Implementing Macroprudential Policies:
Challenges, Pitfalls and Way Forward

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1.   Introduction

Macroprudential policies have become the buzz word in central bank and regulatory circles as well as in international financial institutions like the IMF and BIS.[2] As the name suggests, these policies are regulatory measures taken to influence the stability of the financial system as a whole in a particular jurisdiction and by extension in the global financial system.

So while they are regulatory in nature, they are different from microprudential measures which are taken to ensure the stability of individual financial institutions.

To understand the reasons why macroprudential policies have generated so much analysis and debate, it is necessary to go back some fifteen years in time and recall what was then the conventional wisdom with respect to central bank policy and how this conventional wisdom has changed as a result of intervening events, in particular the financial crisis in the United States and Europe and the Global Great Recession.

In the early 2000s, the broad consensus among central bankers and academics was that central bank policy should focus on inflation as the primary, if not only, objective. This focus would ideally be implemented using the inflation-targeting strategy pioneered by the Reserve Bank of New Zealand in 1990. The focus on inflation became widely adopted in advanced economies, and a number of emerging market central banks also followed suit, the Czech Republic and Israel in 1997, Poland in 1998, and Brazil and Chile in 1999 to mention just the early converts (Roger (2010)).

Some emerging market central banks were skeptical, however, emphasizing the importance of paying attention to a wider set of variables, in particular the potentially damaging effects of exchange-rate misalignments, and taking measures to limit excessive volatility of the exchange rate.

Some economists had also been questioning the exclusive focus on inflation, suggesting that central banks should also pay attention to financial imbalances building in the economy.[3] But the status quo was robustly defended (in Bernanke and Gertler (2001), for example.) One facet of this defense was that it would not be desirable to use interest rates to lean against asset price increases since it was not possible to determine whether such increases were due to fundamental economic developments or to irrational exuberance in financial markets. All central banks could, and needed to do was to clean up the financial wreckage should a collapse of asset prices lead to widespread failures of financial institutions. Furthermore, it was also widely thought that the policy interest rate was too blunt an instrument to correct asset price misalignments.[4]

The financial crisis of 2007-9 in the U.S. and Europe (the Crisis) led to widespread acceptance of the idea that financial stability should be added to inflation as a policy objective of central banks, however.[5] The Crisis was the most significant period of global financial instability in more than seventy years. Post-crisis analyses by the IMF, the Financial Stability Board, the Basel Committee on Banking Supervision and other respected experts have concluded that one of the causal factors was the failure to adequately monitor and control systemic financial risks. Banking system stability monitoring focused on the risks in individual institutions failed to consider that a build-up of macroeconomic risks and vulnerabilities could adversely impact a number of institutions simultaneously, posing systemic risk.

The Crisis underscored the need for relevant national authorities, primarily central banks, to improve surveillance systems to detect, at their incipient stages, the build-up of macroeconomic risks, vulnerabilities or threats that could jeopardize financial system stability. At the same time, it became recognized that the traditional interest rate tool needed to be supplemented with another policy instrument to deal with the additional policy objective. Thus, macroprudential policies were seen as the solution to the Tinbergen dictum which states that in order to achieve a certain number of policy objectives, you need at least as many policy instruments. Timely macroprudential policy measures can then be taken, alone or in concert with other policy actions, to avert, dampen or mitigate periods of instability or crisis.

In its purest form, the post-crisis consensus saw the short-term interest rate as focusing exclusively on inflation, or macroeconomic stability more generally, and leaving regulatory measures, macroprudential policies, to focus exclusively on financial stability (e.g. Bernanke (2011) and Svensson (2012)).

But this strict division of labor between the policy interest rate and macroprudential policies has been challenged. For example, there is evidence that changes in the short-term monetary policy interest rate can have an impact on risk taking by economic agents (C. Borio and H. Zhu (2008)). In addition, macroprudential instruments are, as we shall see, often focused on specific markets and, as such, may not fully guard against more diffuse risks to financial stability. In such cases, using interest-rate policy may be justified as it 'gets into all the cracks' as Professor Jeremy Stein once expressed it when he was one of the Governors of the U.S. Federal Reserve (see Stein (2013)).

Furthermore, if macroprudential policies succeed in restraining excessive credit expansion in the economy, then it may have an impact on macroeconomic conditions, and thus on inflation and other macroeconomic variables.

