Thank you for the opportunity to speak at the University of Nottingham 8th Globalization and Economic Policy Conference. It is a great honor to deliver the World Economy Annual Asia Lecture, and I would like to thank the organizers of the conference and Sir David in particular for having invited me to do so.

Ladies and Gentlemen,
The topic I have chosen to speak on, macro-prudential policies, may sound esoteric to some of you, but these policies have in the past five years or so become the buzz word in central bank and regulatory circles as well as in international financial institutions like the IMF and BIS.

Briefly, macro-prudential 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.

Before I continue I would like to emphasize that the written version of my remarks will appear as a paper co-authored with Mr. Michael Zamorski, also an Adviser at The SEACEN Centre. I should also note that the views expressed in my presentation are my own and should not be attributed to The SEACEN Centre.
The slides that follow represent my own views and should not be taken as reflecting those of The SEACEN Centre
As you might expect for a topic that is on almost every central bank’s to-do list, there is already a very large literature dealing with macro-prudential policies. The ones that I am showing here from the BIS, the IMF, and the ESRB together cover close to 400 pages. Central banks and academics have together contributed even more.

So while I cannot promise to present ideas that you will not be able to find somewhere else in that large literature, I will attempt to put macro-prudential policies in a broad perspective and point to what I consider to be the main challenges in their implementation.
To understand the reasons why macro-prudential policies have generated so much analysis and debate it is necessary to go back some ten years in time and recall what was then the conventional wisdom with respect to central bank policy and how this conventional wisdom has been modified 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 academics and central bankers was that central bank policy should focus on inflation as the primary, if not only, objective, and that central banks should use their short-term policy interest rate to achieve that objective. This focus would ideally be implemented using the inflation-targeting strategy pioneered by the Reserve Bank of New Zealand in 1990. Inflation targeting became widely adopted in advanced economies, and a number of emerging market central banks also followed suite, 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. Our own Bank Negara Malaysia, for example, emphasized the importance of paying attention to the potentially damaging effects of exchange-rate misalignments, and to take 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. Andrew Crockett, William White, and Claudio Borio at the Bank for International Settlements in Basel were forceful advocates of this view.

A monograph in the series *The Geneva Report on the World Economy* entitled “Asset Prices and Central Bank Policy” published 2000 also argued that central banks could improve economic performance if they allowed their interest-rate policy to be influenced by movements in asset prices in addition to inflation and the output gap. (Cecchetti, Genberg, Lipsky, and Wadhwani (2000)). 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 and would lead to large collateral damage in the form of output declines. (Gerlach, 2010)
The Financial Crisis of 2007-9 in the U.S. and Europe led to widespread acceptance of the idea that financial stability should be added to inflation as a policy objective of central banks.

The Crisis underscored the need for relevant national authorities, primarily central banks, to improve surveillance systems to detect the build-up of macroeconomic risks and vulnerabilities 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, macro-prudential policies was 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 macro-prudential policy measures could 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, macro-prudential policies, to focus exclusively on financial stability. (E.g. Bernanke, 2011, and Svensson, 2012)
Post-Crisis Consensus explained by Chairman Bernanke

“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 microprudential and macroprudential tools should be used to address developing risks to financial stability, such as excessive credit growth.” Bernanke (2011)
But this strict division of labor between the policy interest rate and macro-prudential 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. (Borio, C., and H. Zhu. 2008.) In addition, macro-prudential instruments are, as we shall see, often focussed 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 macro-prudential policies succeed in restraining excessive credit expansion in the economy then they may have an impact on macroeconomic conditions, and thus on inflation and other macroeconomic variables.

In other words there are considerable influences from each of the policies on both policy objectives, and this calls for some degree of coordination in their implementation.

A diagram taken from a recent paper by Frank Smets at the European Central Bank illustrates the point very well.
The illustration suggests that monetary policy has the most direct, and therefore presumably the strongest, effect on price stability and macro-prudential policy has the most direct, and therefore presumably the strongest, effect on financial stability, but there are enough cross-over influences in the transmission stage that the two types of policies should be set jointly.
The Current State of Play

• Financial stability is widely accepted as a policy objective
• Appropriate policy objectives are being identified
• New challenges loom
• Beware of pitfalls
• Way forward

As I hope this introduction has shown, 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 implementation.

These tasks raise a number of challenges and open up possible pitfalls. I will devote the remainder of my presentation to these challenges and pitfalls as well as to some thoughts on how they may be dealt with.

But first, let me be a little bit more specific about what we actually refer to when we speak about macro-prudential policy instruments.
Macro-prudential policies are regulatory measures imposed on participants in financial markets with the aim of reducing overall risk in the financial system. They take several forms.

For example, there are measures to influence the growth of credit in the economy either as an aggregate or specific to a particular sector, e.g. the mortgage sector.

There are measures designed to influence the evolution of housing prices, and to affect the maturity and liquidity structure of banks’ balance sheets.

There are also measures that relate to international capital flows such as those which restrict currency mismatches on balance sheets.

This list is not exhaustive, but it gives an indication of what types of measures we are talking about.
I will now turn to some of the challenges that must be dealt with when we implement macro-prudential policies.
The first relates to the very meaning of financial stability.

While it is now uncontroversial to view financial stability as a policy objective, it is not easy to define it in concrete enough terms to be measurable. Yet we need a measurable indicator in order to identify policy instruments and to judge whether their application is successful.

In the case of the traditional central bank objective, 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 unraveling 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.”*


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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 an intermediate targeting strategy is implemented recall how money supply targeting worked when it was a common monetary policy strategy in the 1970s. The ultimate target was price stability or more generally some notion of macroeconomic stability. The money supply was chosen as an intermediate target since 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. When these conditions broke down, monetary targeting was gradually abandoned. The Governor of the 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”.

