, time varying restrictions can be placed on asset compositions and institution- specific limits can be put on bilateral financial exposures (Lim et al. (2011)).

There are recent evidences that macro-prudential policies have centered on their roles in counteracting the leverage in financial markets and institutions (such as banks) which have large potential to create bubbles and cause economic disruptions. The policy tools like caps on loan to value ratio impose a requirement on the minimum amount of down payment for the household loans credits. This limits the pro-cyclicality of collateralized lending of the banks and the bank leverage is effectively controlled. Similarly, ceilings on total lending or specified lending to priority sector dampen the credit/ asset price cycles and this curtails the common exposure of banks to market risks. Again, counter-cyclical capital requirements like risk weights and provisions restrain the credit expansion during an upturn to provide a cushion during a downturn and reduce the leverage position of the banks. Different countries of the world use a combination of these macro-prudential instruments and exercise them in coordination with other macro-economic policies. These instruments are also adjusted counter-cyclically in a way that they act as automatic stabilizers for the economy.

## **MACRO-PRUDENTIAL FRAMEWORK: COUNTRY-LEVEL EXPERIENCES**

The macro-prudential policy framework has received attention both in advanced and developing economies of the world. The advanced nations used the policy toolkits less during the 1990s, but the frequency of usage has increased more after the Global Financial Crisis for maintenance of financial stability.

Countries like US, Spain, Columbia and some Eastern European countries have been successful in implementing macro-prudential policies, both individually and in coordination with other policy measures. For

e.g., in US, the macro-prudential policy authorities have adopted a minimum leverage ratio for the banking institutions in 1991. For the “strong” rated banks, the leverage ratio was set at 3% and for “other” categories of banks, it was set at 4%. In Spain, the macro-prudential measures were actively used between 2000-2008. The authorities introduced time-varying provisions in 2000 which were again revised in 2004. They also exercised sector-dependent asset risk-weights in 2008. A higher weight was proposed for mortgages that exceeded an LTV of 95% for residential property and 80% for other sectors. Columbia introduced LTV caps at 70% in 1999 and DTI caps in terms of a monthly debt service limit of less than or equal to 30% of disposal income limits on maturity in 2009. It also introduced marginal reserve requirements in 2007. Similarly, Greece introduced ceilings on lending via introduction of unremunerated reserves for an amount equivalent to credit growth above the prescribed rates. It also increased the regulatory provisions for susceptible consumer loans from 84% to 100% in 2005 (Lim et al., 2011).

It is worth noting that the developing economies, particularly Asian countries, have been increasingly using the policy toolkit since 1997 as a part of response to the Asian Financial Crisis. The Asian economies like China, Hongkong and India have been successfully using the credit, liquidity and capital-related macro-prudential measures to deal with the threats to financial stability. According to the data released by the Asian Development Bank in 2015, countries like Indonesia, Singapore, Korea and Thailand have frequently used credit –related measures like LTV and DTI caps while countries like China, India and the Philippines have mostly used the liquidity-related measures like limits on net open currency and reserve requirements. However, the capital related measures are used commonly in India but rarely in other Asian economies (Lee et. al, 2015).

