

# **Macroprudential policy design: Four puzzles for policymakers**

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## **Abstract**

Macroprudential policy frameworks have emerged as increasingly popular amongst policy makers and academics alike. This paper identifies four components of such frameworks that still puzzle policy makers: the target puzzle, the instrument problem, model uncertainty and the governance puzzle. These four interlinked aspects present practical design problems for policy makers, as they go to the heart of how macroprudential policy frameworks need to be designed. This paper reviews the literature around these four puzzles and sketches the outlines of a potential surprising consensus (albeit tentative) on how to proceed with implementation.

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# 1 Introduction

The global financial crisis has highlighted a number of weaknesses in the pre-crisis approach to managing economic fluctuations. One of the key lessons of the period has been the need to incorporate financial systems in both theoretical and policy-oriented models of the economy<sup>2</sup>. Indeed, it would seem the “remarkable pre-crisis consensus” did not adequately account for the real economy effects of financial market fluctuations<sup>3</sup>. The crisis demonstrated that these fluctuations can have substantial long-term negative economic effects, and leave the economy in a period of sustained disequilibrium, particularly if compared to the pre-crisis boom.

In response, there have been initiatives to actively incorporate financial system fluctuations into the policy process, and there has been an increase in the literature on how to appropriately respond to financial sector disturbances using a mix of “conventional”, “unconventional”, and “new” policy tools. The term “macroprudential policy frameworks” has been applied to much of this literature.

This paper reviews this literature from a policy maker’s perspective – and provides a high-level overview of the some key issues that still need to be resolved before such frameworks can become fully operational.

The paper is arranged as follows – Section 2 outlines a brief history of macroprudential policy frameworks, noting how they arose in response to the lessons of the crisis. Section 3 then highlights the implementation challenges (“problems or puzzles”) in respect of macroprudential frameworks, namely the “target puzzle”, the “instrument choice puzzle”, the “model puzzle”, and the

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<sup>2</sup> For an overview of some of the identified model weaknesses see Buiters (2009), Caballero (2010) or Du Plessis (2010) while for an overview of how these weaknesses translated into policy mistakes, see Turner (2012).

<sup>3</sup> The weakness with the “remarkable consensus” are discussed in Blanchard et al (2010) and (2012)

“governance puzzle”. Section 4 provides an outline of a very “tentative consensus” on the key elements of a macroprudential approach. Section 5 concludes with some ideas for future areas of research that will assist policymakers in fleshing out this tentative consensus and assist in its implementation.

## **2 Macroprudential policy frameworks**

In an influential IMF Staff Position Note, Blanchard, Dell’Arricia, & Mauro (2010) captured the post-crisis academic and policy mood to “rethink macroeconomic policy”. In particular, they note a shift away from the pre-crisis consensus of “one target (inflation) / one instrument (the interest rate)” to fresh thinking about macroeconomic management which combines monetary and financial regulatory frameworks. This thinking is reflected in the term “macroprudential policy”, which itself is a combination “macroeconomic policy” and “prudential policy”.

Such frameworks are increasingly popular<sup>4</sup>, to the extent that in November 2010, the G-20 Leaders commissioned a comprehensive study of macroprudential policy frameworks<sup>5</sup>. The report (G-20, 2011) sets out possible tools and frameworks and reviews country experiences with macroprudential policy instruments.

The G-20 report highlights that a conclusive definition of “macroprudential” remains elusive, but that it can be characterised by its objective, scope and instruments. The objective is to limit systemic risk, the scope is the financial

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<sup>4</sup> For an overview of the origins of the term “macroprudential” see Clement (2010), while for recent comprehensive literature reviews of the subject see Galati & Moessner (2011), Turner (2012), International Monetary Fund (2011), or Lim, et al. (2011)

<sup>5</sup> The full communique is available at <http://www.g20.org>. The report was prepared by the International Monetary Fund, the Bank of International Settlements and the Financial Stability Board.

system *as a whole*, and not individual institutions, and the instruments are clearly targeted at systemic risk. While the approach and definition is broadly accepted, the objective, scope and instruments still present some problems for policy makers.

These problems form the basis of the next section.

