

# Enhancing Financial Stability and Resilience

*Macroprudential Policy,  
Tools, and Systems for the Future*

Group of Thirty

30

*About the Authors*

*The views expressed in this paper are those of the Working Group on Macroprudential Policy and do not necessarily represent the views of all of the individual members of the Group of Thirty.*

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and Systems for the Future*



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# ABBREVIATIONS

BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
CPMA	Consumer Protection and Markets Authority
ESRB	European Systemic Risk Board
FPC	Financial Policy Committee
FSA	Financial Services Authority
FSB	Financial Stability Board
GDP	Gross domestic product
G30	Group of Thirty
IMF	International Monetary Fund
LTV	Loan to value
VAR	Value at Risk



# FOREWORD

The Group of Thirty's (G30's) mission is to deepen understanding of international economic and financial issues, to explore the international repercussions of decisions made in the public and private sectors, and to examine the choices available to market participants and policy makers. This report continues the G30's long history of contributing to the global policy-making debate.

In February 2010, the G30 established its Working Group on Macroprudential Policy, led by Roger W. Ferguson, Jr., to address the role that macroprudential policy might play in enhancing future financial stability and the resilience of markets and financial institutions to global financial crises. The goal of macroprudential policy is the welfare of the entire financial system, as opposed to the goal of prudential supervision, which is the safety of individual financial institutions. A fundamental concern of macroprudential policy is that the interconnectedness of financial institutions and markets and their common exposure to economic variables may increase the riskiness and fragility of the whole financial system in ways and to an extent that will not be dependably captured by regulatory focus on individual institutions.

We know that the 2007–08 financial crisis was driven by extremes in the economic cycle of asset booms and busts, excesses in leverage and risk taking, failures in regulation and supervision, and a widespread failure of market discipline, which ended in deleveraging and a global financial and economic crisis the likes of which we have not witnessed since the 1920s. The costs to the real economy of

the excesses in the financial sector have been far too high. In the future, supervisors must be able to identify potential financial crises, be willing to act, and have the tools to mitigate the worst effects.

This report is designed to contribute to the debate on the scope, form, and implementation of macroprudential policy at the G-20 summit in Seoul, and to the debates already under way in the Financial Stability Board and in the Basel Committee on Banking Supervision. Accordingly, the report covers four key areas. It (a) defines macroprudential policy, (b) underlines why macroprudential policy is needed and why it must be available to central banks and supervisors, (c) discusses the tools that can be used to achieve agreed macroprudential policy goals, and (d) highlights a number of important implementation challenges that confront supervisors. The report concludes with key observations and recommendations on all these areas.

The G30 believes this report will prove useful as supervisors and the private sector build the components of a strengthened financial system that is perhaps—if we are collectively successful—less prone to excessively destructive cyclical booms and busts.

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have been essential to crafting this report.

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# EXECUTIVE SUMMARY

The 2007–08 global financial crisis demonstrated that regulation focused on individual institutions alone does not adequately deal with systemic risks to the financial markets as a whole. In particular, it became apparent that the financial system has an inherent bias toward booms and busts that is amplified by the highly interconnected nature of financial institutions and markets. Since the financial crisis, debate has focused on identifying these systemic risks and developing appropriate responses—known as “macroprudential policy”—in an attempt to strengthen the resilience of the financial system and avoid, to the extent possible, another similar crisis. A fundamental concern of macroprudential policy is the way in which the interconnectedness of financial institutions and markets, common exposures to economic variables, and procyclical behaviors can create risk. While supervisors have recognized certain macroprudential issues in the past, it is clear that a more robust macroprudential supervisory oversight regime is necessary.

In February 2010, the Group of Thirty (G30) established its Working Group on Macroprudential Supervision to address the role that macroprudential policy might play in enhancing financial stability and the resilience of the financial system and financial institutions to shocks and the risk of crises propagated within the financial system. The Working Group has, in particular, explored tools that can be used to strengthen the financial system’s resilience to shocks and crises that arise from both external sources and the financial system itself. The members of the Working Group hope the report and its recommendations will contribute to the debate on what is meant by “macroprudential policy,” the reasons why macroprudential policy is needed, the

tools available to macroprudential supervisors, and challenges and limits surrounding implementation of macroprudential supervision.

## **A DEFINITION OF MACROPRUDENTIAL POLICY**

The G30 Working Group has introduced a definition of macroprudential policy with four components.

- **Policy Response to Whole Financial System:** Macroprudential policy seeks to develop, oversee, and deliver appropriate policy response to the financial system as a whole rather than focusing on individual institutions or certain economic measures in isolation.

➤ **Enhancing Resilience and Limiting Systemic Risks:**

Macroprudential policy aims to enhance the resilience of the financial system and to dampen systemic risks that spread through the financial system via the interconnectedness of institutions, their common exposure to shocks, and the tendency of financial institutions to act in procyclical ways that magnify the volatility of the financial cycle.

➤ **Types of Tools:** Macroprudential policy should use variable and fixed tools and apply them with the goal of reducing systemic risk and increasing the resilience of the financial system to absorb such risk.

➤ **Guidelines for Institutions:** The institutions charged with implementing macroprudential policy must inform and be informed by monetary, fiscal, and other government policy, and give due regard to the primary responsibilities of other agencies.

The Working Group believes that while a strong macroprudential policy regime might not have prevented the global financial crisis, the crisis would likely have been considerably less costly had macroprudential tools been used. In particular, the application of macroprudential policy tools before the crisis’ “tipping point” might have moderated the precrisis exuberance in the supply of credit to the financial system and global economy.

## MACROPRUDENTIAL TOOLS

An effective macroprudential regime must employ tools that increase the resilience of the financial system to shocks that originate not only from external sources, but also from within the financial markets. Recognizing the work that is already under way in a variety of fora to develop such tools, the Working Group highlights two approaches to the application of macroprudential tools—a variable approach and a fixed approach. The variable approach uses

tools, such as countercyclical capital buffers, with flexible parameters that adjust either automatically or change in response to business cycle developments. A fixed approach uses tools, such as gross leverage ratios and core funding ratios, that are not adjusted during the course of the economic cycle in an attempt to make the financial system more resilient to systemic risk at all points in the cycle. The Working Group believes that the use of *both* variable and fixed tools is necessary to achieve the goal of a more resilient and stable financial system, less prone to severe upswings and downturns.

### Leverage

The financial crisis demonstrated the key role of leverage in the financial cycle. During a boom, firms expand their balance sheets, relying on short-term funding, and increase leverage. During a bust, when asset prices fall, short-term funding becomes less available, financial institutions are forced to sell assets, and deleveraging occurs. The Working Group believes that enhanced capital requirements and a gross leverage ratio may be necessary for supervisors to successfully increase system resilience and reduce leverage.

To strengthen capital adequacy requirements, the Working Group recommends supervisors consider the use of four types of tools:

- The inclusion of capital multipliers reflecting systemic importance, growth of credit, and maturity mismatches to help achieve targeted financial supervision;
- An increase in the capital required against trading books to reduce liquidity risk;
- The adoption of countercyclical capital buffers; and
- The use of stress tests with a macroprudential focus, which have been proven effective with regard to recent events.

In addition, the Working Group recommends the use of a gross leverage ratio. The ratio could be in the form of an absolute limit on gross assets to a defined category of capital. The Working Group believes that the benefits of a gross leverage ratio are clear and compelling and notes that a number of countries already employ this type of tool.

### Enhancing Liquidity Regulation and Supervision

The macroprudential toolkit must include means to bolster liquidity regulation and supervision, in order to ensure credit crunches are less frequent and less severe. Three tools should be considered by supervisors:

- ▷ A liquidity buffer or buffers to reduce the reliance on overly risky sources of funding that in a crisis would likely contribute to systemic liquidity problems;
- ▷ A core funding ratio, applied either as a gauge of overall systemic risk or as a supervisory backstop, limiting high asset growth financed by less stable funding; and
- ▷ The imposition of a capital surcharge on liquidity, which presents an alternative to liquidity buffers.

These liquidity-monitoring tools could decrease the financial system's reliance on short-term, risky sources of funding, incent financial institutions to obtain a greater amount of liquid assets, and check bank lending during the growth phase of the economic cycle.

### Credit Extension

The Working Group notes the link between the financial crisis and excessively aggressive credit extension in the commercial real estate and housing market. The Working Group recommends that the macroprudential supervisor consider an adjustable loan-to-value (LTV) ratio. If required, the LTV ratio could be varied through the cycle to inhibit the swings of the economic cycle. Some supervisors have already adopted this approach.

### Supervision of Market Infrastructure and Business Conduct

Supervision of financial market infrastructure is crucial for a macroprudential oversight regime. The failure of a systemically important market utility, such as a payment, clearing, and settlement system, could have material adverse consequences for individual financial institutions and for the financial system as a whole. Macroprudential supervisors also need to be mindful of business conduct practices and the impact that investor protection issues can have on systemic risks.

## IMPLEMENTING MACROPRUDENTIAL POLICY

### Institutional Structure

National governments have various options when deciding how to implement macroprudential policy. For example, macroprudential supervisory authority could be given to a single supervisor, existing or new, or be divided among a number of supervisors. On balance, the Working Group finds there are strong reasons in favor of granting a single supervisor, such as a central bank, principal macroprudential supervisory authority.

The Working Group recognizes that many countries have recently adopted some form of a macroprudential council or board comprised of multiple supervisors in an attempt to ensure that all share responsibility over macroprudential supervision. While the decision whether or not to do so is a matter of national choice, the Working Group believes that the central bank must play a pivotal role in any such council or board that is established. In addition, the Working Group recommends that if governments choose to design such a council or board, the lines of communication and respective responsibilities for carrying out macroprudential policy decisions must be clear and unambiguous.

### Execution of the Macroprudential Mandate

Implementing the macroprudential mandate will not

be easy and will often be controversial. The macroprudential supervisor must be able to collect and analyze the data needed to detect risks before they develop into full-scale crises. As a general rule, such data would then be made publicly available, such as through financial stability reports, to strengthen market discipline and to enhance the performance of macroprudential tools by making the policy stance of the macroprudential supervisors known. Once risks are detected, the macroprudential supervisor must have the tools to mitigate threats to financial stability. In carrying out this complex mandate, the supervisor must respect the independence and authority of other economic policymaking bodies and be responsive to the prudential decisions of other supervisors.

