# MACROPRUDENTIAL POLICY: A TOOL FOR ENHANCING FINANCIAL STABILITY AND RESILIENCE IN DEVELOPING ECONOMY

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## ABSTRACT

The strength of the financial system as a whole depends crucially on the developing connection between the financial system and the existent economy, and in addition on the system of interconnections between monetary organizations and the strategic interactions and externalities that these linkages create. There is now an extensive harmony in the policy makers that intensification of the macro prudential orientation of regulatory and supervisory frameworks is indispensable for the support of fiscal solidity. But understanding is still inadequate on these tools. This paper reviews the effectiveness of macro prudential tools in controlling systemic risk over time and across institutions and markets. The study exhibits that many of the most commonly used instruments are effective in tumbling pro-cyclicality and the usefulness is responsive to the type of shock facing the monetary sector. They can also interrelate with various other policies, such as monetary and micro prudential, raising coordination issues. According to the findings, the paper pointed out circumstances under which macro prudential policy is most likely to be effective, as well as circumstances under which it may have modest impact.

**Keywords:** Macroprudential; Microprudential; Systematic Risk; Financial Stability; Monetary Policy; Liquidity.

## INTRODUCTION

Macroprudential tools have become an integral part of the policy toolkit in many advanced countries and many emerging markets aimed at reducing financial risk (systematic risk). The recent financial crisis has triggered the need to go beyond purely micro-based approach to more updated financial regulation and supervision. As a result, the number of policy speeches, conferences and research papers that explain the need of macroprudential policy tools, has significantly increased. Now policy makers understand and give consensus that the macro-prudential approach should be adopted to enhance the financial stability and make sure to keep the financial risk at a prudent level with the aid of tighter regulations and supervision (Galati et al, 2013). The macroprudential term is now common in discussion of possible changes among the regulatory and supervisory frameworks. The macroprudential tools are mostly used to control system-wide financial crisis, thus help to limit any incidence of troubles in the financial institutions, which can have negative impact on the economy of a country. Macroprudential policy tools diminishing financial imbalances and protect the soundness of the economy. Macroprudential policy tools addressing and identifying general exposure, linkages, risk concentrations and inter-dependencies that are the bases of contagion and spill over risks that may hamper the stability of the whole economy. In this paper, we will briefly discuss the macroprudential tools, how those tools mitigating financial risk, how

does it affect in the economy and how does it help to the maintaining of financial stability.

***Theory***

Macroprudential policy tools are designed for making the financial stability in the real economy and reducing the risk in the disruption of the financial system (Galati and Moessner, 2010). Moreover, there is a close relationship between macroprudential tools and microprudential tools. The initial purpose of macroprudential policy tools the stability of financial system in the overall economy, later goals to ensure solvency among the individual financial organizations. Although there is a strong relationship between them, sometimes they do not share same objectives.

Macroprudential tools can be classified in a different number of ways. It can be classified into price based instruments such as haircuts, liquidity ratios, capital ratios, financial transactions and quantity based instruments are (LTV) ratios, debt service to income (DTI) ratios that is for residential property loans, guarantee deposit requirements for secured financing transactions (Kelber et al, 2014). There are also some macroprudential tools those were already exist in microprudential or monetary policy tools such as capital ratios for the former and reserve requirements for latter (Banque de France, 2013).We know primarily the task of prudential tools are to promote financial stability (Borio, C. 2014). As an example of macroprudential policy, Draghi (2013) cites the recent recommendation from the UK and Spanish central banks that Bank should keep enough capital level.

## LITERATURE REVIEW

In the case of financial stability, Macroprudential policies have great impact and it is also referred to as complementary to microprudential policy. Moreover, it interacts with the other sorts of public policies. Not all tools are effective for controlling risk; even we cannot think that all are macroprudential. Macroprudential policy has complement but that cannot be substitute for microprudential policies (Board, F. S. 2011).

The aim of macroprudential policy is to address systematic-wide risk in a two dimensions: the first dimension is the evolution of system-wide risk over time, which is called “time dimension”, second is risk distribution at a given point in time in the financial system- the “cross-sectional dimension.” However, in the time dimension, the key issue is to dampen financial system procyclicality, as an example, by the interactions within the financial system how financial system-wide risk can amplified and between the real economy and financial system that is sometimes leading to financial crises.

The recent financial crisis has focused the importance of financial stability by the supervision and regulations of financial institutions to keep control systematic risk. The main aspects of regulatory reforms in the recent year like measuring and mitigating systematic risk by the regulations, and most important thing is designing macroprudential policies appropriately. European systematic risk board (in the EU) (Frait et al, 2010) and financial stability oversight council (in the US and all over the world) made for mitigating systematic risk and confirming financial stability (Arnold et al, 2012 and Gauthier et al, 2011). Arnold et al, 2012 also focus the importance of measuring systematic risk and how macro-prudential helps to improve financial stability.