### **3 The four puzzles**

#### **3.1 The target puzzle**

Measuring financial stability comes with the understanding that financial stability is a continuum, rather than a fixed state (Schinasi, 2005). To put it another way, at the one end of the continuum is full financial stability, and at the other is a complete absence of financial stability, i.e. a financial crisis. In between there are periods of relative instability. In these periods, though not completely stable, the financial system is still able to fulfil its role of facilitating effective resource allocation and financial intermediation.

It is indeed these “in between” times that are of most interest to the macroprudential authority – these are the periods where they need to respond to bring the system back to “full financial stability”, to prevent a crisis developing<sup>6</sup>. The tool (or tools) to return to stability needs to be used in a relatively flexible and transparent way.

Again, the monetary policy literature<sup>7</sup> is a useful starting point. Monetary policy<sup>8</sup> also operates with a nebulous understanding of “price stability” – indeed pure

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<sup>6</sup> The policy literature distinguishes ‘crisis’ as being when a new set quite different set of tools is required. For an overview of these resolution tools, see (Financial Stability Board, 2011)

<sup>7</sup> In the traditional monetary policy sense, Clarida, Gali and Gertler (1999, p. 1662) identify the “policy design problem” as being how to “characterise how the interest rate should adjust to the current state of the economy”. In their analysis (hereafter “CGG”) and in the majority of the inflation-targeting literature, the “current state of the economy” can be objectively determined

price stability is obviously zero inflation; whereas most central banks target a forecast of the inflation rate, and the target is positive (Svensson L. E., 1999)<sup>9</sup>.

Similarly, financial stability can be assessed based on a set of indicators, and, as with price stability, forecasts of these indicators are more useful for policy makers than current observations (given data lags these might be outdated by the time the policy maker considers them). Many of the financial stability indicators forecasts can be derived from market forecasts (e.g. forward rates). In a financial stability framework, it might be possible to conceptualise a “fuzzy” ultimate objective (financial stability) yet still have relatively concrete intermediate objectives and measures<sup>10</sup>.

Schinasi (2005) suggests choosing stability indicators based on the performance of these variables during periods of relative financial instability. More recently, the Bank of International Settlements lists over 35 possible indicators that central banks monitor to achieve their financial stability function (Gadenezs & Jayaram, 2009). These include relatively simple ones (gross domestic product, inflation); to slightly more complex measures such as household debt, non-performing loans; to measures which are substantially more difficult to forecast (equity indices, exchange rates). In practice, indicators can be seen to map onto four broad

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from the inflation rate, together with some indication of how the underlying economy behaves relative to a trend growth rate. Most typically, the interest rate can then be set given a variant of a policy rule (e.g. a Taylor rule). The target is thus some measure of changes in prices, usually a point target or a target band.

<sup>8</sup> The discussion here to some extent incorrectly conflates price stability and monetary policy. This is only to compare a price stability regime and a financial stability regime. As noted below, it is an oversimplification to confuse the two. Firstly, there are many other possible regimes for monetary policy (Walsh, 2003, p. 545), and secondly, as Du Plessis (2012) highlights monetary policy could be seen to include both the balance sheet and interest rate operations of a central bank.

<sup>9</sup> Woodford (2007), in particular, has made the case for the inflation forecast being seen as an “intermediate target” of policy (see also Svensson (2010))

<sup>10</sup> As Walsh (2003, p. 431) points out, given the goal of policy, the value of the intermediate target is set consistent with that goal, from which the operating targets needed to achieve the intermediate goal, and finally the instrument settings that yield the desired values for the operating targets. These instrument settings are the “policy instruments” as they are most closely under the control of the central bank.

objectives: (i) credit growth / asset price inflation; (ii) excessive leverage; (iii) systemic liquidity risk; and (iv) capital flows and currency fluctuations (Lim, et al., 2011). This increases the complexity of the macroprudential authorities decision function, as many of these objectives are interlinked, and overlap closely with monetary policy objectives (for example, currency fluctuations may influence the inflation rate). There is an inter-related relationship between objective and instrument – objectives need to be achievable, and so only those that can be within the “control” of the central bank are useful. This leads to discussing the next component of the framework, the instrument choice problem.

### **3.2 The instrument choice puzzle – a tool to hit the target**

It seems possible to overcome the target problem by defining a set of intermediate objectives to evaluate ongoing financial stability conditions. The next question is which policy instrument to use to achieve the policy objective. Below, we consider three possibilities: (i) the overnight interest rate; (ii) the central bank’s balance sheet; and (iii) regulatory tools<sup>11</sup>.