The Working Group believes that the macroprudential supervisor must have the authority to exercise, either directly or indirectly, whatever policy instrument is determined to be most appropriate for affecting macroprudential policy. The macroprudential supervisor must be independent of political authorities. However, the supervisor's independence must be balanced by transparency and accountability in order for the public to view the supervisor and its actions as legitimate. The Working Group believes that the macroprudential supervisor must be accorded the necessary degree of discretion to employ its policy tools. This is essential because it is difficult to define in advance precise triggering conditions for future market crises. Furthermore, the Working Group recommends that the macroprudential supervisor operate under a clearly articulated mandate provided by the country's political leadership and should be accountable to legislatures and the public. Giving due regard to privacy and confidentiality concerns, the macroprudential supervisor's process should be as transparent as possible.

The effective use of macroprudential policy instruments requires a great degree of international cooperation and coordination and the establishment

of common standards. The Working Group observes that common standards are necessary to avoid a "race to the bottom." Absent such standards, the effects of a macroprudential policy instrument may be limited if a financial institution can avoid its intent by structuring its transactions and holdings to take advantage of lax supervisory environments.

The Working Group supports the work already under way in multiple fora, including the Financial Stability Board and the Basel Committee on Banking Supervision, and underscores the importance of a successful conclusion to these standards negotiations and the subsequent national implementation of the agreed standards in a consistent manner.

#### **Influencing and Responding to Other Supervisors**

Monetary, fiscal, and prudential supervisory policies can be significant contributors to creating a systemically risky or stable financial environment. Supervisors charged with implementing macroprudential policy, whether through a new macroprudential supervisor or as part of an existing institution, must inform and be informed by monetary, fiscal, prudential, competition, and other government policies. In all cases, however, there must be due regard for the sole or primary responsibility of these other supervisors in their areas of authority. If the macroprudential supervisor is not the central bank, for example, it should not be given the authority to set or unduly influence interest rates, though it may be appropriate to allow it to comment at times when excessively low or high interest rates over a long period of time pose a macroprudential threat.

The special relationship between monetary policy and macroprudential policy implies a pivotal role for the central bank even if macroprudential authority is not vested in the central bank. In addition, while a close relationship with governmental authorities charged with fiscal policy is necessary, the macroprudential supervisor should not be so closely linked to the fiscal authorities that its political independence is, or appears to be, compromised. Finally,

a macroprudential supervisor's relationship with the prudential supervisory authorities that oversee financial institutions and markets must allow the macroprudential supervisor to influence, either directly or indirectly, prudential supervisory policy with respect to the particular policy tool or tools that the macroprudential supervisor is assigned.

### **CONCLUSION**

The events of 2007–08 provided evidence that major systemic risks could emerge and escalate from within the financial system. This report considers the role of macroprudential policy in avoiding or ameliorating future financial crises. While the implementation of

macroprudential policy will not completely remove the financial system's susceptibility to cyclicity and shocks, properly applied it may enhance financial stability, improve the market's resistance to shocks, and ensure that potential future crises are identified and addressed before it is too late. The report clarifies the definition of macroprudential policy, makes a strong case in support of its use, identifies tools and institutional structures that can be used for its implementation, and offers recommendations on all of the above for the policymaking community. The Working Group believes that the report will add to the ongoing debate and help drive broad-based agreement on these crucial issues.





**SECTION I**

**A Definition of  
Macroprudential Policy**

## A DEFINITION OF MACROPRUDENTIAL POLICY

While the precise definition of “macroprudential policy” in the literature varies depending on the context, there are several elements common to most definitions. This section explores those common elements, defines macroprudential policy, and explains these key elements at each step.

### WHAT IS MACROPRUDENTIAL POLICY?

1. Macroprudential policy seeks to oversee, assess, and deliver appropriate policy response to the evolving financial system as a whole, rather than focusing on individual institutions or certain economic measures in isolation.
2. Macroprudential policy aims to enhance the resilience of the financial system and to dampen systemic risks that arise and propagate internally in the financial system through the interconnectedness of institutions by virtue of their common exposure to shocks and the tendency of financial institutions to act in procyclical ways that magnify the extremes of the financial cycle.
3. Macroprudential policy uses many of the tools of prudential supervision, on an ongoing basis and as needed to mitigate procyclical tendencies, but applies them with the goal of reducing systemic risk and increasing the resilience of the financial system to absorb such risk.
4. Recognizing the complementary nature of macroprudential and other areas of economic policy, supervisors charged with implementing macroprudential policy, whether through a new coordinating organization or as part of an existing institution, must inform and be informed by monetary, fiscal, and other government policy, while giving due regard to the primary responsibility of other entities in these areas.

#### **1. Macroprudential policy seeks to oversee, assess, and deliver appropriate policy response to the evolving financial system as a whole, rather than focusing on individual institutions or certain economic measures in isolation.**

The goal of macroprudential policy is to identify and address risks in the financial system. To this end, it generally uses the tools of supervision and prudential regulation tailored to meet macroprudential objectives. In his 2009 “Report of the High-Level Group on Financial Supervision in the EU,” Jacques de Larosière distinguishes between financial “regulation,” or the rules and standards that govern the behavior of financial institutions, and “supervision,” or the implementation of those rules and the design instituted to make sure they are

applied properly. It is important that macroprudential policy consider both the appropriate standards themselves and the means of ensuring financial institutions’ adherence to these standards.

While the goal of macroprudential policy is to ensure the welfare of the entire financial system, the goal of prudential supervision is to ensure the safety of individual financial institutions. Since the financial system is made up of individual institutions, the goals of prudential supervision and macroprudential policy often coincide. There are, however, cases in which the two differ, as seen in the 2007–08 global economic crisis. For example, in the fall of 2008, the values of complex financial instruments, including those created through securitization, held by many banks became impossible to determine, although

prices were clearly lower than they had been when these instruments were purchased. A prudential supervision approach would, for the safety of individual financial institutions, encourage each institution to resolve such assets as quickly as possible. However, the actions of an individual financial institution could cause unrealistic valuations to be recorded for all financial institutions, precipitating capital or funding problems, “fire sales,” and an evaporation of liquidity. Macroprudential supervision should attempt to employ standards that take into account both systemwide issues and the issues of individual institutions in addressing such situations.

Macroprudential policy and macroeconomic policy often complement each other since both take a broader view of the economic system rather than emphasizing the fate of individual institutions. Historically, however, macroeconomic policy has looked at single economic measures in isolation or at the interaction among a small set of such measures. Most notably, macroeconomic policy has focused on the interaction between interest rates and inflation, attempting, in the words of the Bank of England, “to stabilise the aggregate price of goods and services in the economy” (Bank of England 2009:10). Certain economic measures that are crucial to macroprudential policy, such as risk premia in the economy, are not the concern of macroeconomic policy, except perhaps as indicators of stress in the financial system. In addition, as described more fully below, macroprudential policy uses a toolset more akin to that of prudential supervision than macroeconomic policy, though the tools are calibrated to the health of the entire financial system rather than that of an individual institution.

Macroprudential policy has not been a major focus of national governments. The Turner Review explains that the Bank of England’s focus on monetary policy through an inflation target and the Financial Services Authority’s (FSA’s) focus on individual institutions rather than on systemwide risk

led to a situation in which macroprudential concerns “fell between two stools” in the United Kingdom.

**2. Macroprudential policy aims to enhance the resilience of the financial system and to dampen systemic risks that arise and propagate internally in the financial system through the interconnectedness of institutions by virtue of common exposure to shocks and the tendency of financial institutions to act in procyclical ways that magnify the extremes of the financial cycle.**

Risk and volatility are essential elements of a properly functioning financial system. Indeed, an absence of risk and volatility would entail ossified financial markets that fail to provide investment capital to the real economy. As such, macroprudential policy does not seek to eliminate risk and volatility entirely. Rather, while recognizing that it is impossible to quantify precisely how much risk and volatility are economically optimal, macroprudential policy seeks to enhance the resilience of the financial system and to prevent risk and volatility from reaching the point where they threaten to result in a costly financial crisis.

However, not all institutions pose such systemic risks, and not all the activities of a systemically important institution pose risks to the financial system as a whole. The aim of prudential supervision might well be to save both an individual, isolated, nonsystemically significant firm and a large, interconnected, systemically significant firm, but the aim of macroprudential policy should not be. It is important to recognize the limitations in this regard of macroprudential policy’s role in protecting a nonsystemically significant financial institution, or in protecting the individual shareholders or creditors of a significant firm.

Macroprudential policy, like macroeconomic policy, is prospective and preventive, not merely a set of tools to be used upon the near-failure of a systemically important financial institution. Furthermore,

the focus of macroprudential policy must be on the financial system as a whole and on specific institutions only as they affect that system. Since a primary concern of macroprudential policy is, as described below, the interconnectedness of financial institutions and markets and the resulting speed of propagation of risks through the financial system, its application must begin before such risks have propagated through the system. As a result, macroprudential supervisors must recognize, analyze data regarding, publish anticipatory guidance on, and address systemic risks as they emerge.

A fundamental concern of macroprudential policy is the way in which the interconnectedness of financial institutions and markets and their common exposure to economic variables create risk. We have learned that the financial system has moved, through the use of complex financial instruments and credit relationships, toward a degree of interconnectedness and common exposure that leaves it vulnerable to the rapid propagation of failures. Consequently, a focus on prudential supervision alone is insufficient to deal with macroprudential concerns.

A crucial difference between prudential supervision and macroprudential policy is that prudential supervision views economic shocks as external to the financial system, whereas macroprudential policy views them as largely internal to the financial system. Consider the following example, in which the value of an asset begins to drop and an individual institution must decide whether to sell it into the market. Prudential supervision sees the original risk and the subsequent increase in volatility and decrease in liquidity as external to the firm making the decision; the firm makes a decision about whether to sell or hold onto the asset independently of other firms, without taking into account a sale's potential effect on the rest of the financial system. Macroprudential policy, however, looks at the aggregate effect of individual firms selling assets on the value, volatility, and liquidity of those assets in financial markets more broadly. Macroprudential

policy understands that an asset that is viewed by all market participants as liquid may not be marketable if its attributes, or the supervisory scheme under which the institutions operate, encourage all parties to attempt to sell the instrument into the market simultaneously.