CNB defined financial stability in 2010 that this is a situation where without the severe failure or undesirable impacts in the financial system. Frait et al, 2010 showed the relationship between systematic risk and financial stability with the some variable that

affecting financial markets and macroeconomic environment. In the case of economic upswings, the financial system makes which tends to be overexposed to aggregate risk, which can be happened through the ample credit availability, fast growth in asset prices, leverage and maturity mismatches. At the time of financial cycle turns if the financial system has not made sufficient buffers in the proper time then the downturn can create extensive financial distress, moreover, can be amplified through considerable deleveraging, declining the provision of credit, and key financial services to the economy (Board, F. S. 2011).

***Interactions with Other Policies and International Dimensions***

The aim of macroprudential policies not only confirming the economic and financial stability, some other polices are fiscal and monetary, macroprudential policies interact with these policies (Claessens, 2014). In the context of countercyclical management both monetary policies and macroprudential polices are very helpful , the initial purpose of monetary policy is ensured price stability whereas the primary purpose of macroprudential policy is to ensured financial stability. From the Claessens, 2014 and IMF (2013) showed a benchmark world when monetary policy work perfectly. To ensure financial stability efficiently, monetary policy alone cannot be expected enough because the degree of liquidity in the system or the level of interest rate are not only the causes, which is related to monetary policy. In the policy rate pricking an asset price bubble for example can huge changes (Bean and others, 2010). Similarly, by the use of macroprudential policies to manage aggregate demand may make extra distortions through the imposing of constraints beyond and which is the reason for originating financial instability. For example, in the aggregate economic perspective, Limiting credit growth could be harmful.

However, by several ways monetary policies can affect in the financial stability, such as (a) by shaping ex- ante risk-taking incentives of individual agents, affecting short-term and leverage or foreign-currency borrowing (Dell'Ariccia and Marquez, 2013, review) or (b) by affecting ex-post the tightness of borrowing constraints, probably worsening asset price and related externalities and leverage cycles (Claessens, 2014). By the limiting borrowing and hence expenditure in one or many more sectors, this is also affecting in the output.

***Fiscal policy***

During the encouraging leverage, tax policies can contribute to the systematic risk, as when interest payment are tax deductible or it can affect asset prices (Mooij, 2011, Keen and De mooij, 2012). Tax can affect the conduct of macroprudential policies even when not contributing directly to risks. Van Den Noord, 2005 mentioned that how real estate taxes can be capitalize into the prices of house and making future tax policies for the financial constancy. Therefore, coordination between fiscal and macroprudential agencies may be needed, since various Pigouvian taxes and levies can address systemic externalities. However, fiscal policy in the aggregate matters as it can counter procyclicality.

***Microprudential***

In the effective microprudential regulation and supervision macroprudential policies presume very helpful. Osiński, Seal, and Hoogduin, 2013; Angelini, Nicoletti-Altimari, and Visco, 2012 showed the conflicts between macroprudential and microprudential policies. And at the bad time when microprudential perspective may look for tighten requirements to protect the interest of depositors of individual banks or investors while macroprudential perspective suggest for the relaxing regulatory requirements because it impedes the provision of credit to the economy or contribute to fire-sale effects.

***Other structural policies***

At the designing of the structural policies, conflict may also arise, as when risks rises from how the microprudential policies are led. As an example, the incidence of real estate booms, a very high loan to value ratio is likely to increase (Claessens, 2014). Capital requirements can increase overall procyclicality, Even when set optimally from a microprudential perspective (Angelini et al. 2010; Repullo and Suarez, 2013). For the public safety net , including deposit insurance , when individual institutions reducing the threat of running and that may be increased systematic risk (Demirguc-Kunt and Detragiache, 2002; Demirguc-Kunt, Kane and Laeven, 2008).

## FINDINGS AND ANALYSIS

Since the implementation of macroprudential policy are not easy be clearly recognized, researchers are faced with information limitation regarding the actual use of different tools. But Lim et al., 2011, succeeded to gather relative data on a representative sample of countries that includes New Zealand, Korea, China, some Eastern European countries, Spain, the United States, and Colombia. The sample is comprised of 12 developed as well as 28 emerging economies. They have analyzed the impact that implementation of seven explicit tools had on risk variables, e.g. counter-cyclical requirements (CTC), reserve requirements (RR), caps on debt-to-income (DTI) and loan-to-value (LTV) ratios, dynamic provisioning (DP), limits on credit growth (CG) and limits on foreign lending (FC). Some of these policies were implemented singly in some specific countries, and a combination of them in some others.