#### ***3.2.1 Interest rate as a prudential tool – a “conventional tool”***

The canonical discussion of the instrument choice problem is probably that of Poole (1970). A re-reading of Poole’s analysis in light of the macroprudential debate is particularly insightful. Indeed, he identifies a group that “think[s] in terms of the free reserves in the banking system, the rate of growth of bank credit with one or more components of bank credit being emphasised, or the overall ‘tone’ of the money markets” (Poole, 1970, p. 199). Even such a group, would “probably agree” that the short term interest rate is the appropriate policy tool under almost all circumstances.

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<sup>11</sup> The early macroprudential literature only considered regulatory tools as macroprudential tools. However, as the literature has developed, the role in financial stability of what were traditionally monetary policy tools (both conventional and unconventional) has received increasing prominence. For that reason they are considered here too.

A similar conclusion is reached in Goodhart, Sunirand and Tsomocos (2011). They conclude that the interest rate remains the preferable policy tool for prudential reasons, as during times of bank stress, interest rates can decline, which reduces default risk.

Blanchard *et al* (2010) have a different view, noting that “the policy rate is a poor tool to deal with excess leverage, excessive risk taking or apparent deviations of asset prices from fundamentals”. Indeed, further problems can be identified with using the overnight interest rate as the sole financial stability tool:

- *Direct conflict with the monetary policy objective* (perceived or otherwise). Indeed, Goodhart *et al* (2011) explicitly recognise this conflict, noting that “the short term policy conflict is evident and it refers to the fact that it is optimal to deviate from the ‘desired’ rate of inflation in the short-run in order to best maintain price as well as financial stability over the longer run.” Simply put, actions to ensure financial stability may be inflationary putting the two objectives at loggerheads.
- *Ambiguous effects on bank profitability*. Periods of low interest rates may reduce bank profitability, as banks make a proportionately lower profit during low interest rate periods than in low ones<sup>12</sup>. Consequently, a

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<sup>12</sup> This can be shown quite simply – assume the profit ( $\pi$ ) of a bank is simply a function the overnight interest rate ( $i$ ) and the margin it charges over that rate ( $m$ ). Bank profits are then  $\pi=mi-x$ , or  $i(1-m)$ . If overnight rate falls then bank profits fall. This is an extreme simplification – costs of capital for a bank here are assumed to follow the overnight interest rate precisely. In reality, bank profits are obviously some more complex function of the overnight rate and other rates, which fluctuate in different ways in response to the overnight rate  $\pi=f(i,m)$ , but the general property that  $\frac{\partial \pi}{\partial i} < 0$  holds. English (2002) discusses some of these complexities, highlighting that the interest rate effect on bank profits depends on additional factors, including the shape of the yield curve (lending might be long-dated and funding short-dated) and the hedging strategies that banks may use to offset variable interest rates (e.g. a standard interest rate swap).

decline in bank profitability may exacerbate a period of banking stress, rather than reduce it<sup>13</sup>.

- *Conflict with liquidity management / currency effects.* For emerging markets especially, banking crises are often also associated with bank liquidity crises which may also manifest in substantial exchange rate depreciations or more general balance of payments crises<sup>14</sup>. In this case, policy makers often chose to hold rates steady (or even raise them) to protect domestic liquidity or the currency<sup>15</sup>, and simultaneously loosen microprudential standards to counteract a freezing of credit conditions.
- *Difficulty in identifying states.* The interest rate tool may have different prudential implications depending on the state of the financial sector. For example, the Goodhart *et al* (2011) analysis assumes two states – financial stability in the first period and financial instability in the second period. They note that expansionary monetary policy in the first period promotes financial *instability* by encouraging risky lending, raising aggregate defaults and reducing commercial bank profits. In contrast, during the “bad states of nature of the second period”, expansionary monetary policy

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<sup>13</sup> The Goodhart *et al* (2011) analysis highlights the improvement in defaults as improving bank profitability – obviously the two effects might cancel each other out. During periods of banking stress, the proportion of non-performing loans and its impact on profitability are a key determinant of the how profitability might be restored. We can expand the simple analysis in the footnote above to say that  $\pi = f(i, m, \theta l)$  where  $\theta$  is the proportion of bad loans and  $l$  is the amount of loans granted. Simply put, one can argue that  $\theta = f(i)$ , i.e. that the proportion of bad loans is a function of the overnight interest rate. The effect on bank profitability is thus dependent on the net impact of interest rate changes on the proportion of bad loans (positive) together with the impact of interest rate changes on margin (negative).