As mentioned, macroprudential policy looks to the links among financial institutions, be they explicit contractual links or implicit links that arise through common exposure to financial risks. Over the past decade, explicit contractual links among financial institutions grew as the use of complex financial instruments distributed tranches of risk to various market participants, who often repackaged these risks in different and opaque forms and resold them into the financial markets. The failure of Bear Stearns, Lehman Brothers, and AIG, and the liquidity woes of many major banks around the world, have thrust the interconnectedness of financial institutions into the public consciousness. In addition, systemic risk can also be created through herd behavior by institutions, including nonfinancial firms, and individuals and other activities that cause procyclical movement.

Interconnectedness can also be implicit. As de Larosière argues, global financial crises result in large part from the common exposure of financial institutions to elements that change over the course of the economic cycle (de Larosière 2009). In broad terms, the cycle can be described as follows: The “up phase” of the cycle is characterized by rising asset values, decreasing risk premia, and competition among financial institutions. The natural reaction of financial institutions is to expand their balance sheets to take advantage of such conditions, particularly since financial institutions, in times of rising asset prices, tend to benefit from depressed risk premia and easy access to credit and other forms of funding. Financial institutions in the up phase of the cycle often employ volatile short-term funding and increased leverage, practices that capital markets encourage through the “punishment” of overly

conservative institutions. At some point, however, the boom ends and asset prices begin to fall. Cheap short-term financing becomes less available to highly leveraged financial institutions holding assets that are now viewed as more risky than they were during the boom. These institutions are often then forced to sell such assets, resulting in a further decrease in their price and in price volatility throughout the markets. All financial institutions face this general cycle in one form or another and, as a result, the movement in asset prices, liquidity, and credit availability are magnified.

The role of banks in the economy as maturity transformers—funding long-term assets with short-term liabilities and thereby allowing their counterparties to do the opposite—amplifies many of these cyclical effects as banks become particularly sensitive to changes in short-term funding, for example through the repo market. In addition, certain regulatory choices have exacerbated this common exposure to financial cycles. As Avinash Persaud has identified, these choices include mark-to-market valuation of assets, the use of market-based measures of risk, and the use of credit ratings for supervisory purposes (Persaud 2009). Each of these may cause “herd” behavior, which, following an adverse shock to financial markets, can lead a stampede of financial institutions to act in a similar way at a similar time.

**3. Macroprudential policy uses many of the tools of prudential supervision, on an ongoing basis and as needed to mitigate procyclical tendencies, but applies them with the goal of reducing systemic risk and increasing the resilience of the financial system to absorb such risk.**

Despite the differences between macroprudential policy and prudential supervision, also referred to as microprudential policy, outlined above, the two often use the same tools, albeit in different ways. The prime example is capital regulation, which is used in the prudential supervision context to ensure the safety of an individual firm under stress, but can

also be employed in the macroprudential context, as discussed further below, both to ensure the resilience of the overall system and to mitigate the risk created by network effects within the financial system and procyclical behavior. Other macroprudential concerns require tools from outside the microprudential arsenal, including tools to ensure systemwide liquidity.

The fact that similar tools are used by prudential supervision and macroprudential policy, however, should not be construed to mean that they are used in the same way or to the same end. For example, the quantity or quality of capital required by supervisors can vary dramatically depending on the purpose of the capital regulation. Currently, most capital requirements are set with the prudential supervisory goal of ensuring that individual institutions survive reasonable economic shocks, and are not focused on the stability of the overall financial system. Notably, however, several regulatory bodies are taking steps toward an approach to capital regulation that does in fact focus on the financial system as a whole.

It is clear that there is an inherent bias toward procyclicality in the financial system and a lack of countercyclical control mechanisms and instruments. Although some improvements are in the making, the current supervisory structure often exacerbates this bias. Thus, in addition to the use of macroprudential tools on an ongoing basis, macroprudential policy employs “through-the-cycle tools” to ensure financial stability over time. For example, a supervisor with a macroprudential approach could use capital requirements not only to protect individual institutions from an unexpected shock, but also to shore up the financial system in a countercyclical manner. Capital requirements could be increased in boom times through techniques such as dynamic provisioning, and capital buffers could be funded in boom times to moderate procyclical activities or create a fund for drawdown during economic downturns. Of course, macroprudential policy must have not only prospective prescriptions,

but also recommendations for times in which the financial system is in crisis.

As discussed above, a focus on individual institutions—either by the institutions themselves acting in their own best interests or by supervisors with a prudential supervision focus—ignores the externalities created by those individual institutions. In a highly interconnected financial system, particularly one in which financial institutions are exposed to correlated risks, these externalities can be significant. The use of macroprudential tools to enhance systemic resilience, discourage procyclical behavior, and manage network interconnectedness risk can force institutions to internalize these externalities by dampening their behavior in booms and creating cushions for the system as a whole during times of stress. As the Bank of England has noted, “[b]ecause individual firms are unlikely fully to internalise the costs of their distress on others, the objective of macroprudential policy is to provide additional incentives for banks to do so” (Bank of England 2009:23).

**4. Recognizing the complementary nature of macroprudential and other areas of economic policy, supervisors charged with implementing macroprudential policy, whether through a new coordinating organization or as part of an existing institution, must inform and be informed by monetary, fiscal, and other government policy, while giving due regard to the primary responsibility of other entities in these areas.**

For macroprudential policy to have a real effect, it is imperative that the relevant supervisors be given both a mandate to implement the macroprudential program and the appropriate authority to do so. These supervisors must develop an effective plan for their macroprudential supervisory efforts, including macroprudential data collection, analysis, and assessment, “preventive medicine” through implementation of macroprudential tools, international coordination of macroprudential efforts, and interaction with other supervisors.

Different governments may choose different institutional arrangements for implementing macroprudential policy. While some may choose to create a systemic risk committee and charge it with monitoring systemic risk and implementing macroprudential tools, others may choose to vest this oversight and authority in an existing institution. Regardless of the institutional structure, however, macroprudential supervisors must be provided the appropriate resources for their mandate and the executive authority to implement the tools they deem necessary, and must affect any macroprudential policy in a manner that is transparent to the financial system and other supervisors.

Given the complementary relationship between macroprudential and other areas of economic policy, most notably monetary policy, financial stability is likely to be a shared responsibility. Central banks, in addition to their monetary policy tasks, also have a key role in overseeing the payments and settlement infrastructure that is central to the modern financial system. They are generally isolated from political influence and as part of their mandate they devote considerable resources to analyzing macroeconomic and financial trends. Hence, there is merit in vesting macroprudential supervisory authority in a central bank. But regardless of the governance structure relating to macroprudential policy, central banks should play a key role and benefit from information sharing with the macroprudential supervisor in order to inform the central bank’s macroeconomic policies.

Similarly, it is important for macroprudential supervisors to be able to analyze and comment on macroeconomic issues insofar as they relate to the macroprudential environment. For example, macroprudential policy generally does not directly employ the tools of monetary policy, such as changes to the target policy rate. However, while maintaining the independence of the central bank to set monetary policy, it may be appropriate for macroprudential supervisors to comment on cases, for example, when excessively low interest rates lead to financial

imbalances with potential systemic ramifications. Thus, even if their direct authority does not extend to certain other macroeconomic policies, macroprudential supervisors should be encouraged to analyze, develop views about, and take note of how such policies may be affecting systemic risk. In doing so, the macroprudential supervisor should maintain due respect for the independence

of central banks and other policymaking bodies, any appropriate division of responsibilities, and the jurisdiction's established process for setting macroeconomic policies. For the views of macroprudential supervisors to carry weight, governments should fill macroprudential policymaking institutions with well-respected individuals that have experience related to these other policymaking roles.





**SECTION II**

**The Need for  
Macroprudential Policy**

## THE NEED FOR MACROPRUDENTIAL POLICY

Section I defined macroprudential policy and deconstructed the definition according to its key elements. This section discusses why macroprudential policy is a necessary ingredient in any financial supervisory regime seeking to minimize systemic risks. It explores the principal sources of systemic risk in the financial system and discusses the unique role that macroprudential policy can play in mitigating such risk.

## THE NATURE OF SYSTEMIC RISK IN THE FINANCIAL SYSTEM AND THE NECESSITY OF MACROPRUDENTIAL POLICY

The financial system has an inherent bias toward procyclicality. Crises can originate and rapidly propagate through a network of highly interconnected institutions, both financial and nonfinancial. The 2007–08 global financial crisis has provided a stark case study of how an internal shock can deepen through the procyclical behavior of institutions and individuals and spread to the real economy and across borders. Macroprudential policy is needed in order to address two particularly salient drivers of systemic risks. First, macroprudential policy is necessary in order to mitigate the ability of internal shocks to spread quickly through interconnected financial institutions. Second, macroprudential policy is necessary in order to identify and counteract amplification mechanisms that cause procyclicality. Macroprudential policy aims both to mitigate these risks and to make the financial system more resilient to their effects.

### 1. Internal Network Risks

As discussed in Section I, the modern financial system has moved toward increased interconnectedness. This interconnectedness is the result of, among other things, the consolidation in one financial institution of distinct financial activities that previously were performed by independent entities, counterparty credit risk, shared reliance

on critically important market utilities, the use of common valuation and risk metrics, and widespread exposure to certain assets. This complex network of contractual and behavioral links can create, and rapidly propagate, risks throughout the financial system. Increased interconnectedness and common exposure to risk has left financial institutions as susceptible to endogenous, or internal, shocks as they are to downturns in the real economy.

Financial instability arises not only through the idiosyncratic failure of an individual institution, but also from the collective exposure of financial institutions and other important financial market participants, such as asset managers, hedge funds, and large corporations, to similar risks. A common view of systemic risk is that it begins with the failure of one institution and then spreads through contagion mechanisms, including contractual, informational, and psychological links within the financial sector. In this view, the original shock is external and the amplification mechanisms are internal to the financial system. However, seemingly more important are those crises that are fundamentally internal to the financial system and that arise from common exposure to similar risks. Under this model, unpredictable triggers and relatively modest initial shocks can cause widespread financial crises, and instability is also spread through financial sector assets, rather than just through liabilities. As the Bank of England has pointed out, endogenous market failure can arise from information frictions and incentive and coordination problems that operate among financial institutions.