All the evidences show that, despite the nature of exchange rate regime of the country or the size of its financial system, by the introduction of instruments, there have been some positive impacts on the economy to some extents.

United States financial authorities introduced a minimum leverage ratio for banks, (which only reflects on-balance sheet activities), to maintain in 1991. However, as they did not respond to the noticeable shift of the nature of business activates of commercial banks from on-balance sheet toward off-balance sheet activities, in addition to the fact that the new requirement did not apply on investment banks, leverage ratios increased significantly.

By the year 1999, Colombia implemented a number of measures, which initially caused a reduction in credit to private sector but soon recovered later, and the proportion of non-performing loans of financial intermediaries as well as their exposure to default risk reduced.
After 2007-9 financial crisis and as a respond to vulnerabilities related to capital flaws, the Korean authorities implemented a number of measures in order to better control short-term external borrowings of financial institutions. By the year 2010, figures have reduced by 30% comparing to pre-crisis period.

In addition to fiscal and monetary policies, in 2010 Chinese authorities implemented a series of macroprudential policies and instruments and successfully slowed down the inflation rate in real estate sector and reduced credit growth. In order to curb liquidity risk exposures of New Zealand's FIs, by 2010 authorities introduced a core funding as well as two liquidity asset-liability mismatch ratios in 2010. Thereafter the announcement and before the formal implementation of the ratios, various banks started to extend their comprehensive funding structures.

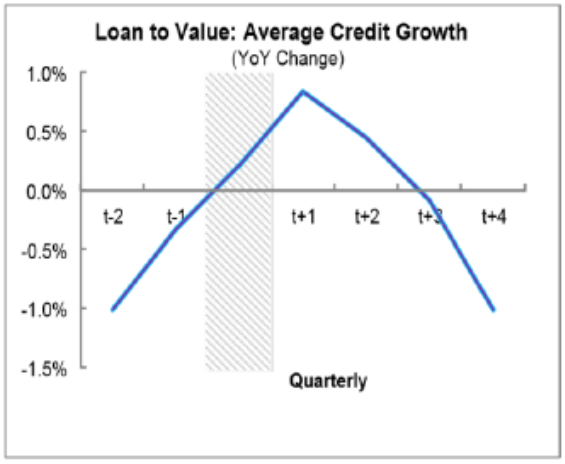
In 2000, the Spanish financial authorities introduced forward-looking loss provisioning as a macroprudential tool. During the recent sub-prime crisis, the instrument has helped to limit the growing credit losses, but taking into consideration the severity of the crisis and the economic downturn it failed to provide a full cover.

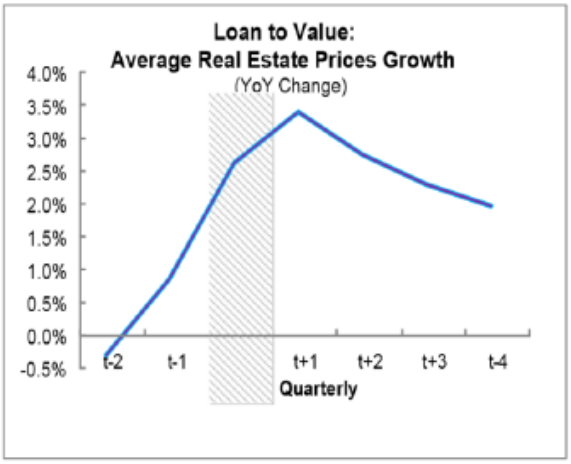
The authorities in Eastern Europe implemented several measures to control bank lending in foreign currencies. Adoption of the instruments helped to in build liquidity and capital buffers and contributed in slowing down credit growth rates, despite the fact that they were bypassed to some extent as nonbanks players became one of the main participants in the lending market.