<sup>14</sup> Hassan (2006) notes that the optimal policy response depends crucially on whether the policy makers assumes uncovered interest rate parity holds and whether or not the credit multiplier depends on real or nominal rates. Simply put, the central bank may wish to raise rates to defend the currency and use other methods (e.g. liquidity provision). This may however, be misguided particularly if the country is under speculative attack (Krugman, 1979).

<sup>15</sup> Indeed policy makers during the Asian crisis chose to raise rates substantially, with Indonesia raising rates by 31.7 percentage points (Berg, 1999, p. 36).



(if effective) supports financial stability by reducing default in the mortgage, interbank and wholesale money markets<sup>16</sup>.

Notwithstanding these concerns, the central bank's interest rate policy is a very important component of an overall prudential policy approach, but cannot be the only tool.

### ***3.2.2 Central bank balance sheet as an prudential instrument – an “unconventional tool”***

The second tool that central banks have at their disposal to influence economic conditions is the central bank balance sheet. The rise and fall in size of a central bank balance sheet reflects at least three distinguishable components:

- Shifts as a consequence of overnight interest rate policy<sup>17</sup>;
- Valuation shifts<sup>18</sup>; and
- Discretionary shifts.

The discretionary increases and decreases in the balance sheet have most recently been associated with “quantitative easing”, or “QE”. While controversial, such policies are particularly useful at the “zero-bound”, which is where short-term interest rates have reached zero and can no longer be adjusted lower (Woodford, 2012). Asset purchases by the central bank are used to change to the price or yield

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<sup>16</sup> The historical record is that the Goodhart *et al* (2011) model fits history very well history. Indeed, prior to the US crisis, interest rates were actually *lowered* further, i.e. to fix a period of too low interest rates, interest rates had to be dropped further.

<sup>17</sup> The canonical analysis is the Poole (1970) one referred to above, where money stock adjusts to maintain the interest rate set by the central bank. See also Walsh (2003: 432-436).

<sup>18</sup> Central bank reserves are invested in multiple currencies and in physical assets such as gold and shifts in the relative price of these currencies and assets causes changes in the value of central bank assets expressed in these currencies, or in a third-country currency such as US dollars.

of targeted assets, usually long-dated assets. This alters the structure of the yield curve (Bernanke, Reinhart, & Sack, 2004).<sup>19</sup>

Using the central bank's balance sheet for financial stability purposes has a number of advantages (Du Plessis, 2012), including greater precision with targeting particular asset markets, not being constrained by the zero-bound, and additional freedom for the central bank to manage other risks (e.g. large capital flows) within the context of flexible inflation targeting. This is particularly useful for central banks in emerging markets – the discussion above highlights that the overnight interest rate is often not the best tool to use for exogenous shocks.

### **3.2.3 Regulatory tools – “new tools”**

The use of overnight interest rates and balance sheet policies as instruments of monetary policy are relatively well-established. The “macroprudential” literature adds an additional set of tools. These tools are those which are traditionally the domain of regulators to ensure the prudential health and soundness of individual financial institutions, and are so classified as “microprudential”. But, when used to achieve macroeconomic outcomes they have been classified as “macroprudential<sup>20</sup>”. A summary of the list of possible tools is provided in Table 1.

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<sup>19</sup> Although frequently called “unconventional”, it is the new conventional. Even by 2009, variations of the policy had been put in place (Bank of England, 2009) in almost all major jurisdictions, including the Bank of England's Quantitative Easing programme, the European Central Bank's “enhanced credit support measures”, the Bank of Japan's outright purchases of private sector instruments, the Swiss National Bank's purchase of private sector assets and the Bank of Canada's commitment to undertake such policies if needed. Variants include “Operation Twist” which has been used twice (1961 and 2011).