Information frictions contribute to market failures by preventing participants in the financial system from accurately analyzing the risks to which they are exposed. For example:

- The contagion risks that arise when one firm fails can be opaque to others in the financial system.
- During downturns, buyers may doubt the quality of assets in the market.

- ▷ Principals may be unable to perfectly observe or monitor the actions of their agents.
- ▷ Following periods of relative stability, risk illusion or disaster myopia can cause financial investors to collectively underestimate the probability of adverse scenarios.

Incentive problems are often the unintended result of public policy and can contribute to excessive risk taking immediately before the outbreak of a market failure. For example:

- ▷ Explicit or implicit guarantees of government protection for state-regulated financial institutions can lead to the expectation of a safety net.
- ▷ The belief that macroeconomic policy will protect against future tail risks can distort investor monitoring incentives.
- ▷ Contractual protections, including limited liability for shareholders and managers, can generate additional incentives for taking big risks in search of high returns.
- ▷ Payout asymmetries can lead banks to pursue risky strategies including higher leverage, larger trading books, and writing deep out-of-the-money options on illiquid financial instruments.
- ▷ Tax breaks for corporate debt payments and tax incentives for home purchases can lead to over-leveraging by companies and individuals.

In addition, coordination problems, which can arise when participants collectively respond to market signals with similar behavior, amplify economic fluctuations. For example:

- ▷ The performance of financial institutions and individuals is often judged relative to peer or industry benchmarks, creating an incentive for market participants to mimic others' risk-taking behavior.
- ▷ Individual solvency concerns, causing one bank to reduce its balance sheet by selling assets or

constraining new lending, can lead to asset “fire sales” and impaired market liquidity when undertaken by multiple firms.

- ▷ Individual and wholesale depositors, who have a first-come-first-served incentive on an individual basis, can collectively cause bank runs.

Individual institutions do not have an incentive to overcome coordination problems. While everyone bears the risk, no one firm is able to take sufficient action to mitigate it. As a result of this classic collective action dilemma, individual banks often create network risks by not internalizing the spillover effects of their actions on the rest of the financial system.

As noted in Section I, one of the key features of modern systemic risk is how rapidly shocks can be disseminated through the network of interconnected financial institutions. Liquidity and solvency shocks originating from the frictions described above are propagated among financial institutions and on to the real economy through two internal channels: leverage, or the degree to which assets are funded by debt, and maturity transformation, or the degree to which shorter-term liabilities are used to finance longer-term assets. While leverage and maturity transformation perform economically useful functions, in excess, they can act as amplification mechanisms that make the financial sector more fragile in the face of adverse shocks.

## 2. The Procyclical Bias of Financial Markets

Systemic risk also arises from the procyclical behavior of financial institutions. As discussed in Section I, common exposure to risk exacerbates the interconnectedness of financial institutions. Furthermore, financial and nonfinancial institutions facing similar risks often react similarly to changes in the economic cycle, which in turn amplifies cyclical fluctuations. Thus, common exposure fuels systemic risks through a negative chain effect: similar risk exposure causes homogenous behavior

among firms; homogenous behavior strengthens the effects of market fluctuations; and the resulting procyclicality of the financial system is a driver of systemic risk. In this way, the procyclical behavior of financial institutions can be thought of as both its own form of systemic risk and as an element of network interconnectedness risk.

Like companies and households, financial firms have a strong collective tendency to overexpose themselves to risk during upswing periods and to become overly risk averse in downturns. During upswings, as price-based measures of asset values rise and price-based measures of risk fall, financial institutions expand their balance sheets and increase leverage in order to avoid facing punishment in the equity markets. This expansion of leverage and maturity mismatch among financial institutions is one example of procyclical movement. The Turner Review also describes other large-scale and self-reinforcing herd effects and the way in which prices procyclically overshoot rational equilibrium levels during upswing periods.

As suggested in Section I, certain industry practices and regulatory choices have further exacerbated the common exposure of firms to financial cycles. The recent shift to an increasingly securitized form of credit intermediation, together with the increased complexity of securitized credit, has led to new market practices and measures of risk that hardwire procyclicality into the financial system. Market practices with procyclical effects include:

- The use of Value at Risk (VAR) as a technique for measuring and managing risk. The use of short-term observation periods encourages trading behavior that reinforces recent market trends while underestimating the probability and possible effects of extreme loss events.
- Private market practices relating to collateral margin requirements (or “haircuts”) in derivatives contracts and secured financing transactions.

When financial markets enter a downturn, collateral requirements for specific categories of assets or contracts increase, which in turn drive deleveraging, asset sales, and falling asset prices in a self-reinforcing cycle.

- Overreliance on credit rating techniques to assess new and highly complex structured securities where no historic record existed. These ratings have proved to be highly imperfect predictors of risk, and rapid downgrades in ratings during the financial crisis have fueled herding behavior.
- Arrangements that relate the level of collateral posted in derivative contracts to the credit ratings of counterparties. During a downturn, credit default swaps and other over-the-counter derivative contracts entered into by a given financial institution may require it to post more collateral if its own credit ratings fall, triggering a downward spiral of increased liquidity stress and falling perceived creditworthiness.

Furthermore, unless counterbalanced by other measures, procyclical practices within the financial sector can be reinforced by regulatory policies and business practices, including:

- Risk-sensitive capital requirements;
- Mark-to-market accounting rules for valuing assets, which can fuel a cycle of irrational exuberance; and
- Regulator-mandated, market-based measures of risk, such as the use of credit spreads in internal credit models or price volatility in market risk models, which cause market participants to herd into areas of the market that appear safe (de Larosière 2009:17).

These regulations and market practices were introduced in the name of prudence, transparency, or increased risk sensitivity. However, taken together, they have had the unintended consequence of

increasing homogeneous behavior during both upswings and downturns, and of fueling the inherent procyclical bias of the financial system. The counterproductive effects of such regulations and practices during the 2007–08 financial crisis strongly point to the need for a macroprudential approach to assessing potential sources of systemic risks.

## MACROPRUDENTIAL POLICY AND SYSTEMIC RISK

Macroprudential policy aims to manage systemic risk by (a) strengthening, on an ongoing basis, the financial system’s resilience to such risk, and (b) mitigating the systemic risks created by interconnectedness and procyclical trends. This section describes the missing role of macroprudential policy during the 2007–08 global financial crisis, and explains why the goals of macroprudential policy cannot be accomplished through the tools of prudential supervision or macroeconomic policy alone. This analysis, supporting calls for a systemwide focus of prudential policies prior to the crisis (Crockett 2000; BIS 2001), suggests that macroprudential policy is a necessary element of any supervisory framework seeking to moderate systemic risk.

### 1. The Missing Role of Macroprudential Policy in the 2007–08 Global Financial Crisis

The 2007–08 global financial crisis once again made apparent three important contributors to procyclical and network risk within the financial sector: (a) the build-up of financial imbalances and unsustainable trends within and across financial systems, (b) the contagion of risk through the financial system, and (c) strong feedback effects between the financial sector and the real economy. Analysis of the causes of the financial crisis is beyond the scope of this report, but the comprehensive descriptions provided in the de Larosière Report, the Turner Review, and other analyses lead to several important observations related to systemic risk:

- The crisis served as a reminder that major risks could emerge from within the financial system itself.
- The crisis confirmed that systemic risks could be triggered and amplified by the collective behavior of institutions in reaction to changes in the financial market.
- The policies of credit rating agencies, compensation systems that rewarded risk taking, and supervisory requirements and accounting rules that triggered negative feedback loops in the credit market all contributed to procyclical tendencies within the financial system.

Homogeneous herd behavior both intensified market exuberance leading up to the crisis and exacerbated the drying up of markets for asset sales and credit during the downturn.

In addition, the 2007–08 global financial crisis demonstrated that existing financial supervisory regimes were poorly designed to mitigate the effects and costs of severe financial shocks. While a strong macroprudential policy regime might not have avoided the global financial crisis, the crisis would likely have been less costly had macroprudential tools been used to increase the resilience of the financial system to internal shocks and to moderate precrisis exuberance in supplying credit to the financial system and real economy.

First, macroprudential policy would have shifted the focus of supervisors from protecting individual financial institutions to addressing macrosystemic risks, like contagion. Financial firms were particularly susceptible to network risks because, as noted by Federal Reserve Chairmen Ben Bernanke, “most financial regulatory systems throughout the world are designed primarily to ensure the soundness of individual institutions” (Bernanke 2010).

Second, having a designated supervisor in charge of macroprudential policy might have mitigated

some of the information exchange and collective decision-making problems faced by central banks, supervisors, and financial ministries responding to the crisis. Instead, supervisors and governments attempted to mitigate losses in the financial sector using existing prudential supervision and macroeconomic policy tools. In the United Kingdom, for example, the Bank of England initially kept its attention on monetary policy analysis as required by its inflation targets, and the Financial Services Authority (FSA) focused on the supervision of individual institutions rather than on systemwide risks. The Turner Review notes that, as a result, “[t]he vital activity of macro-prudential analysis, and the definition and use of macro-prudential tools, fell between two stools” (Turner 2009:84). In the words of Paul Tucker, now Deputy Governor of the Bank of England for financial stability, the problem was not overlap but “underlap.”

## **2. Distinguishing Macroprudential Policy from Prudential Supervision and Macroeconomic Policy**

Macroprudential policy’s goal of mitigating systemic risks by strengthening the financial system’s resilience to economic downturns and counteracting procyclical behaviors cannot be accomplished solely within the frameworks of either prudential supervision or macroeconomic policy.

Prudential supervision, also referred to as microprudential policy, focuses on strengthening and protecting individual financial institutions from exogenous shocks. Prudential supervision sees the financial institution in a vacuum; it does not consider internal financial system risks and does not weigh the systemic importance of individual institutions. Instead, prudential supervision seeks to safeguard the interests of individual investors and depositors in potentially at-risk financial institutions. Since prudential supervision is limited to calibrating institution-specific balance sheet risks, there is a limit to what this supervisory framework can achieve in a financial system characterized by

deep integration. Federal Reserve Chairman Ben Bernanke has emphasized that such an institution-specific focus causes supervisors under a prudential supervision regime to overlook emerging threats to financial stability that cut across many firms or markets. Furthermore, when credit markets and asset prices collapse, a prudential supervisor is concerned with the solvency of an individual financial institution rather than with the financial system as a whole—and might thus push for conservative lending policies, which could have a negative procyclical effect on the larger financial system.