**A Familiar Example: Monetary Targeting**

- **Ultimate objective**: Macroeconomic Stability
  - Is the link reliable? Stable over time?
- **Intermediate target**: Money supply growth
  - How to measure excessive growth of the money supply?
- **Indicator**: Excess money growth
  - Are the instruments effective? Are there unintended and undesirable side effects?
- **Instrument(s)**: Open Market Operations, Reserve requirements, ...

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Similar procedures need to be conceived for macro-prudential 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 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 have 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 macro-prudential policies.

Finally the policy framework relies on a reasonably dependable relationship between the policy instruments and the intermediate target.
A second challenge facing the implementation of macro-prudential policies relates to evaluating their impact. Three separate aspects of this challenge relate to the effect on the intermediate target; the effect on the ultimate targets; and to unintended side effects. Let me briefly discuss each in turn using as an example an empirical study carried out by staff of the research department of the Hong Kong Monetary Authority.
The study 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.
To measure the effect of the reduction in the maximum LTV ratio on the ultimate financial stability objective, the authors of the HKMA paper conducted a second regression analysis in which the frequency of non-performing mortgage loans was related to the LVT ratio and other control variables. Using the estimation results they then performed the same counterfactual simulation as before and concluded that without the imposition of maximum LTV ratios, the frequency of non-performing mortgage loans 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.

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 try 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?

To answer these questions we would ideally need a full general equilibrium model of the financial system and its interaction with the rest of the economy. We do not have this at the moment even if much research has been devoted to this issues since the U.S./Eurozone financial crisis.
3. Co-ordination

• Domestic
  – Central Bank
  – Central Bank and Regulatory Agency
  – Central Bank, Regulatory Agency, and Finance Ministry

• International
  – Regulatory arbitrage, cross-border spillovers and the need for some form of international information sharing and/or coordination

A third implementation challenge relates to the need for co-ordination between different actors that are involved with monetary policy, regulatory policy, and fiscal policy. The need for co-ordination arises because of interactions between monetary and macro-prudential policies that I noted earlier, and because of potential international spill-overs.

A full discussion of the arrangements that would need to be made to govern the co-ordination processes would easily fill an entire separate lecture and I will not dwell on them here. I will only mention that the co-ordination 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 the 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 co-ordination 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 co-ordination may have to be organized.

Cross-border co-ordination between just two countries could potentially include six institutions, an herculean organizational task.
Having discussed the challenges that are associated with implementing macro-prudential policies, it is easy to imagine some of the pitfalls that need to be avoided.
1. Unintended Side Effects

• Where does the risk of mortgage lending go if macro-prudential measures succeed in reducing such lending?
  – Is there a Whack-A-Mole effect at work?
• How are first-time home-buyers and SME’s affected?

The first relates to unintended side effects.
For those of you not familiar with the Whack-a-mole expression, it comes from an arcade game where the player is faced with a board from which moles appear from their holes in a random fashion. The objective of the game is to hit them on the head before they disappear and come up in a different hole.

Is the nature of risk in financial markets of this type? You try to suppress it in one market and it shows up in another.
A different type of side effect can be illustrated with limits on mortgage lending or overall credit growth. The effect of limiting loan-to-value ratios for mortgages may fall disproportionately on first-time young home buyers effectively preventing them from starting to build equity in their homes.

Similarly, reducing bank credit growth may be felt particularly strongly by SMEs resulting in a loss of employment in that sector.
The second pitfall I would like to highlight relates to potential policy overreach. What I have in mind is the possibility that we unintentionally drift towards what may be called a "Whack-a-risk" solution.
The regulator may introduce a measure to reduce excessive credit growth only to find that borrowers turn to foreign markets for credit. Then a capital flow management measure may be introduced to limit borrowing from foreign banks. But this may lead corporates to circumvent banks altogether by issuing bonds in the international capital market. Etc.

The end result could become a complicated set of regulatory measures with uncertain and unintended general equilibrium effects.
Other possible consequences of the ‘Whack-a-risk’ approach could be that politicians decide that hurting young first-time home buyers is not politically acceptable so they introduce fiscal countermeasures.

Or when banks are being hit with additional prudential measures, financial activities may shift to so-called shadow banks. Regulators may respond by extending the regulatory perimeter to include also these types of financial institutions.

Again the end result may be a plethora of measures each of which seemed like a good idea when it was introduced, but which together makes for a very complicated regulatory landscape.
A third potential pitfall is that we might become overconfident in our intermediate target strategy.
So what considerations should we keep in mind when we go forward in implementing macro-prudential policies?
1. Well-Structured and Disciplined Process

- Keep sight of the ultimate objective
  - Do the intermediate targets continue to be appropriate?
  - Beware of mission creep.
- Cost-benefit analysis
  - Side effects
- Communication
2. Research

• What are good intermediate targets? Do they change over time?
• Are the links between policy instruments and the intermediate targets stable over time?
• What are the potential side effects and how important are they empirically?
Summary

1. Financial stability has become fully accepted as a concern for central banks
2. Macro-prudential policies are a useful addition to the toolbox of central banks and regulatory authorities
3. There is a need to coordinate the use of macro-prudential policies and traditional monetary policy
4. The implementation of macro-prudential policies requires a disciplined and transparent process to overcome challenges and potential pitfalls and to be able to communicate effectively with the public.
5. Transparency and clear communication is essential to instill confidence and to promote accountability.
Thank You

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Our MISSION
To build capacity in central banking and foster networking and collaboration.