<sup>20</sup> In general, the emerging markets have more extensive experience of using macroprudential instruments, although not always within the context of a fully organised framework, and sometimes quite ad hoc [(Blanchard, Dell'Arricia, & Mauro, 2010); (Lim, et al., 2011)].

**Table 1 Macroprudential tools**

<b>Instrument</b>	<b>Conceptual basis</b>
Countercyclical capital requirement	Ratio or risk weights can be raised during an upturn to restrain credit expansion
Credit or credit growth ceiling cap	Can be used to dampen credit or credit/asset price cycle
Debt-to-income cap	Ensures bank's asset quality; can be varied in a counter-cyclical way
Foreign currency lending cap	Foreign currency risk can be systemic if common exposure is large, creating credit risks for banks
Limits on maturity mismatch	Can be used to address systemic risk in the event of fire sales
Limits on net open currency position	Limits common exposure to foreign currency risks, and can limit exposure to e.g. sharp currency fluctuations
Loan-to-value ratio cap	Imposes a down payment constraint on household's capacity to borrow, theoretically reducing collateralised value of household lending
Reserve requirements	A monetary policy tool that can dampen the credit/asset price cycle, and also create a liquidity cushion
Restrictions on profit distribution	Ensures capital adequacy of banks
Time-varying / dynamic provisioning	Can be used to dampen cyclicality

Source: Adapted from Lim *et al* (2011: Appendix VI)

The major tools are considered in more detail below.

**(a) Capital adequacy requirement (counter-cyclical adequacy buffer)**

Capital adequacy requirements are traditionally "microprudential" tools, in the sense that they are used primarily to ensure the health and safety of individual banks. Following the crisis, they have received substantial attention in both the

literature and by standard setters, in part because of concerns that they were procyclical in nature<sup>21</sup>. Moreover, this (negative) procyclicality also highlighted their potentially (positive) role as tools with macroeconomic implications. Indeed, it can be shown that capital adequacy buffers can also be used for monetary policy purposes, and can be seen to as substitutes (Cecchetti & Kohler, 2012). Intuitively, this is because increasing capital adequacy requirements essentially increases the cost of capital for banks, which has similar macroeconomic effects to an increase in the overnight interest rate<sup>22</sup>.

In its guidance to national authorities, the Basel Committee on Banking Supervision (BCBS, 2010) highlights that the countercyclical capital adequacy requirement has two objectives. The first is, during credit contractions, to create an automatic lever to ensure that the banking system has on aggregate enough capital to “help maintain the flow of credit into the economy”. The second is for an automatic stabiliser to “lean against the wind” during periods of rapid credit growth<sup>23</sup>.

The Financial Stability Board (FSB, 2012) highlights that credit growth is relatively volatile in emerging markets. It follows that estimating a credit growth trend would be challenging, particularly over long periods. The BCBS accepts this and notes that a credit-to-GDP alternative is arguably worse: emerging

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<sup>21</sup> The inherent pro-cyclical nature of bank capital requirements had been identified as early as 2001 as a concern (Borio, Furfine, & Lowe, 2001). During benign economic conditions, risk-based bank capital requirements encouraged additional lending, further exacerbating potential credit-induced asset bubbles. During economic downturns, bank capital requirements become increasingly onerous, discouraging lending, and exacerbating already-weak economic conditions, and creating a “credit crunch” (Bikker & Hu, 2002).

<sup>22</sup> See also Du Plessis & Du Rand, (2011) for a response to an earlier version of the paper, in particular their discussion on the implications for the non-equivalence of the two instruments.

<sup>23</sup> In the case of South Africa, the performance of the credit-to-GDP approach is demonstrated by the BCBS. High deviations from the credit-to-GDP trend are observed in 2007 and 2008. The countercyclical capital buffer would have been 2.5 per cent. Indeed, in view of rapid credit growth in this period, the South African authorities used their discretionary powers to raise the requirement minimum capital adequacy requirement and this may have contributed to the protecting banking system. However, that is the subject of another paper.

markets with less-developed financial sectors could expect to have long-periods of rising credit-to-GDP ratio as they converge economically with countries that have more developed financial sectors.

**(b) Risk-weightings**

Risk weightings are used to set capital ratios. Intuitively, the higher the historical risk (credit risk, market risk, etc.) associated with an asset, the greater the amount of capital that needs to be held against the asset. However, risk weightings can be set by the macroprudential authority to limit exposure to certain asset classes that are perceived to be risky based on expected risk.