Many of the Emerging Market Economies have implemented the leverage requirements as prescribed by Basel III to mitigate the on- and off-balance sheet leverage build-up. Some of these economies have tightened their capital requirements to curtail the exposures to the household sectors. Countries like Indonesia, Cambodia, China, Malaysia, India, and the Philippines etc. have implemented the liquidity coverage ratio since January 2015 and increased it by 10 percentage points each year till early 2019. Although many of the countries have emphasized on the issue of financial stability in the post crisis phase but economies like China, India, Philippines and the Republic of Korea have been using the policy measures way before the crisis of 2008. Specifically, in 2004, the People’s Bank of China (PBC) used the dynamic adjustment of the differentiated reserve requirement to moderate the credit growth of those financial institutions that have a Capital to risk weighted asset ratio less than 4%. In 2011, PBC mandated a permanent capital conservation buffer of 2.5% and a counter cyclical buffer of 0 to 2.5% during the period of rapid credit growth to prevent a systemic risk. It also imposed a 1% surcharge on five largest banks of its economy that have relative systemic importance. Similarly, to control the rapid loan extension in Philippines and Republic of Korea, in the pre-crisis period i.e. 2000: Q1 to 2008:Q2, instruments such as reserve requirement and LTV ratio have been tightened in respective order. In Malaysia, the Bank Negara Malaysia scrutinized strictly the eligibility requirements for credit cards in March 2011, and tightened the lending conditions on mortgages nearly three times, by adjusting the LTV ratios between 2010 and 2011. On an average, the macro-prudential measures have been tightened in these economies over the recent years (Lim et al., 2013).

## **INDIA’S EXPERIENCE OF MACRO-PRUDENTIAL POLICY REGULATION: THE ROLE OF RBI**

The apex bank of India, the RBI, has been applying the macro-prudential tools for financial regulation in India on a regular basis. The country has a long standing experience with the operation of the policy instruments particularly to contain the credit cycle and mitigate the systemic tendency of any financial risk. The RBI acts as the banking regulator and undertakes the responsibility of designing and implementing the macro-prudential policies. According to Section 35 A of the Banking Regulation Act, 1949, the RBI is granted the power to issue guidelines to banks and banking groups regarding the exercise of the toolkits. The policy instruments are thus set primarily by the RBI. The tools are implemented and measured basing upon the frequent monitoring of the indicators of financial vulnerabilities like aggregate growth in credit, credit-to- GDP ratio, credit growth in sensitive sectors and loan-to-deposit ratio etc. The status and evaluation of the policy operations is done regularly through the bi-annual Financial Stability Reports (FSRs) which are eventually debated at the Financial

Stability Development Committee (FSDC) and suggestions are made over the standard operating procedure of the policy package.

The RBI uses the “state of the art” technique to do an assessment of the systemic risk as a part of its macro-prudential regulation. The objective is to develop a comprehensive perspective about the financial system through advanced methodologies and econometric tools. It conducts the macro-stress tests for the banks following a bottom-up approach in which it tests the notional values of the derivative portfolios of at least 20 leading banks of the Indian economy. Through network analysis it examines the interconnectedness between different institutions and identifies any sort of systemic risk build-up by using various connectivity ratios. In its contagion simulation methodology, the RBI assesses the potential capital loss to the financial system due to an arbitrary failure of one or more financial entities. Additionally, it conducts a Systemic Risk Survey twice a year with the help of external experts and market participants.

For the banking system, the RBI appoints its regulatory departments to identify the risks as highlighted in FSR and prepare a detailed report on the ongoing initiatives and regulations to deal with the risks. It also suggests measures for mitigation of such risks. The assessment of the entire report is done by the apex body of banking system supervision i.e.- the Board for Financial Supervision and then submitted to the RBI after formal discussions. In order to address the data gaps, some progress has been made by the RBI partly by creation of a Central Repository of Information on Large Credits (CRILC) and also by collection of data regarding the foreign currency exposures of the corporates. A Financial Data Management Centre has been formed by the FSDC for sharing information and facilitating further analysis in this area.

The macro-prudential policies are announced by the RBI in the “Statement on the Development and Regulatory Policies” which is released along with the Monetary Policy Statements. If there are any significant changes which are needed to be communicated, the RBI disseminates it in the form of drafts and comments which are further analyzed before the final report is presented to the public. The notification to the public is given by either press release or through speeches by senior authorities or publications in financial reports such as the FSR. It also releases a master circular, wherein it presents the regulations related to particular aspects of a policy and/or the possible impacts of a specific policy stance. Moreover, it conducts workshops for the media on the motive and scope of macroprudential regulation in India. In its annual “Report on Trend and Progress of Banking in India”, the RBI tracks the status of the banking institutions, regulation and supervisions and assesses their development made so far according to the policy guidelines issued. All in all, the RBI operates through proper discretion rather than rule for the exercise and implementation of macro-prudential policies.