Macroprudential policy, in contrast, would account for the externalities of the microprudential approaches of individual institutions. Such an approach would recognize that during downturns, individual banks and other highly leveraged institutions acting to protect themselves from disaster can have the effect of destabilizing the broader financial system, for example through “fire sales” of assets rapidly declining in value. The “top-down” viewpoint of macroprudential policy allows supervisors to observe more effectively and respond to potential sources of internal shocks and collective behavior that causes procyclicity.

Macroeconomic policy guides the aggregate price of goods and services in the economy by balancing nominal demand and the supply capacity of the economy. Although there is a complementary relationship between monetary and macroprudential policy, and monetary policy can often be used to address systemic risk, monetary policy is not a perfect tool for mitigating sources of risk internal to the financial system and combating procyclical trends within the financial system. Given their primary focus on inflation—that is, on the change in prices of goods and services—monetary supervisors are not always in the best position to moderate movements in financial asset prices or emerging financial imbalances. While central banks can adjust short-term interest rates, it is unclear that such adjustments would influence risk-taking behavior by financial institutions. As

the Bank of England explains, “the impact of short-term, risk-free interest rates on financial prices and quantities is at best uncertain when risk premia are adjusting rapidly, whether upwards or downwards” (Bank of England 2009:11).

Monetary policy, in turn, can help cool rapid growth in bank balance sheets during upswing periods, and may sometimes be the most effective means available to supervisors. Its use in this regard, however, is a blunt tool that carries with it several negative side effects. To slow spending materially in the economy, a central bank—which is in charge of setting monetary policy—would have to set interest rates above the level needed to meet its inflation targets. Such a move by a central bank might well generate lower output relative to expected GDP trends and cause higher unemployment. Furthermore, using the institutions responsible for monetary policy to carry out the macroprudential goal of moderating the peaks and troughs of the economic cycle leads to the risk of persistent deviations from target inflation levels. While monetary and macroprudential policy would typically be expected to complement each other, any stated policy of using interest rates to lean against asset bubbles could risk undermining expectations within the private sector of managed inflation. The question of whether the central bank should be responsible for macroprudential policy is discussed further in Section IV.

As a result, to respond to the sources of systemic risk outlined above, financial supervisors cannot rely solely on existing prudential supervision and monetary policy regimes. Macroprudential policy is uniquely well positioned to mitigate sources of internal risks among highly interconnected financial institutions and to combat the procyclical bias of the financial system. Section III of this report outlines the tools macroprudential policy uses to accomplish these goals, and Section IV suggests how macroprudential policy should be implemented to complement existing prudential supervision and monetary policy institutions. As discussed in Section IV, it is crucial

that macroprudential, prudential, and macroeconomic supervisors work together, while giving due regard to the scope of each supervisor’s authority, to ensure as complete oversight of the financial system as possible.

Given that each of these supervisory regimes will have overlapping areas of concern within the financial system, macroprudential supervisors should be given the authority and opportunity to analyze, develop views on, and make note of how these other areas of economic policy affect the systemic risk environment. Nevertheless, macroprudential supervisors should respect the independence and authority of monetary and other economic policy-making bodies. Continuous dialogue with other supervisors will avoid contradictory regulations and allow for coordinated action when necessary.

## **TOWARD IMPLEMENTATION OF MACROPRUDENTIAL POLICY**

The following subsections of this report provide tools and strategies for implementing macroprudential policies. Before presenting recommendations for how macroprudential policy should be carried out in practice, however, this section concludes by reviewing the experiences with macroprudential policies already in effect and current debates that should inform any discussion of the macroprudential approach to financial supervision. Specific topics discussed are (a) macroprudential rules and oversight mechanisms that have been implemented to date, (b) the role of international coordination in the new macroprudential policy regime, (c) the selection of a macroprudential supervisor and the localization of macroprudential institutions within existing supervisory regimes, and (d) the limitations of using macroprudential policy to mitigate systemic risk.

### **1. Current Steps Toward a Macroprudential Framework and Oversight**

Governments and international bodies have already begun to adopt and experiment with macroprudential

tools and policies. Recently, the International Accounting Standards Board proposed replacing the current incurred loss impairment methodology with an expected loss, or cash-flow, approach. This change in approach would make it easier for firms to build up general provisions during upswings in order to cushion against expected future losses. Some emerging market economies have implemented domestic reserve requirements to limit the build-up of domestic imbalances arising from volatile cross-border capital movements.

More important, the Basel Committee on Banking Supervision (BCBS), in conjunction with the Financial Stability Board (FSB), recently embarked on an ambitious work program to mitigate procyclicality in regulatory requirements, improve minimum prudential standards for financial institutions, and address problems related to systemically important financial institutions and cross-border resolutions. A final package of measures is expected by the end of 2010. In this context, progress is being made on a variety of initiatives, including:

- Raising the quality, consistency, and transparency of banks' capital base;
- Improving the risk-capture of capital requirements across banks' trading and commercial banking activities;
- Introducing a simple, transparent leverage ratio as a supplementary measure to risk-based capital requirements;
- Developing, for the first time, an international liquidity standard for banks based on supervisory ratios penalizing imprudent funding profiles;
- Assessing measures focused on systemically important financial institutions, such as capital or liquidity surcharges and contingent capital instruments;
- Improving the capacity to resolve cross-border financial firms; and

- Working closely with the organizations responsible for setting accounting standards to improve banks' incentives to set aside provisions against expected losses (BIS/BCBS July 2010).

The United Kingdom, too, has taken several steps toward the implementation of a new macroprudential supervisory framework. The FSA has investigated the costs and benefits of a material increase in required equity capital for the banking system and has written a consultation paper proposing major reforms to the liquidity regime in the United Kingdom. The FSA has already implemented an interim regime to improve capital adequacy by requiring a higher quantity and quality of capital reserves, and is currently introducing adjustments such as variable scalars to avoid procyclicality. In December 2008, the FSA approved a proposal for a central clearing mechanism for some European Index credit default swap products. In its implementation of the Basel II framework during the financial crisis, the FSA introduced measures designed to smooth the financial cycle by using longer-run averages of default probabilities, or "through-the-cycle" averages.

More recently, in July 2010, the U.K. Treasury presented its proposal for vesting macroprudential supervisory authority in a Financial Policy Committee (FPC), to be housed in the Bank of England. The FPC was proposed in response to the perceived regulatory "underlap" noted earlier. The Treasury, in particular, highlighted the weaknesses of the United Kingdom's tripartite regulatory system, where three authorities—the Bank of England, the FSA, and the Treasury—were collectively responsible for financial stability but no one authority had primary responsibility for monitoring the system as a whole. As described by the Treasury, the FPC would be chaired by the head of the Bank of England and would include other Bank of England officials, a representative from the Treasury, and independent members.

In addition to fulfilling a supervisory function, the FPC would be charged with employing microprudential tools to address perceived systemic risks. To facilitate the use of such tools, the Treasury report proposes transferring responsibility for prudential regulation from the FSA to the Prudential Regulation Authority, a new subsidiary within the Bank of England, so that both macroprudential and microprudential supervision are overseen by a single institution. In addition, with the exception of payment and settlement systems and central counterparty clearinghouses, regulatory authority over markets themselves would be granted to a separate, dedicated Consumer Protection and Markets Authority (CPMA). The objective of the CPMA is to protect participants in financial and credit markets, particularly consumers of retail products, and thus to promote consumer confidence in financial services and markets.

In 2000, Spanish authorities introduced dynamic provisioning into their financial supervisory regime. These rule-based regulations require banks to build buffers of general provisions, also known as “dynamic” or “statistical” provisions, against performing loans during upswings, which can then be drawn upon during downturns. Under the Spanish rules, such general provisions are intended to complement specific provisions made against loans that already show signs of impairment. The Spanish experience with dynamic provisioning has been well documented, and while this macroprudential instrument is generally seen as having successfully protected banks from underprovisioning during the precrisis upswing, it has been less successful in moderating the financial cycle.

All of these initiatives increase the resilience and reduce the procyclical tendencies of individual financial institutions. However, as the Bank of England and the Bank for International Settlements (BIS) have both observed, most initiatives to date have not addressed systemwide procyclical trends, such as widespread credit exuberance during upswings or

risks arising from the complex interconnectedness of the financial system. Again, BCBS has begun to address this challenge (BIS/BCBS July 2010) by, for example, developing proposals for “countercyclical capital buffers” that promote the build-up of extra capital in good times that can be drawn down in times of stress, and by adopting a “bond equivalent approach” for calculating how much capital a bank must set aside to protect against counterparty credit risk—a move that is designed to require banks to take more account of worst-case scenarios with regard to defaults by counterparties.

Influenced by the recommendations provided in the de Larosière Report, the European Union in September 2009 created the European Systemic Risk Board (ESRB) to monitor the overall soundness of the European financial system. European central banks will play a prominent role in the ESRB’s governance, since the European Central Bank is designated as the Secretariat of the ESRB and all 27 national central banks of the European Union are members. The ESRB is principally intended to serve as an early warning system by identifying, prioritizing, and reporting potential sources of risk. Once it is operational, the ESRB will perform the important task of overcoming fragmented risk analysis that is currently focused at the national and individual firm level. However, the ESRB is designed only to provide a macroprudential analysis and does not have any binding powers to impose measures on member states, nor does it create any new macroprudential tools or policies for national authorities to use.

On July 21, 2010, U.S. President Barack Obama signed the *Dodd-Frank Wall Street Reform and Consumer Protection Act* (Public Law No: 111-203), which incorporates certain macroprudential approaches to U.S. financial stability. The Act mandates the creation of a Council, comprised of supervisors from various U.S. regulatory bodies including the Federal Reserve Board and the newly formed Bureau of Consumer Financial Protection,

which is to be given significant authority and responsibilities, including:

- ▷ Designating banks, financial activities, and non-bank financial firms as “systemically important” and recommending heightened prudential standards for any activity or firm that the Council determines is contributing to systemic risk;
- ▷ Gathering information about and reporting to Congress on institutions and market practices that in its view contribute to systemic risk;
- ▷ Conducting an ongoing study of the economic impact of regulatory limitations designed to reduce systemic risk, including the costs and benefits of imposing limits on the size, organizational complexity, and interconnectedness of large financial institutions; and
- ▷ Monitoring domestic and international supervisory proposals and developments and analyzing their effect on systemic risk in the U.S. financial market.