While monetary policy has the most direct, and therefore presumably the strongest, effect on price stability and macroprudential policy has the most direct, and therefore presumably the strongest, effect on financial stability, there are enough cross-over influences in the transmission stage that some form of coordination between the two types of policies is desirable.[6]

Preserving financial stability is now widely accepted as a legitimate objective of public policy. Staff of international financial institutions as well as authorities in central banks, regulatory bodies as well as finance ministries are actively looking for appropriate policy instruments, analyzing their effects, and setting up governance arrangements for their implantation.

These tasks raise a number of challenges and open up possible pitfalls. Sections 3, 4 and 5 of the paper will discuss these challenges and pitfalls and how they may be dealt with. Before doing so, the next section will be a little bit more specific about what we actually refer to when we speak about macroprudential policy instruments, and about their use.

## 2.   What are Macroprudential Policies and How Widespread is Their Use?

Macroprudential policies take many forms reflecting the diffuse nature of 'financial stability'.[7] For example, there are measures intended to influence the aggregate growth of credit to the private non-financial sector, measures that focus on credit growth or price developments in particular sectors of the economy, measures to affect maturity mismatches and liquidity mismatches on banks' balance sheets, and measures to curtail currency mismatches in the financial sector of the economy.

Cerutti, Claessens and Laeven (2015) report data for 119 IMF member countries on the use of twelve types of macroprudential policies obtained from a survey of country authorities. The survey asked when a particular measure was introduced and, if relevant, when it was removed. It did not record changes in the intensity of the measure, nor was there an attempt to assess whether or not a particular measure was binding. Figure 1 gives the average per country grouping of the number of macroprudential measures in place in each year from 2000 to 2013. An increasing trend is clearly visible for all with a tripling of the average number of measures used in Emerging Asia over the period and a doubling in low-income developing countries.

IMF (2014) and Zhang and Zoli (2014) present data which attempt to account not only for the number of macroprudential measures in place but also whether their intensity has increased or decreased. These data confirm the positive trend throughout the decade in most country groupings, but in contrast with Figure 1, they show a sharp increase the intensity of the application of macroprudential measures in the second half. Looking behind the aggregate figures reveals that Asian authorities have been particularly active in the use of measures aimed at the housing sector.

Zhang and Zoli also contain data on the use of capital flow management policies. They show that authorities in Latin America have been active users of these policies, particularly in the aftermath of the financial Crisis. Authorities in Asia have also increased the use of these measures substantially during this period.

Figure 1
Macroprudential Measures in Place: Averages Per Region
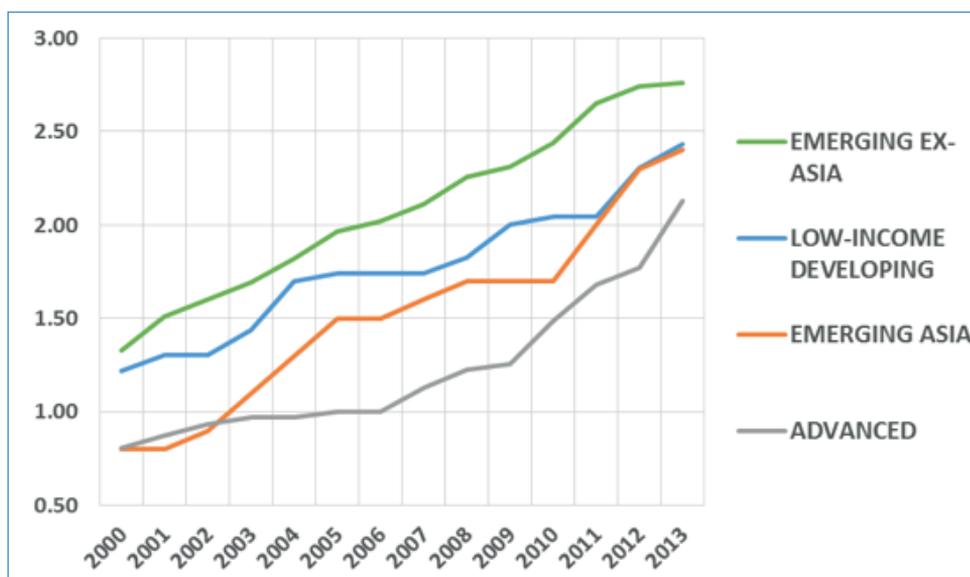
Source: Authors' calculations based on data from Cerutti et al.