The first experience of the macro-prudential policy in India can be traced back to the early 2000s when the banks were directed to build up an investment fluctuation reserve of at least five percent of their investment portfolio by substituting the profits received on the sale of investments within a period of five years. The reserve strengthened the banks to maintain a constant capital adequacy and also ensured that a “cushion” is built up during a good time which can be used as a buffer during a bad time. This in turn shielded the banking sector against the effect of fluctuation in interest rates over the marked-to-market profits of the banks. The RBI decided to withdraw the surcharge once it implements the capital charge for market risk in a phased manner.

To reduce unprecedented overheating of the sensitive sectors of the economy like the commercial real estates, housing and capital markets etc., the RBI implemented risk weights and provisioning requirements in different phases to guard the balance-sheet of the banks. Moreover, to curb the possible risks that may emerge due to the unparallel credit growth in the near future, the RBI adopted pre-emptive counter-cyclical provisioning and differentiated risk weights for the sensitive sectors in 2004. It raised the provisioning requirements for standard assets in November 2005, May 2006 and January 2007 in a phased manner in sectors like retail loans, exposures to Non-Banking Financial Corporation (NBFC) and capital markets. But after the crisis, RBI eased some of the measures around 2009 which were tightened to curb the financial distortions during the crisis.

In response to the risk of a systemic failure, the RBI implemented macro-prudential measures for banking and non-banking institutions separately. Among the bank-specific macro-prudential policy measures, the RBI

initiated the LTV ratio in 2007 with a differential risk-weight requirement for housing loans during the crisis to prevent unwanted overheating of the housing sector. The LTV cap was introduced as a function of the loan size as extended to the borrowers by the banks. From the year 2007-2012, RBI observed that there was a rapid increase in gold prices and the NBFCs extended their loans against the gold jewellery as collateral at a faster rate which was historically high and more than their peer financial institutions. To tackle such an abnormality in credit growth, RBI imposed an LTV ratio of 60% on the NBFCs in March 2012 on these institutions as a part of its non-banking prudential limits. In addition to this, the RBI thrived to put margins on loans against sensitive commodities and sectors that are prone to market fluctuations. In this direction, for loans to individuals who applied against some capital market instruments as collateral, the RBI instructed the banks to maintain a minimum margin of 50% of the market value of the equity/convertible debentures held in physical forms. In case, the debentures were in dematerialized form, a margin of 25% was prescribed by the RBI (Reserve Bank of India, Master Circular (July 2015)).

The RBI noted that the access of NBFCs to public funds through non-convertible debentures and commercial paper borrowings increased tremendously in recent years. Realizing that the NBFCs are inter-connected with the rest of the financial system, RBI issued directions to monitor the financial parameters of the NBFCs through an off-site data base on a quarterly basis and at the same time analyze the build-up of concentration in specific sectors through a robust off-site return methodology and onsite inspection. RBI mitigates any potential risks to these companies by strict norms on issuance of non-convertible debentures, capital requirements and norms on credit concentrations, leverage limits and prescriptions on asset-liability management. To tackle any arbitrage opportunities that can impact financial stability, the RBI attempts to synchronize the regulations of the NBFCs with those of the banks. In its mid-term review of the annual policy for the year 2004-05, the RBI initiated the macro-prudential measures by increasing the risk-weights on housing loans from 50% to 75% and from 100 to 125% on consumer credit. Moreover, for systemically important financial institutions (SIFIs), RBI put in counter-cyclical capital buffer measures as well as capital requirements and clarified that such a framework will be activated according to the current economic situation. It further added that it may exercise its discretion to use its alternate indicators like gross NPA growth and incremental Credit-to-GDP ratio for a period of 3 years (BIS Working Paper, 2017).