Beyond the Council, the Act introduces new regulations designed to address some of the macroprudential concerns raised by the 2007–08 financial crisis. For example, risk-based and leveraged capital standards are extended beyond banks to U.S. bank holding companies, thrift holding companies, and other systemically important nonbank financial companies. The Act adopts new requirements for credit rating agencies, including greater transparency and internal controls, and introduces new rules for executive compensation disclosure.

Much of the final scope and impact of the Act remains unknown, particularly since the details of the Act will likely be worked out through agency rulemaking and during the upcoming regulatory implementation period. The reach and activities of the Council require implementing regulations, which are subject to regulator’s discretion. In addition, the internal rules and procedures that will

set the manner in which the Council will operate are not yet in place. Despite these significant uncertainties, the Dodd-Frank Act, and the new Council in particular, suggest that macroprudential policy has informed at least part of the U.S. response to the financial crisis and systemic risk.

The current international experimentation with macroprudential policy suggests that macroprudential policy is a dynamic area of supervisory innovation without a settled “best approach.” While many of the proposals are promising, the current steps toward introducing macroprudential policies by national regulators and international organizations suggest that without a clear methodological framework and implementational approach, macroprudential policies created in an ad-hoc fashion may not fully address the important policy aims of leaning against the financial cycle, enhancing the resilience of financial institutions against systemic risk, and controlling the spread of risk through interconnected institutions. Sections III and IV of this report provide a coherent set of tools and implementation guidelines to inform future efforts to build supervisory regimes that effectively minimize systemic risks.

## 2. The International Dimensions of Macroprudential Policy

Significant international coordination would not have averted the 2007–08 financial crisis, which instead demonstrated the need for stronger national financial supervision. National rules should account for global risks due to the interconnectedness of the financial system, but capital and liquidity rules and banking supervision are most likely to be strong and effective when they are originated and adopted locally. International policy coordination is also complicated by the fact that currently, only national governments can apply fiscal resources to resolve financial crises. Furthermore, in recent reports, the BIS has suggested that, given the lack of experience in applying countercyclical tools, attempts to develop internationally coordinated approaches to leaning

against the financial cycle must proceed cautiously (CGFS 2010; BIS June 2010). Acknowledging the limitations of using international cooperation to implement effective macroprudential policies, the Turner Review (2009) has observed that “it is inevitable and appropriate that supervisory authorities throughout the world will increase their focus on the resilience of local legal entities.”

However, there remains a clear need for cross-border information sharing and supervisory coordination. The inherent interconnectedness of global financial institutions can cause the national regulations of one country to bleed into the operations and behavior of important financial market participants in foreign countries. Macroprudential instruments may be able to strengthen the resilience of the domestic banking sector to shocks. But to be wholly effective a macroprudential policy regime must also limit opportunities for arbitrage between strong and lax national financial supervisory regimes—or, indeed, even between strong regimes, which may vary enough to allow sophisticated institutions to seize upon arbitrage opportunities. As Under Secretary of the U.S. Treasury for International Affairs Lael Brainard has explained, such arbitrage can create a race to the bottom, since “[w]ithout internationally consistent standards, large financial firms will tend to move their activities to jurisdictions where standards are looser and expectations of government support are stronger” (Brainard 2010). In the United Kingdom, the Bank of England has outlined four possible sources of leakage or arbitrage should foreign macroprudential supervision be weaker than new U.K. rules:

- Foreign-owned banks could operate in the United Kingdom via branches that are subject to more permissive home country financial rules.
- Foreign-owned banks subject to weaker capital requirements could lend to the U.K. real economy, either directly or through corporate bond or commercial paper markets.

- Foreign-owned banks could lend through wholesale markets to U.K. nonbank financial institutions, which in turn would lend to real economy participants.
- U.K. corporates could borrow abroad from foreign-owned banks and then lend intragroup to their U.K. operations.

Some commentators, such as Avinash Persaud, have argued that at least the first of these concerns is overstated. In his view, one likely outcome of future nationally adopted rules is that banking supervision will switch back from “home country” to “host country.” As a result, foreign banks will be required to establish local operations as independent subsidiaries that could withstand the default of their international parent. Despite this qualification, regulatory and supervisory arbitrage remains a real concern for national policy implementation, and one that can only be addressed through international coordination.

A handful of areas stand out in which international coordination is most important for achieving robust macroprudential supervision, perhaps most significantly in the areas of capital reserve requirements and insolvency and resolution regimes.

There has long been recognition of the need for international coordination in the setting of capital reserve requirements. As noted, the BCBS has ongoing work to establish new international capital standards, while the FSB is coordinating efforts to improve cross-border resolution frameworks. Given the global reach of today’s systemically important financial institutions, coordination of how to manage the failures of such institutions in an orderly manner is perhaps just as critical to an optimally effective macroprudential supervisory regime as is coordination of capital reserve requirements.

Global financial stability would be further benefited by high-level commitments to improved early warning systems, surveillance, and “peer review.” Peer review agreements could empower international

institutions to produce wholly independent studies that identify national regulatory frameworks that are lax, underenforced, or inconsistent with international standards. Certain international organizations have already taken steps to improve cross-border information gathering and surveillance. The International Monetary Fund (IMF) has contributed work on financial risk fees, alternative approaches to cross-border resolution, and bilateral surveillance. The joint World Bank-IMF Financial Sector Assessment Program provides a voluntary, comprehensive analysis of a country's financial system. In addition, the G-20 has recently become a key forum for global economic cooperation. In the spring of 2010, G-20 leaders reconstituted the Financial Stability Forum as the Financial Stability Board, with a mandate to identify vulnerabilities in the global financial system, promote financial stability, and encourage coordinated and comprehensive supervisory standards. The FSB has been actively involved in maximizing the flow of information between home and host country supervisors and advocating for increased international coordination in crisis situations and cross-border contingency plans. Section IV of this report presents preliminary recommendations on how to foster effective international coordination among institutions responsible for implementing macroprudential oversight.

### **3. Integrating Macroprudential Oversight into Existing Financial Supervisory Regimes, and the Relationships among Macroprudential, Prudential, and Macroeconomic Supervisors**

There is debate over the optimal institutional arrangement for supervisors charged with implementing macroprudential policy. Fundamentally, this debate centers around the extent to which macroprudential supervisors should be embedded into existing financial supervisory structures. While there is no clear answer to this question, Section IV of this report contributes to the debate by clearly outlining the choices that governments face when implementing new macroprudential regimes.

Specifically, Section IV describes the advantages and drawbacks of embedding macroprudential supervisors within existing institutions charged with implementing prudential supervision or macroeconomic policies, as well as the costs and benefits of creating new organizations focused solely on macroprudential policy.

### **4. The Limitations and Difficulties of Macroprudential Policy**

Although macroprudential policy is an important piece of any financial supervisory regime seeking to minimize systemic risk, it is not a complete solution. Some of the difficulties associated with implementing an effective macroprudential policy regime arise from the complicated nature of macroprudential rules. Comprehensive macroprudential oversight requires regular and periodic fully integrated reviews of the entire financial system, which is technically demanding and possibly very costly for both public supervisors and the private institutions they oversee. Modern financial markets change rapidly, firms' holdings and exposures move daily, and financial transactions often occur across national boundaries, making information gathering for conducting effective macroprudential surveillance potentially daunting. Effective supervision would also require increased coordination between private- and public-sector supervisors, who would have to keep abreast of evolving market practices and products in order to identify those most likely to pose risks to the broader financial system.

In addition, it would be unrealistic to expect macroprudential oversight to eliminate systemic risk fully. While macroprudential policy may help contain asset bubbles or soften credit crunches, it will not completely prevent significant volatility within the financial market. Free capital mobility and cross-border lending restrict any macroprudential supervisor's ability to tightly control domestic credit and asset markets. Furthermore, macroprudential policy cannot effectively prevent shocks to

the financial systems that arise from exogenous sources. The Bank of England has, in fact, explicitly stated that “to the extent that such falls in the global cost of capital [are] sourced in developments in the real economy—for example, greater savings in Asia—the effect on credit should not be offset by macroprudential policy” (Bank of England 2009:9).

Macroprudential policy should not seek to eliminate all risk and volatility since these are necessary elements of a healthy financial system, nor should it seek to completely remove cyclicalities from the financial system. Rather, macroprudential policy is designed to minimize the costs that financial crises and turmoil can impose on the entire economy by strengthening the resilience of the financial system and mitigating the risks created by procyclical tendencies and network interconnectedness. Ultimately, therefore, while macroprudential policy has an important role to play in mitigating systemic risk, the recommendations in this report

are not expected or designed to alleviate the financial system’s susceptibility to cyclicalities and shocks completely.

\* \* \*

This section has argued for the need to implement macroprudential policy regimes to manage inherent systemic risk—both by reducing such risk and by making the financial system more resilient to it—with the aim of preventing the type of costly, extreme fluctuations in the financial cycle that occurred during the 2007–08 global financial crisis. Macroprudential policy fills a gap in existing financial system supervision by mitigating procyclical tendencies and internal network risks that are not adequately addressed by prudential supervision or macroeconomic policy. The tools available to macroprudential supervisors to minimize systemic financial risks are outlined in Section III.





**SECTION III**

**Macroprudential Tools**

## MACROPRUDENTIAL TOOLS

Sections I and II addressed the nature of and need for macroprudential supervision. This section explores the various tools a supervisor might employ as part of a macroprudential policy regime. Specifically, we consider tools to manage systemic risk in four ways:

- ▷ Avoiding systemically risky levels of leverage;
- ▷ Ensuring a degree of liquidity sufficient for well-functioning markets;
- ▷ Preventing excessive credit extension; and
- ▷ Regulating market activity that could pose a systemic risk.