3.   Challenges

3.1   Financial Stability as an Objective

3.1.1 Defining Financial Stability

We have argued that it is now uncontroversial to view financial stability as a policy objective. It is, however, not easy to find a concrete measure of 'financial stability.' Yet we need a measurable indicator in order to identify policy instruments and to judge whether their application is successful.

In the case of other central bank policy objectives, such as price stability, the problem is relatively simple. While there are debates about the proper price index to use and what actually constitutes 'stability' – i.e., which numerical rate of inflation should be the target – these problems are minimal in comparison with what we face when we attempt to quantify 'financial stability.'

In its Financial Stability Review of December, 2012, the European Central Bank proposed the following definition of financial stability.

"Financial stability can be defined as a condition in which the financial system – which comprises financial intermediaries, markets and market infrastructures – is capable of withstanding shocks and the unravelling of financial imbalances. This mitigates the likelihood of disruptions in the

financial intermediation process that are severe enough to significantly impair the allocation of savings to profitable investment opportunities." (European Central Bank (2012), p. 5)

3.1.2 Identifying an Intermediate Target

This definition is clearly too general to be directly applicable in a concrete policy strategy. For this purpose, we therefore resort to finding an intermediate target that is more directly observed and which can be influenced by policy measures.

To appreciate how this is implemented, recall how money supply targeting worked when it was a common monetary policy strategy in the 1970s. As now, the ultimate target was price stability or more generally some notion of macroeconomic stability. The money supply was chosen as it was believed that an appropriate rate of growth of money was closely associated with macroeconomic stability, and since the growth rate of money could be influenced to a reasonably degree of accuracy by the central bank. What the appropriate rate of growth should be was determined with reference to the demand for money, and open market operations were conducted to achieve the desired growth rate.

The strategy appeared to work well as long as the relationship between the intermediate target and the ultimate target remained stable and predictable, as long as the demand for money was a stable function of a small number of variables, and as long as central bank policy instruments could reliably influence the relevant monetary aggregate with a certain degree of accuracy. When these conditions broke down, monetary targeting was gradually abandoned. The Governor of Bank of Canada, Gerald Bouey, described the reason for abandoning M1 targets in Canada in November 1982 as follows: "We didn't abandon monetary aggregates, they abandoned us."

Similar procedures have been conceived for macroprudential policies. For example, the evolution of housing prices has been adopted in some jurisdictions as an intermediate target and limitation on loan-to-value ratios have been introduced to prevent excessive mortgage lending from stoking speculative demand for housing, thereby leading to excessive increases in house prices. Similarly credit growth, or more precisely the evolution of the ratio of total bank credit to GDP, has been elevated to a particular status by the Financial Stability Board as an indicator triggering the imposition of Countercyclical Capital Buffers (CCB) on banks.

Note however, that while both variables can be relatively readily measured, it is not a simple matter to decide when housing prices or credit growth has reached levels that threaten financial stability. Both variables evolve over time in response to fundamental economic forces, and policies should react only to growth rates over and above what these forces dictate. In other words, we are faced with exactly the same difficulty as that identified in the debate about whether interest rate policy should react to asset prices, except now the problem is associated with the introduction of macroprudential policies.

The solution proposed by the Basel Committee in the so-called Basle III framework is to recommend that countercyclical capital buffers should be required only when the ratio of bank credit to GDP (credit-to-GDP gap) exceeds its trend value by a specified threshold.[8] This recommendation is based on empirical grounds. In a comparison with a number of other variables, the credit-to-GDP gap was found to be the best predictor of forty-nine banking crises since 1960 in a cross-section of thirty-six countries.[9] But nothing guarantees that this predictability will be stable over time or that the recommendation in the Basel III framework is applicable to all countries without modification.[10] Indeed, in a recent research project sponsored by The SEACEN Centre,[11] it was found that while the credit-to-GDP gap does have some early warning properties, the fact that "…this variable has exhibited considerable volatility over the last decade [makes] its application as a rule difficult."[12]

These considerations suggest that the choice of variables to serve as intermediate targets for macroprudential policies may have to be country- and context-specific.