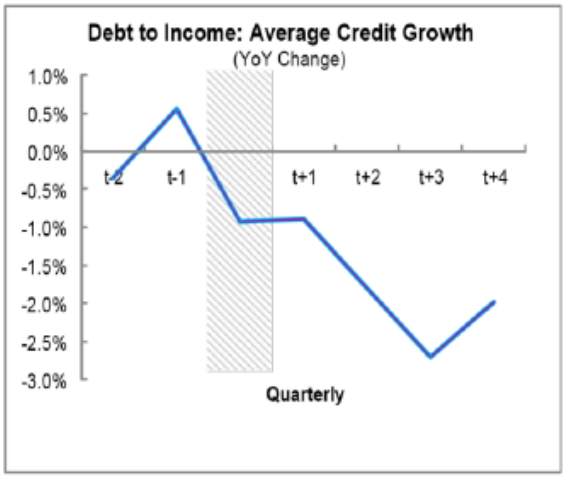
As the following charts illustrate, implementation of some of the macroprudential instruments did leave the desired effect on the targeted risk variables, and changed their trends. The impact of adoption of a number of instruments such as caps on the DTI, caps on the LTV, reserve requirements could be easily noticed, by examining the behavior of the risk variables of interest during ex-ante and ex-post the adoption.

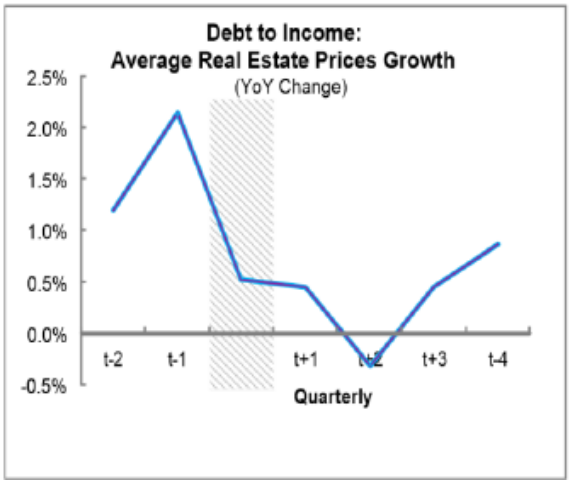
- Caps on the Debt to Income: Caused a sharp, continuous decline and an unsustainable decline in credit growth rate and asset price inflation respectively.
- Caps on the Loan to Value: After the implementation, both credit growth rate and asset price inflation indicators fall down in more than fifty percent of the sampled countries.

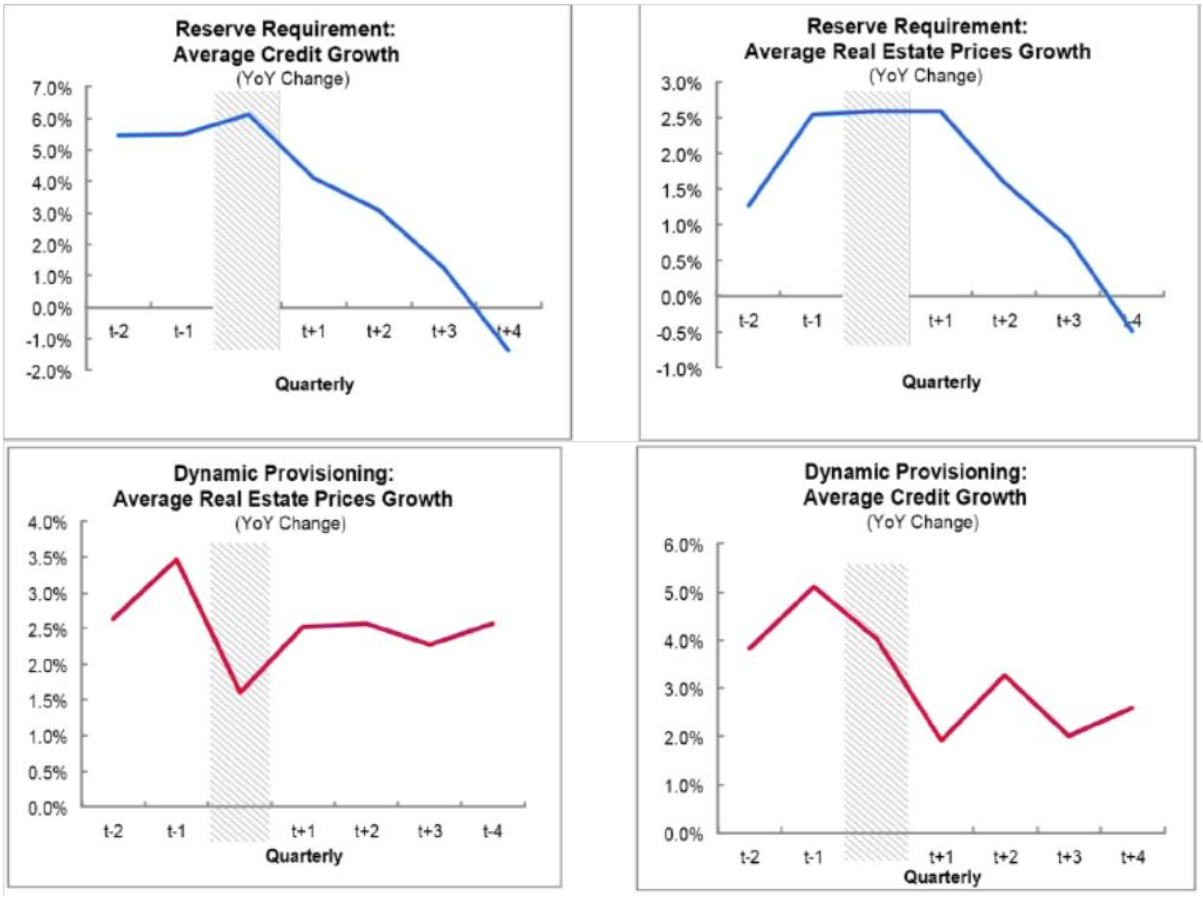
Reserve requirements: Both risk indicators, credit growth and asset price inflation collapse by the implementation of the tool.