The macroprudential supervisor will need to be equipped with a comprehensive data-gathering, analytical, and assessment capability. This will provide the basis and context on the need for and timing of specific macroprudential policy initiatives as discussed below and in Section IV. But the same database, analytical, and assessment capability should also be used as the basis for publication of financial stability reviews to provide input to decision making by market participants, parallel in some respects to the influence in the monetary policy area of published minutes of central bank monetary policy committees and periodic reports on inflation. A core object of such transparency on the part of the macroprudential supervisor should be “preventive medicine” in the sense of informing and providing guidance to the private sector of the overall state of financial stability and prospects. To the extent that such assessments stimulate anticipatory market reaction and reinforce market discipline, the subsequent need to deploy specific macroprudential tools to counter any emerging instability should be correspondingly reduced. While thoroughly researched and authoritative financial stability assessments have for some time been published by several central banks, by the Bank for International Settlements (BIS), and by the International Monetary

Fund (IMF), they appear to have been inadequately heeded by market participants. Since the macroprudential supervisory authority as recommended here is newly charged with specific powers and a duty to take timely and specific policy initiatives where this is judged necessary, one would expect the published financial assessments to materially increase the influence exerted on market behavior and discipline.

But beyond such market transparency of its data, analysis, and assessments of financial stability, the macroprudential supervisor will require an arsenal of specific tools for effective macroprudential policy supervision. The tools described below are designed for effective macroprudential policy supervision. They are designed both to enhance the resilience of the financial system to systemic risk and to mitigate the internal risks created by linkages between firms and markets and by the procyclical tendencies of market actors. These tools are not intended to prevent the economic cycle or to eliminate risk entirely, but rather to moderate its worst effects. Most are microprudential tools in the sense that each tool is to be applied to specific institutions and types of market actions. On the other hand, the tools are macroprudential tools because they will be applied to all relevant institutions and activities on the basis of macro indicators, regardless of whether a specific institution or activity would independently warrant application of the tool.

As an initial matter, we note that there are two distinct but reinforcing approaches to implementing macroprudential tools: a variable approach and a fixed approach. A variable approach would use tools, such as countercyclical capital buffers, which would have variable parameters that adjust—either automatically or through regular modifications by the macroprudential supervisor—depending on macroprudential indicators that would fluctuate with the economic cycle. Variable tools are most likely to be used to limit procyclical tendencies and those network risks that increase with the economic

cycle. Variable tools might therefore be thought of as tools to “lean against the cycle.”

A fixed approach would use tools, such as a gross leverage ratio and a core funding ratio, which would not necessarily have to be adjusted during the course of the economic cycle and are intended to make the financial system more resilient to systemic risk at all points in the cycle. In addition, fixed tools could be used to manage network risk by, for example, requiring the use of central clearinghouses for certain transactions and regulating the market activity of critical market makers. Even in the case of a nominally fixed tool, however, it would nevertheless be necessary for a macroprudential supervisor to periodically revisit the terms and application of such a rule to ensure it is achieving its intended purpose.

As noted, macroprudential supervision focuses on the financial system as a whole and on individual institutions as they affect the system—by their sheer size or through their trading and lending activities, their implicit and explicit interconnections, and the market infrastructure they create and maintain. Depending on its size and interconnectedness, any type of financial or nonfinancial institution can contribute to systemic risk. Thus, while banks have been the traditional focus of efforts to maintain financial stability, it is now clear that an effective macroprudential policy must extend both to bank and nonbank institutions, including nonfinancial firms.

In applying the various macroprudential policy tools, one must therefore carefully consider the institutions and activities to which they will be applied. This decision must be made based on the capacity of an institution or activity to create systemic risk, and this may differ across types of institutions and activities. For example, the risks involved in banking compared to nonbanking activities (such as insurance) are very different, and institutions have different abilities to withstand the various types of risk that exist. A bank funded with short-term deposits might have little capacity to withstand liquidity risk, although it might have a greater

threshold for credit risk, in light of the breadth of its credit exposure. In calibrating the application of macroprudential policy tools to different types of institutions, the macroprudential supervisor should encourage risks to flow to those institutions that are best equipped to bear them. In addition to an institution’s financial structure, supervisors should also consider the governance of institutions, since lax governance can contribute to systemic risk and imprudent risk taking by an institution. In some instances, a macroprudential supervisor may find it more effective to regulate market activities directly, rather than trying to manage the effect of those activities on institutions.

Macroprudential supervisors must carefully calibrate the use of these tools to the specific economy in which they are employed. While a macroprudential tool may serve an important role in one financial system, the differing economic environment of another financial system may make that tool impractical or ineffectual. In addition, macroprudential regulators must be aware that simultaneous implementation of macroprudential measures may have unintended effects on each other and on the economy. Furthermore, as discussed in the next section, the impact of the use of macroprudential tools may be magnified or mitigated by measures implemented by other supervisors.

The effectiveness of these tools, and of macroprudential supervision generally, will depend in part on successful international cooperation. Without international cooperation, cross-border lending can undermine the work of a national macroprudential supervisor. As discussed in more detail below, borrower-level tools can help mitigate this risk. But, despite the challenges presented by cross-border capital flows, the first necessary step is for macroprudential frameworks to be adopted at the national level.

Finally, it is also noteworthy that a number of the tools discussed in this section have been, at one point or another, implemented by supervisors

in various countries, in different forms and with varying degrees of success. Annex II to this report lists examples of discretionary prudential interventions in response to property market developments. Lessons drawn from the use of these tools are also discussed below. As a general rule, except for information obtained under strict confidentiality requirements, the data gathered by the macroprudential authority should be made publicly available, perhaps through financial stability reports. This can help enhance market discipline by providing market participants with a balanced risk assessment to mitigate overreactions and herd behavior and enhance performance of macroprudential tools by making the policy stance of the macroprudential supervisor clear. It is possible that detailed and persuasive scenarios could be developed in such financial stability reports to aid the above purposes.

## LEVERAGE

Section I addressed the role of leverage in the growth of systemic risk. During the boom phase of an economic cycle, financial institutions respond to increased asset prices and falling measures of risk by expanding their balance sheets, relying on short-term funding, and increasing leverage. In contrast, during the bust phase, when asset prices fall and short-term funding to institutions—particularly those that are highly leveraged—becomes less available, financial institutions are forced to sell assets. Although it might make sense for an individual institution to sell assets in times of stress, from a systemic perspective, forced asset sales generate “fire sale” externalities, that is, an individual institution has no incentive to account for the price impact its own fire sale can cause even though its fire sale causes asset prices more generally to drop. In this way, widespread leveraged purchases can be viewed both as systemically risky procyclical behavior on the part of individual financial institutions and, by creating a network of leverage, as a form of systemically risky interconnectedness.

This relationship between leverage and the economic cycle was clearly displayed during the most recent financial crisis. From 2003 onward, in the up phase of the economic cycle, leverage increased tremendously, as did the use of off-balance-sheet vehicles such as structured investment vehicles and conduits, all of which were not included in standard measures of either gross or risk-adjusted leverage. Also, new products with high levels of embedded leverage were created, exposing bank trading books to shifts in confidence and liquidity. When the down phase began in 2007, confidence in the system collapsed and risk aversion increased, exposing the system to a cycle of deleveraging, liquidity problems, and decreasing asset prices.

Considering the impact of excessive leverage on the cyclicity of the financial system, the macroprudential toolkit should include instruments to reduce incentives to take on additional leverage during boom phases and to deleverage during bust phases.

For example, a macroprudential supervisor could employ tools to monitor and enforce heightened capital levels. A macroprudential supervisor could also employ a maximum gross leverage ratio, in the form of an absolute limit on the ratio of gross assets to some category of capital (for example, Core Tier 1). This gross leverage ratio would complement the risk-based capital regime as a supervisory backstop, although it would not necessarily be required if a robust regime were put in place to define minimum capital requirements vis-à-vis specific classes of assets and thus to control the overall scale of weighted risk assets relative to capital. One decision for supervisors is whether the definition of capital used in calibrating the ratio should include non-core tier capital in addition to core tier capital.

Apart from leverage of financial institutions themselves, certain financial products have levels of embedded leverage. Given that the variety of products and structures of products are constantly changing, leverage at the product level is probably best monitored on a discretionary basis,

with the macroprudential supervisor evaluating specific products to determine whether any limits should be imposed with respect to the product. Macroprudential supervisors could institute a “product observatory” to assess not only new instruments but also to analyze unique usage issues and market practices related to such new products.

The discussion that follows first deals with various tools for addressing capital adequacy requirements, and then considers the adoption of a maximum gross leverage ratio.

### 1. Capital Adequacy Requirements

One important macroprudential tool to control leverage, both on an ongoing basis and in order to prevent a situation in which a small shock could lead to a crisis, is a capital adequacy requirement. This section describes four potential capital adequacy requirement tools:

- ▷ The inclusion of multipliers corresponding to the systemic importance of financial institutions and the growth of credit and maturity mismatches;
- ▷ Increases in capital required against trading books to reflect a lack of liquidity;
- ▷ The creation of countercyclical capital buffers; and
- ▷ The use of macroprudential stress tests to calibrate capital requirements.

These potential tools respond to an understanding that inadequate capital played a central role in the financial crisis. The tools described in this section can generally be expected to increase the capital adequacy requirements imposed on financial institutions. Some of these tools may be better suited to moderating the risk created by procyclical behavior, while others may be more apt for mitigating network risk. In each case, enhanced capital requirements will tend to reduce the return on equity generated by institutions subject to the requirements, but will

make the financial system better able to absorb shocks and stresses.

#### a. Inclusion of Multipliers Reflecting Systemic Importance, Growth of Credit, and Maturity Mismatches

Capital requirement multipliers are simple, transparent rules that vary capital adequacy requirements based on specified objective criteria. They provide one means of achieving targeted financial supervision that mitigates macroprudential risks without hindering appropriate risk taking. Examples of multipliers that could be a part of macroprudential policy include multipliers that reflect the systemic importance of a given institution, the growth of credit, and maturity mismatches between assets and liabilities.

Not all financial institutions are large enough or sufficiently interconnected to pose systemic risk. A multiplier that relates to the systemic importance of a given financial institution would allow a macroprudential supervisor to require systemically important institutions to have higher capital requirements than institutions with less systemic importance.

Although there is no single balance sheet metric of systemic importance, the Bank of England has identified the following variables as possible indicators of the degree of systemic risk posed by a given financial institution:

- ▷ Value of its total assets;
- ▷ Liabilities arising from arrangements between it and other financial institutions;
- ▷ Repo liabilities;
- ▷ Value of trading assets and assets available for sale;
- ▷ Capital structure;
- ▷ Presence of infrastructures that reduce uncertainty about interfinancial institution exposures;

- ▷ Existence of a recovery or resolution plan (also known as a “living will”) to ease orderly resolution; and
- ▷ Network structure, including:
  - Subsidiaries, branches, and off-balance vehicles to which the financial institution has explicit or implicit commitments;
  - The financial institution’s exposure to credit default swaps and other derivatives within the financial system; and
  - Large liabilities to foreign banks and nonbank financial institutions.