3.1.3 Choosing Policy Instruments

Finally, the policy framework relies on a reasonably dependable relationship between the policy instruments and the intermediate target. Different instruments are likely to be needed depending on the intended target of the policy. The European Systemic Risk Board (ESRB) (2014b) provides a useful taxonomy focusing on four targets: excessive credit growth and leverage; excessive maturity mismatches and market illiquidity; exposure concentration; and misaligned incentives and moral hazard. In each case, the ESRB identifies a number of possible policy instruments. For example, to counter excessive credit growth, six measures are identified that country authorities may use; among them are countercyclical capital buffers, caps on loan-to-value ratios, and liquidity ratios. To prevent excessive maturity mismatches and market illiquidity, regulators may impose a minimum net stable funding ratio (NSFR) or maximum loan-to-deposit ratios.

Some instruments may be used to achieve several targets. For example, the ESRB suggests that systemic risk buffers (SRBs) can be implemented both to address exposure concentration and misaligned incentives.

The abundance of targets and instruments complicates significantly the process of deciding which one(s) to focus on, particularly since the limited experience with their implementation gives little information on which ones are most effective. As we discuss further below, the sheer number of targets and instruments may also lead to policy over-reach in which the policy maker is tempted to use multiple instruments without a clear understanding of how they interact with each other and what the overall effect on the economy will be.

3.2   Evaluating the Impact

A second challenge facing the implementation of macroprudential policies relates to evaluating their impact. Three separate aspects are particularly important: the effect on the intermediate targets; the effect on the ultimate target; and to unintended side effects. We illustrate this using empirical evidence from a large cross-section of countries reported in Cerutti et al. (2015) and from the experience of Hong Kong with the regulations of loan-to-value (LTV) ratios on housing loans (Wong et.al. (2014)).

3.2.1 Impact on the Intermediate Target

Cerutti et al. make use of a new and comprehensive cross-country data base (see Section 2, paragraph 2 above) on the implementation of macroprudential policies to study the effects of these measures on credit growth and house prices. A number of interesting findings emerge from their analysis. The implementation of macroprudential measures is associated with an economically significant reduction in overall credit growth in the economy. The size of the reduction is estimated to be larger in developing and emerging economies than in advanced economies. This is consistent with the hypothesis that macroprudential policies have smaller effects in financial markets that are highly developed, thus offering more possibilities to circumvent the policies. The effects of macroprudential policies on credit growth is also found to be larger in economies that are highly open to international capital flows, a finding also consistent with the proposition that opportunities to circumvent the intended effects of macroprudential measures will reduce their impact on the economy.

The case study of Hong Kong was designed to measure the impact of maximum loan-to-value ratios for mortgage lending by Hong Kong banks. Hong Kong has a history going back to the 1990s of imposing such restrictions (see He (2014) for a description). Since 2009, the policy has been particularly active permitting a time-series regression analysis of its effect on actual loan-to-value ratios on the books of local banks. In a recent paper, Wong et al. carry out such analysis which allows them to calculate how the loan-to-value ratio would have evolved if no policy of reducing the maximum authorized had been carried out since 2009. According to the results, the policies introduced by the Hong Kong authorities resulted in a reduction of some seven percentage points, suggesting that the risk to banks from this type of lending may have declined.

3.2.2 Impact on the Ultimate Target

To measure the effect of the reduction in the maximum LTV ratio on the ultimate financial stability objective, Wong et al. conducted a second regression analysis in which the frequency of non-performing mortgage loans was related to the LTV ratio and other control variables. Using the estimation results, they then performed a counterfactual simulation and concluded that without the imposition of maximum

LTV ratios, the frequency of non-performing mortgage loans (NPL) would have more than doubled by the end of 2014 from about 1% to 2¼ %. On this measure, financial stability in Hong Kong has been strengthened.

3.2.3 Unintended Side Effects

But can we be sure that the NPL ratio in mortgage lending is the appropriate measure to assess financial stability more generally? Perhaps the reduction in mortgage lending of Hong Kong banks led them to turn to other markets and other customers, and perhaps these other markets and customers were actually more risky than the mortgage market.

In order to answer this question, we need to understand what effects regulations in one market, the mortgage lending market in this example, has on the financial system as a whole. How will lenders adjust their business model if mortgage lending is restricted by the LTV policy? Will they reduce total lending, in which case what would be the effect on the economy? Will they seek out other borrowers, and if so, how would that impact the riskiness of their lending book?

What about the borrowers who are no longer able to obtain a mortgage loan from traditional mortgage banks? Will they seek out other institutions, perhaps even foreign institutions, to obtain credit, and if so how is the stability of the financial system as a whole affected?