**(c) Leverage**

In addition to the countercyclical capital adequacy buffer, Basel 3 also creates an additional leverage ratio, which is designed to limit leverage for individual institutions. Leverage is a key concern because it causes a deterioration of bank balance sheet and may fuel a credit-induced increase in asset prices.

**(d) Other tools**

As noted in Table 1, there are a number of potential tools. However, a key concern is the extent to which they can be varied to address both financial stability risks, from both a cross-sectional and time-sensitive perspective. For example, the aggregate loan-to-value ratio reflects historical lending patterns – if the macroprudential authority changes the ratio, it only affects new lending. By this stage it may be too late to address financial stability risks. The debt-to-income cap also has some of this is also to some extent exogenous. A deterioration in the ratio may reflect a deterioration of income, due to a recession, for example. Again, it is not clear exactly how sensitive financial institutions could be to changes in this ratio imposed by the macroprudential authority. And, of course, the lack of understanding on the impact of these tools on economic performance and financial stability is another weakness. This is considered in more detail in the following section.

### **3.3 Model uncertainty puzzle**

The effect of a change of monetary policy instruments, particularly the overnight interest rate, on various economic variables has been heavily researched, and the trade-offs are relatively well-understood, and these have survived more or less intact through the financial crisis (Blanchard, Dell'Arricia, & Mauro, 2010).

This is not the case for macroprudential tools. As noted in the section above, there is no shortage in the number of tools that are potentially available to the macroprudential authority. The problem, however, is to understand what the impact of these tools will be, given limited experience of the tools and hence limited (theoretical and empirical) model evidence on how these tools may affect the economy.

#### **(a) Intended and unintended consequences**

Given the early stages of the understanding of macroprudential tools, the impact on economic conditions (both intended and unintended) is of particular concern. Cross-country analyses of tools reveal that tools vary in effect, particularly when central banks are trying to achieve fuzzy intermediate objectives (Lim, et al., 2011). For example, tools used to dampen foreign exposure may reduce demand for foreign currency and have unanticipated results on the value of the currency. The impact on the currency may have other consequences for the economy.

#### **(b) Multiple tools used together**

There is an argument that multiple tools used together improves the likelihood of the objective being realised. But using multiple tools also increases the possibility of unintended consequences from the combination of tools being used. This is a particularly a concern when monetary policy tools are being used simultaneously.

#### **(c) Assymetry**

There is an emerging literature that highlights that macroprudential tools are often *asymmetrical* – increasing the statutory capital adequacy ratio may decrease

mortgage lending, particularly during an economic upswing. However, a decrease in the capital adequacy ratio may not have the same effect. As Turner (2012) highlights, during downswings, policy becomes less effective. Indeed, during an economic downswing, with house prices falling and demand for new loans weak, banks may choose to remain well-capitalised, even though the macroprudential authority may have reduced the capital-adequacy requirement.

**(d) International co-ordination**

Finally, many macroprudential tools are cross-border in nature. This is particularly a concern where they are attempting to deal with (real or perceived) imbalances between countries. Cross-border capital flows, for example, may create substantial financial stability risks, and these flows may be due to both “push” and “pull” factors (Fratzscher, 2012), i.e. policies in foreign jurisdictions leading to an outflow of capital, or policies in home jurisdictions leading to an inflow of capital. Also, the international integration of major financial services institutions creates the potential for regulatory arbitrage between jurisdictions. For macroprudential tools to be truly effective, international co-ordination is vital.

### **3.4 Governance puzzle**

**(a) Who should use the tools?**

Tools can be used “*bottom-up*” by the financial-sector supervisors to ensure “systemic stability” (Galati & Moessner, 2011); or “*top-down*” by the central bank to influence the supply of credit, credit and asset price cycles and to dampen periods of macroeconomic volatility (Turner, 2010).

This creates a number of tensions between the legislative authority, financial sector supervisors and the central bank, particularly since there is substantial overlap between traditional actions taken the central bank to manage economic and financial stability using tools such as interest rates and liquidity provision; and the supervisors’ use of regulatory tools. Supervisors also have much more

granular information on the health of individual institutions. For this reason a number of jurisdictions have in place, or are moving to, a ‘twin-peaks’ approach to prudential supervision<sup>24</sup>. In this model, the central bank has joint responsibility for both monetary policy and prudential financial sector supervision. (business conduct is concentrated in the other ‘peak’, and typically in a separate supervisory body).