As a part of its capital flow management, the RBI implemented measures to reduce the risks out of capital flow volatility which ultimately cause financial instability. The RBI has been changing prescriptions of sector-specific caps, domestic entity-specific caps, external commercial borrowings etc. according to the prevailing situations. During the crisis, the RBI removed the all-in-cost ceilings so that the corporate can access funds. It again re-imposed the ceilings when the condition in the credit markets improved. In response to the 2013 “taper-tantrum”, the RBI raised the marginal standing facility rate (MSF) rate by 200 basis points and tightened the reserve requirements with a motive to restrict the liquidity flow in the economy. (RBI Working Paper (2017)).

Not only in the planning of macro-prudential policies has the RBI acted as the sole authority, it is also the apex body for design and implementation of monetary policy measures, banking regulation and financial inclusion. The Bank maintains an optimal balance between the policy objectives depending upon the prevailing circumstances and takes a decision that would be favorable for the economy. The RBI has exercised both macro-prudential and monetary policy measures in tandem to curtail the financial overheating and has witnessed that both the policies work together in molding the expectation of economic agents about the macroeconomic perspective.

The BIS report (Dec,2016) has highlighted about how India has witnessed the coordination of both the policies in shaping its macro-financial environment without any conflicts so far between financial stability, the development of financial sector and financial inclusion. The macro-prudential policy framework designed for banking and non-banking sectors has prevented the regulated institutions from entering any risky business activities. The RBI has employed both the policies in conjunction with an aim to maintain both price and financial stability under the ambit of its regulatory norms.

## **CONCLUSION**

The Global Financial Crisis has revived the concept of macro-prudential regulation and has given way to the introduction of many new instruments. Today, the policy framework stands as an overarching public policy that aims towards achievement of financial stability across the globe. Although the progress in the macro-prudential policy regulation is far-reaching and significant, still it is an inexact science. Although macro-prudential policies have been successful in reducing the credit growth but their impact has remained asymmetric for different phases of the credit cycle. Evidence regarding its success in upgrading the credit growth during downturns is a missing link in the existing literature. So policy makers should take into account the limitations of the policy and make it work in conjunction with other major policies for effective functioning of an economy.

The joint report by IMF, FSB and BIS to the G-20 in August 2016 suggested that institutional arrangements for the macro-prudential policy implementation adopted by a country are shaped by the country-specific circumstances, such as political and legal traditions as well as prior options on the regulatory framework. Since a “one size fits all” approach does not exist in this regard, there has been a rising prevalence of three primary models (as mentioned in the report) that employ the main macro-prudential directive to a well-identified authority or interagency body, with an important role of the central bank as is the case in India.

In the first kind of model, the main macroprudential mandate is assigned to the central bank, with its Board of Governor making macro-prudential decisions (as in the Czech Republic, Ireland, New Zealand and Singapore). The model is prevalent in economies where the regulatory and supervisory authorities are established outside the central bank and the assignment of the mandate to the central bank can be complemented by coordination mechanisms. In the second type of model, the main macro-prudential mandate is assigned to a dedicated committee within the central bank structure (as in Malaysia, India and the UK). This setup creates dedicated objectives and decision-making structures for monetary and macro-prudential policy where both policy functions are under the roof of the central bank. This model can help counter the potential risks of dual mandates for the central bank (IMF 2013a). In the third kind of model, the main macro-prudential mandate is assigned to an interagency committee outside the central bank, in order to coordinate policy action and facilitate information sharing and discussion on system-wide risk, with the central bank which participates in the committee (as in France, Germany, Mexico, and the US). This model can accommodate a stronger role of the Ministry of Finance.

All these models can be useful to create political legitimacy and enable decision makers to consider policy choices in various related affairs. Although each of these models has equal amount of benefits and drawbacks, any one model can be fortified with auxiliary safeguards and mechanisms to ensure financial stability in an economy (Nier et al. (2011)).

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