The paper by Cerutti et al. contains partial answers this last question. To investigate the possible role of circumvention the authors test whether the size of cross-border claims is systematically related to the use of macroprudential policies. They find that this is indeed the case: the existence of macroprudential measures is associated with larger cross-border financial claims.[13] Based on this result, the authors conclude that there is a "need to consider macroprudential policies and capital flow measures simultaneously and in an integrated manner." (Cerutti et al., p.14)

From a theoretical perspective, the question of how the stability of the financial system as a whole will be influenced by regulations in general and macroprudential and capital-account measures in particular, would have to be addressed in a full general equilibrium model of the financial system and its interaction with the rest of the economy. We do not have such models at the moment, even if much research has been devoted to this issue since the financial Crisis. Without such a model, it is not possible to carry out a thorough cost-benefit analysis of a proposed set of regulatory measures.[14]

3.3   Coordination

A third implementation challenge relates to the need for coordination between different actors that are involved with monetary policy, regulatory policy, and fiscal policy. The need for coordination arises because of interactions between monetary and

macroprudential policies already noted, and because of potential international spill-overs.

A full discussion of the arrangements that would need to be made to govern the coordination processes would easily fill an entire separate paper and we will not dwell on them here. We note that coordination may be required inside the central bank between the monetary policy branch and the regulatory branch when both of these reside within the bank as is the case, for example, here at Bank Negara Malaysia and also at the Bank of England.

When the responsibility for monetary policy and regulatory policy reside in two different institutions, as for example in Indonesia and Sweden, then the coordination will have to be organized across the agencies.

In cases where a regulatory policy has fiscal implications or falls directly under the authority of the finance ministry, an additional layer of coordination may have to be organized.

Cross-border coordination between just two countries could potentially include six institutions, a herculean organizational task.

3.4   Communication

Central banks have substantial experience in announcing monetary policy actions and crafting communications that clearly convey the rationale of decisions taken. Market participants and observers scrutinize and dissect these statements to understand the decisions, and what the messages may imply about future policy direction. Despite careful crafting, policymakers' explanations are sometimes misconstrued or misinterpreted. Unintended market reactions may require clarification, potentially eroding policymakers' and institutional credibility.

The efficacy of macroprudential policy actions depends in part, on policymakers' ability to clearly articulate the intent of actions taken. Communications need to influence market behavior in proportion to policymakers' concerns. Explaining a macroprudential policy action is perhaps more difficult than monetary policy actions, since the transmission mechanisms between macroprudential policy actions and desired outcomes may be indirect or less clear.

Macroprudential measures may receive significant criticism from market participants with strong financial interests in preserving the status quo. Some policy actions may also be unwelcome across a broader segment of the population. It may be useful to preempt such reactions in either the communication itself and/or any contemporaneous media interactions.

Central banks may face significant reputational risk in defending more controversial macroprudential policy decisions. One difficult criticism to avoid and

refute is the assertion that policymakers' actions caused adverse market reactions, financial instability or a crisis, rather than preventing or mitigating threats to financial stability through their actions.

Responsibility for implementing various macroprudential measures may reside in different national authorities and not necessarily be a central bank mandate. Policy actions necessitate close cooperation and communication among domestic authorities to ensure they do not have contradictory goals or offset each other.

Macroprudential policy decisions may also involve more than one authority. For example, some central banks have authority to set margin requirements on banks and nonbanks for loans to finance the purchase of equity securities, specifying the maximum amount that can be loaned against the value of the collateral securities. Authority for setting margin requirements for broker dealers may reside outside the central bank in a securities regulator. If the authorities believe there are imbalances building in domestic equity markets, they may decide to raise margin requirements to control the amount of purchase leverage. In this case, it is essential that both regulators collaborate in formulating consistent policy actions. Also, coordinating the timing, form and content of public announcements of their policy actions is useful to maximize the intended impact of the action and control reputational risk.

4.   Potential Pitfalls

Having discussed the challenges that are associated with implementing macroprudential policies, it is easy to imagine some of the pitfalls that need to be avoided.