This concentration of both power and responsibility in the central bank creates concerns for policy makers for the following reasons:

- *Central bank independence.* The relationship between the central bank and the government becomes more complex. For good reason, central banks are quite independent of government interference. In contrast, financial sector supervision requires a much closer relationship with the central bank, and this may impact on central bank independence;
- *Overlap.* There is a substantial overlap between monetary policy and financial sector supervision. The process of decisions making to use interest rate, balance sheet or macroprudential tools is more complex. Current proposals for the United States, the Bank of England and the South African Reserve Bank are to have separate committees for “monetary policy” and “financial sector policy”.
- *Rules or discretion?* There is an already relatively extensive monetary policy literature on rules versus discretion. But in a macroprudential setting, the debate is made more complex due to the wide range of potential indicators and possible tools. Inevitably substantial discretion is passed on to the macroprudential authority.

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<sup>24</sup> Including the United Kingdom, the Netherlands and South Africa. Australia and Canada have modified versions – prudential bank supervision is in a separate agency, but there are strong ties with the central bank.



- *Microprudential v macroprudential.* In many jurisdictions, the financial system is relatively concentrated, and systemic risks could become concentrated in one . This makes it difficult to set prudential levels for the “system”
- *Legislative mandate.* Many tools need to be exercised within a legislative framework, particularly as the use of tools almost by definition may affect short-run financial sector profitability. It is particularly complex to design and pass such legislation and there is a possible trade-off between appropriate legislation and flexibility in implementation.
- *Transparency.* Tools need to set in a transparent and clear way. Sometimes however, particularly in crisis situations, transparency may suffer.

#### **4 A tentative consensus?**

So far, this paper has sketched some (certainly not all) of the puzzles facing policy makers as they finalise their respective macroprudential frameworks. A consensus, albeit tentative, appears to be emerging in the policy guidance from international standard setters and academics. Roughly, from the discussion above, this consensus contains the following elements:

- Financial stability should be measured by a relatively broad set of financial stability indicators. However, credit growth appears to a leading contender for a rules-based mechanisms in bank supervision;
- Capital adequacy requirements are the most suitable tools for influencing bank credit, and so lend themselves to being useful as transparent macroprudential tools. Capital adequacy requirements can be adjusted through “systemic surcharges” (requiring an additional level of capital to counter act systemic risk) or “counter-cyclical capital adequacy buffers”

(capital levels based on cyclical movements). Changing risk weightings on particular assets is one way of achieving more nuanced policy results, and has been used in emerging markets to dampen “excessive” lending, or asset price bubbles in particular lending classes (e.g. commercial property). That said, the first line of defence remains conventional policy tools (the overnight interest rate) and to some extent and unconventional monetary policy (variants of quantitative easing) to contribute to the financial stability objective; and

- Given the overlap between the objectives, tools and instruments of monetary policy and prudential policy, as far as possible these two should be fully co-ordinated. It is most sensible to house these functions in a single institution, and the central bank is the obvious candidate. Decision making can be exercised by a committee, much like the monetary policy committee. While this is increasingly popular in many jurisdictions, the exact nature of the interaction between committees is an important area of research.

## **5 Conclusion**

Financial stability policy is as much an art as a science. Definitive answers to questions on appropriate instruments, tools, and governance structures may not even exist, and, inevitably, the new shift to a macroprudential regime will lead to more complex and nuanced policy choices by particularly the central bank.

This paper set out some of the debates in the literature, highlighting those that are currently of most interest to policy makers. The broad conclusion is that it is possible to design workable macroprudential policy frameworks, even under the constraints imposed of uncertain indicators, tools and models. Progress is being made to understand these components, but more work is needed. In particular, understanding how the impact of the various macroprudential tools on both

overall economic conditions, and in conjunction with monetary policy tools is an important strand of research.

While the research is naturally dividing into strands, there needs to be consistency across debates – it is clear that intermediate objectives, instruments, forecast models and governance system need to function together as an interlinked and consistent whole.

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