- **t** denotes the time of the introduction of instruments.
- Source: IMF's International Financial Statistics

Nevertheless, as illustrated above, the dynamic provisioning cause the credit growth indicator to plunge but unlikely, asset price inflation remains constant to some degree.

***Regression Analysis***

Lim et al., 2011, has ran a series of regression tests to study the relationship between four risk variables, systemic liquidity, excessive leverage, excessive credit growth, capital flows reversals and 10 macroprudential instruments. Explicitly, their model using liquidity and capital flow risks proxies estimates the impact of limit on maturity mismatch and limits on NOP on common exposure. It also assess the effect of eight other tools on procyclicality of leverage and credit. They decided to proxy procyclicality by corresponding correlation of GDP growth with growth in credit and leverage, in order to be able to analyse the difference between the impact of implementation during recessionary and expansionary cycles. Three dummy variables in the model control for currency exchange regimes, the size of the financial system and economic growth to verify the magnitude of effectiveness of the instruments across different countries in the sample.

The sample includes data for 49 countries collected during a period of ten years, between 2000 and 2010. The source of information is an IMF (2011a) survey on country authorities.
First, the empirical evidence on the link between either the type of exchange rate system, the size of economic growth or financial system on one hand, or the effectiveness of instruments on the other hand does not suggest any unambiguous positive (or negative) relationship, as they collectively reported statistically insignificant coefficients. Moreover, even after

controlling for macroeconomic policies and factors the instruments continue being effective. Implementation of several policies collectively may produce a lower net welfare cost rather than considering only macroprudential policy or monetary policy tools. Plus, rules-based instruments appear to have a higher impact. Second, the following is a brief summary of regressions outputs.

**On risk of excessive credit growth,** the reported coefficients on ceilings on credit growth, caps on DTI & LTV, reserve requirements and dynamic loss provisioning are statistically significant[1]. Revealing that these tools would decrease the correlation coefficients between GDP and credit growth. For example caps on the Loan to Value causes procyclicality of credit growth to decrease by 80%. This confirms findings of the IMF (2011b) that suggests an increase in LTV ratios will follow a gradual increase in credit growth and real estate prices over time.

**On systemic liquidity,** non-deposit funded credit expansion is used as a proxy for wholesale funding in order to estimate usefulness of limits on asset/liability maturity mismatch macroprudential measure, and verify if its implementation would curb wholesale funding, as it is known to be a cross-sectional source of systemic risk. The coefficient associated with limits on maturity mismatch dummy variable is statistically significant, and consequently credit/deposit ratio is 5% lower in countries implemented the instrument comparing to the ones that did not.

**On excessive leverage,** the computed coefficients on dummy explanatory variables for ceilings on credit growth, time-varying/dynamic provisioning, countercyclical/time-varying capital requirements, reserve requirements, caps on foreign currency lending, and caps on the DTI instruments are statistically significant[2]. This suggests that, although capital-related measures are likely to decrease the leverage procyclicality levels, but other additional instruments which are primarily intended to limit credit growth may also impact leverage growth. So dynamic loss provisioning seems to reduce both procyclicality of leverage as well as credit growth. Since the numbers of countries that have implemented other capital-related measures during the last two years are too low, there is no chance for their impact on systematic risks to be accurately measured.

**On capital flows and currency fluctuation,** to proxy external common risk exposures, they have divided total foreign liabilities over total foreign assets. Limits on NOP are the only dummy variable that is associated with a statistically significant coefficient. According to the results, it could be said that by every pound of foreign assets held, the countries that have adopted this policy tool, have less foreign liabilities by 15%, comparing to those that have not[3].

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