4.1   Side Effects

4.1.1 Risk Mitigation or Risk Transfer?

Macroprudential policies are typically focused on a particular type of institution (e.g. limits on the growth of credit extended by commercial banks or countercyclical capital buffers required of regulated banks), a particular financial activity (e.g. maximum loan-to-value ratios on mortgage lending or a minimum net stable funding ratio for a commercial bank), or the financial strength of bank clients (e.g. ceilings on debt-to-income ratios). As such, they aim to reduce risks associated with the institution, the financial activity, or the type of individual being targeted. While the measures taken may well be successful in curbing these risks, the more difficult question to answer is whether they succeed in significantly reducing overall financial risk in the economy, or whether the risk is transferred somewhere else in the financial system: from regulated banks to shadow banks or the capital market; from mortgage lending to credit-card lending; and from borrowing from commercial banks to borrowing from 'curb-market' money lenders. If so, the risk in the system may not decrease substantially but become more opaque. There is also a danger that the transfer of risk will beget additional

macroprudential policies targeted at the new activities resulting in multiple layers of policies whose aggregate effects may be hard to assess.[15]

4.1.2 Distributional Effects

Being targeted at particular financial institutions or activities, macroprudential policies are likely to have more pronounced distributional effects than conventional monetary policy. Ceilings on loan-to-value ratios on mortgages offer a pertinent example. Such ceilings are likely to be particularly binding on young first-time home buyers who do not have substantial funds available for a down-payment, potentially leading to calls for the introduction of fiscal measures to reduce the burden on such borrowers.

4.1.3 Regulatory Arbitrage

Financial services providers face strong competition to book profitable business. Earnings pressures may induce some of firms to find ways to legally circumvent regulatory restrictions, including macroprudential policy measures. If macroprudential policy measures are imposed in one jurisdiction, it may be possible to book business in affiliates in different jurisdictions, including unregulated entities, to circumvent legal prohibitions, or take advantage of less stringent (or no) legal requirements. Some jurisdictions have crafted their policy measures and implementing rules to close arbitrage opportunities or imposed extraterritorial restrictions to prevent forum shopping that could undermine the impact of the policy action.

4.2   Losing Sight of the Ultimate Objective

Since macroprudential policies are by necessity focused on influencing an intermediate target, there is a risk that success of the policy is measured by the effect on the intermediate target, forgetting that what ultimately matters is its contribution to financial stability broadly. The development of numerical models to guide the imposition of macroprudential policies (for example the CCB approach in Basel III) may give us a false sense of security.

In other words, can we be sure that if we reach the intermediate target, we will also reach the ultimate financial stability target? We need to remember the fate of monetary targeting and reassess on a continuing basis whether the relationship between the intermediate targets subject to macroprudential policies and the ultimate policy objective remains stable over time.

A particular aspect of the possible breakdown of the link between the macroprudential policy instrument and the financial stability objective is Goodhart's Law. Will the relationships between the macroprudential policy instrument and the intermediate target, on the one hand, and between the intermediate and ultimate targets on the other, remain stable once the instrument is actively used?

A related issue is policy complementarities. Central bank policy actions need to be internally consistent. For example, a central bank maintains a low policy rate in an attempt, consistent with its mandates, to enhance economic activity, including housing market affordability. At the same time, the same central bank institutes prudential policies requiring higher minimum down payments on bank financing of home purchases. In the absence of concern about real estate market systemic risk build-up, are the policies consistent? Do they tend to offset each other? A different but related concern is implementing macroprudential measures when there is a public perception that prior central bank policy actions have induced imbalances which the macroprudential measure is targeting.

4.3   Outside Influences and the Risk of Regulatory Capture

Central banks have considerable experience in effecting and explaining monetary policy, and there is a vast body of supporting research. Since macroprudential policy decisions rely heavily on judgment, the chains of causation and transmission mechanisms involved in macroprudential policy action are less certain and predictable than monetary policy actions. They are also likely to be more difficult to explain to the public.

Market participants and the public are generally familiar with central bank policy rate decision processes. While there may be adverse market and public reactions, they are usually contained and of short duration. Central banks strive to be as transparent as possible in explaining the basis for their actions and, while there is political accountability and even criticism, there is usually not political interference.

However, central banks' macroprudential policy actions have been episodic and are less familiar. Forceful opposition and criticism may be unleashed by market participants that are financially benefitting from the build-up of certain systemic risks, such as inflating asset bubbles. Opponents may try to enlist political support in attempts to mitigate or defeat policy actions. Strong central bank leadership and resolve is necessary to take action under such circumstances.

5.   Summary and the Way Forward

Central banks have increasingly been given explicit financial stability mandates.[16] Many also already have direct responsibility for microprudential supervision of their banking systems. Macroprudential policies are a useful addition to the toolbox of central banks and regulatory authorities as they seek to control systemic risk arising from the formation of potentially destabilizing asset price bubbles. There is a need to coordinate the use of macroprudential policies and traditional monetary policy so they complement each other is achieving desired policy objectives and outcomes.

The implementation of macroprudential policies requires a disciplined and transparent process to overcome challenges and potential pitfalls and to be able to

communicate effectively with the public. Transparency and clear communication are essential to instill public and market confidence and to promote accountability.

Central bank implementation of macroprudential policy measures needs to be timely and decisive to curtail the build-up of systemic risks. Policy actions and discretion should be supported by clear legal authority and the same degree of autonomy and independence that pertains to monetary policy actions. Governance arrangements should allow sufficient internal debate of alternative policy choices and calibration of the chosen policy action. Of course, central bank macroprudential policy decisions need to be well-designed and supported by sound analysis, while avoiding "analytical paralysis," since time is usually a factor in successfully controlling the build-up of system risk.

The Asia Pacific region has been a leader in using macroprudential measures. As mentioned, proving the efficacy of macroprudential policy actions is difficult. Such policy action will probably remain largely a judgmental process, though experience will provide more empirical underpinnings to the macroprudential policy formulation process, and allow more granular data to assist researchers in this area. Regionally, it is useful to continue sharing experiences on macroprudential policy decision-making, and collaborate in related research. Given the increasing level of financial integration and close linkages among regional economies, consideration to implementing coordinated multilateral policy measures can also be explored.

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Endnotes

1. Seconded from Bank Negara Malaysia. The opinions contained in this paper are our own and should not be ascribed to The SEACEN Centre or Bank Negara Malaysia.

2. A very extensive literature dealing with macroprudential policies has emerged recently. Comprehensive coverages can be found in Bank for International Settlements (2011), European Systemic Risk Board (2014a, b), and International Monetary Fund (2013a, b). In addition, there are numerous publications by academics as well as from individual central banks and regulatory authorities.

3. Borio and Crockett (2000); Borio and Lowe (2002); Borio and White (2004); Cecchetti, Genberg, Lipsky and Wadhwani (2000).

4. "The evolving consensus, which is by no means settled, is that monetary policy is too blunt a tool to be routinely used to address possible financial imbalances; instead, monetary policy should remain focused on macroeconomic objectives, while more-targeted micro-prudential and macroprudential tools should be used to address developing risks to financial stability, such as excessive credit growth." Bernanke (2011).

5. In some jurisdictions, the task of implementing macroprudential policies is vested in a separate institution from the central bank. This raises issues of coordination with decisions taken at the central bank which may also have a consequences for economy-wide financial stability. See Section 3.3 for a discussion.

6. Smets (2013).

7. European Systemic Risk Board (2014a) lists five measures that will be covered by an EU Directive, three measures covered by a Regulation, and an additional three that are not covered by EU legislation but that member countries may use. Cerutti, Claessens, and Laeven (2015) reports the result of a survey of IMF member countries on their use of macroprudential measures. They identify no less than twelve such measures.

8. The methodology suggested for calculating the trend is to apply the Hedrick-Prescott filter with a large smoothing parameter (λ=400000 for the initiated).

9. Drehman, Borio and Tsatsaronis, (2011).

10. See Edge and Meisenzahl (2011), Repullo and Saurina, (2011) for critical reviews.

11. SEACEN stands for South East Asian Central Banks Research and Training Centre. Its headquarters is in Kuala Lumpur, Malaysia. Information about the Centre and the research project on "Building on the Countercyclical Consensus: An Empirical Test" can be found at www.seacen.org.

12. Ghosh (2015), p. 29. The paper by Ghosh is an overview of the findings of the entire project based on team project papers for Cambodia, Chinese Taipei, Indonesia, Malaysia, Papua New Guinea, Philippines, Thailand, and Vietnam.

13. Note that it is possible reversed causality is present so that large cross-border claims lead to the imposition of macroprudential polices. While the authors addresses this issue using conventional econometric methods, they are nevertheless not completely sanguine about the efficacy of these methods to completely rule out reversed causality.

14. See Cochrane (2014) for an insightful discussion.

15. The arcade game 'whack-a-mole' offers an apt analogy. In this game, the player faces 'moles' that appear temporarily from different holes in the game console, and the goal is to whack each mole before it disappears. The application of macroprudential policies must guard against the temptation to chase each type of new risk that appears in what might be called a 'whack-a-risk' fashion.

16. For example, Zeti (2013).

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