This list of factors does not explicitly consider the degree of interconnectedness of an institution, although network structure captures some elements of interconnectedness. Most observers would suggest that this is key in determining systemic importance. Although it is likely more difficult to quantify than a multiplier reflecting an institution’s size, a multiplier to weigh interconnectedness risk could consider, among other variables:

- ▷ The extent of a financial institution’s exposure to counterparty risk and other types of direct contractual risk and the distribution of that exposure;
- ▷ The extent to which a financial institution serves as a critical market participant;
- ▷ A financial institution’s involvement in, and thus exposure to the risks of, multiple types of financial activities; and
- ▷ The degree to which a financial institution’s trading strategies, risk policies, and valuation metrics mimic those of other institutions.

A multiplier could also be used to address the growth of credit and leverage. This type of multiplier would first require supervisors and central bankers together to produce a forecast of aggregate bank asset

growth that is consistent with the long-run target for nominal gross domestic product (GDP) growth. The forecast could include upper and lower bounds to reflect uncertainty. If a bank’s assets were to grow above the upper bound, the capital requirement for new lending could be increased by a multiplier. If, however, a bank’s assets were to grow at less than the lower bound, the capital requirement applicable to the bank could be decreased by a multiplier. This mechanism would encourage banks with the capacity to take on additional risks to do so and would discourage banks from taking on excessive amounts of risk. This multiplier would function similarly to a rule-based countercyclical capital buffer (described below), and could be expected to offset cyclicity in the same way. That said, while theoretically appealing, this may prove unworkable in practice.

In addition, a multiplier could be used to address risk generated by mismatching the maturity of bank assets and liabilities. If no supervisory distinction is made between short- and long-term funding, financial institutions have an incentive to mismatch long-term assets with cheaper, short-term funding, as was evidenced in the 2007–08 crisis. A capital requirement multiplier that varies in accordance with the degree of mismatch between assets and funding would reduce the risk associated with this mismatch by requiring banks to increase reserves when funding has a term that is shorter than that of the funded assets. The multiplier would, however, have no effect on capital requirements when funding has a term that is equal to or longer than funded assets. In addition, direct control of a funding mismatch could encourage credit to be deployed elsewhere, unless leverage is directly addressed.

#### **b. Increases in Capital Required against Trading Books**

A weakness of the current capital regime is that it has required relatively low levels of capital against trading books, on the theory that assets can be rapidly sold and positions unwound. As the 2007–08

crisis revealed, however, this rationale overlooks significant liquidity risks. To reduce this risk, a macroprudential policy could require an increased level of capital to be held against trading books to reflect a more realistic assessment of these risks.

Value at Risk (VAR) is a measurement used to estimate the losses that could be incurred before a trading book position can be reduced. VAR plays a central role in the current treatment of trading book risk but has a number of weaknesses, including a tendency to underestimate the possibility of low-probability, high-impact events (the so called “tail risk”) and a failure to account for significant systemic risks. The former deficiency results from the use of short historical observation periods to determine the volatility of an asset and a statistical assumption that profit and loss is normally distributed. The latter results from a methodology that implicitly assumes that the purchase or sale of an asset by an individual firm will not affect the actions of other firms. This assumption fails to account for the possible generation of “network externalities” that may occur from “herding” effects, if numerous firms act similarly at the same time. Measures to address these deficiencies can help mitigate systemic risk arising out of this type of interconnectedness.

While these weaknesses have always been present in the VAR approach, they have been magnified as the composition of trading books has shifted to increasingly complex and less liquid holdings. These weaknesses were clearly demonstrated when, as the recent credit crisis spread, market liquidity dried up and prices dropped much more rapidly than was anticipated.

To address VAR’s underemphasis on illiquidity and other imperfections that emerge when markets experience “tail events,” many observers have suggested that VAR be supplemented by stress test results (discussed below). They have also suggested that VAR be used only as a short-term control of trading book exposure.

The Basel Committee has already adopted important proposals that will require stressed VAR calculations, incremental capital charges to cover default and credit risk mitigation, and increased charges for securitizations. However, macroprudential policy could further take into account trading book risk and related capital adequacy requirements, by considering, for example:

- The definition of assets appropriately booked in trading and banking books;
- The use of VAR and related measures of risk; and
- The extent to which capital requirements should be increased in accordance with trading activity to reflect, for example, differences in liquidity characteristics.

### c. Countercyclical Capital Buffers

The fixed tools discussed in this section can be expected to mitigate but not eliminate the procyclical impact of the risk-sensitive approach employed at present. There is an argument for employing an overtly countercyclical (variable) capital buffer to partially offset cyclicity. This would require banks and, where relevant, other financial institutions, to build up capital buffers during years in which loan performance exceeds historical averages, to be later drawn down during recession years if loan performance fell below historical averages.

A countercyclical capital buffer regime would decrease the probability of bank default and system-wide bank failures. In addition, by constraining bank lending during upswings and reducing the extent to which banks must cut back on lending to meet capital requirements during downswings, the regime would reduce the tendency of bank behavior to amplify economic cycles.

In designing such a regime, important choices must be made about both the mechanism for adjusting buffer levels and the presentation of the buffer.

The mechanism for adjusting buffer levels could be discretionary or rule based or a combination

of both. Under a discretionary system, supervisors would determine the appropriate buffer level in light of analysis of the macroeconomic cycle and macroprudential concerns. This system would allow nuanced analysis to guide decisions but would depend crucially on the quality and independence of judgments made. Under a rule-based system, the required buffer level would vary according to a predetermined metric such as growth of the balance sheet. This would provide preset discipline and would not be subject to political pressures, but would inevitably allow less flexibility and qualitative judgments than a discretionary system.

If additional flexibility were deemed to be necessary, a hybrid system that employed rules to determine minimum requirements but permitted supervisors the discretion to impose additional requirements could be adopted.

There is also a potential choice between a system in which the dynamic buffer is included in reported capital ratios, and one in which the buffer is designated a reserve and excluded from reported capital ratios. The first system would employ a capital ratio that varied throughout the cycle. This would clearly achieve the purpose of the approach but might result in market pressure to avoid reducing capital ratios during a downturn. The second system would employ capital adequacy requirements that do not vary with the cycle, and a separate reserve that does. Because market participants would not have to isolate reserves independently when analyzing capital ratios, this system could potentially reduce market pressure to maintain aggregate reserves during a downturn.

Individual countries will have to weigh the costs and benefits of these alternative choices. For example, Spain has chosen to adopt a dynamic provisioning system that combines a rule-based mechanism for determining buffer levels with a reserve presentation style. Other countries may strike different balances and make different choices.

Although the details of implementation may vary, the need for countercyclical capital buffers is

clear. Although they are unlikely to be panaceas—experience in Spain, for example, suggests that the dampening effect of a rule-based countercyclical capital buffer may not itself be enough to smooth the supply of credit—countercyclical capital buffers would be useful tools to increase the resilience of the banking system and reduce the procyclical effect of bank behavior. The appropriate size of buffers requires detailed analysis. As a starting point, the U.K. Financial Services Authority has suggested that a buffer of approximately 2 to 3 percent of weighted risk assets might be appropriate at cyclical peaks.

#### d. Macroprudential Stress Tests

Formal macroprudential stress tests could be used to help calibrate appropriate capital adequacy requirements. These tests would apply at a systemwide level to reveal linkages that are not captured by stress tests focused on individual firms. Such tests would have significant technical and information requirements, but, in conjunction with qualitative information, could nonetheless provide supervisors with a sound basis for setting appropriate capital requirements.

A macroprudential stress test could apply a prescribed set of stress scenarios to factors identified by supervisors as influencing default and recovery rates for different classes of lending. These factors could be made dependent on the state of the credit cycle, permitting supervisors to identify cycle-dependent risks. Results of macroprudential stress tests could then be used to help calibrate capital requirements. Of course, the effectiveness of stress tests depends greatly on the quality of the inputs and a subjective assessment of the results.

Although implementation and use of macroprudential stress tests may entail significant data collection and technical efforts, neither present insurmountable obstacles. In the United States, the new financial regulatory reform law contemplates a major new data collection effort, through a new Office of Financial Research. Examples of indicator

variables, the first twelve of which relate to currently available data sources, include:

- Credit flows, stocks, and spreads;
- Income and leverage of households, corporations, and other financial companies;
- Unemployment rate;
- House price-to-earnings ratio and house price inflation;
- Maximum loan-to-income and loan-to-value ratios of first-time buyers;
- Commercial property prices and rents;
- Property pipelines and vacancy rates;
- Credit conditions surveys;
- Volume spread data on leveraged buyout and private equity deals;
- Volume spread data on syndicated loan activity;
- Growth in assets under management at hedge funds and other financial companies;
- Contribution to growth in the mortgage market from other specialist lenders;
- Reliable data on leverage ratios of hedge funds and other financial companies;
- A detailed geographic breakdown of banks' loan books;
- Data on the quality of institutions' loan portfolios; and
- A breakdown of trading assets by class and quality.

Experience suggests that any single or fixed set of indicators is unlikely to produce a robust basis for macroprudential policy in all states in the world. Macroprudential stress tests should therefore not be relied on as the sole basis for determining appropriate capital requirements. Instead, the results of

such tests could be complemented by qualitative information gathered from sources such as market participants and surveys.

## 2. Gross Leverage Ratio

As noted, a macroprudential supervisor could also employ a gross leverage ratio, both for financial and nonfinancial firms. There are three benefits of employing a gross leverage ratio backstop:

- A gross leverage ratio would guard against the underestimation of risk. When systemic problems emerge, assets that were previously believed to be low risk can become illiquid and high risk, leading, on a micro level, to forced sales of assets, and thus, on a macro level, to systemically significant crises of funding that are directly related to the gross scale of balance sheet leverage levels. A gross leverage ratio backstop would control increases in levels of leverage during the up phase, so as to minimize the potential for systemic harm during the down phase.
- A gross leverage ratio would limit systemwide financial instability risks by limiting aggregate positions.
- Because minimum capital requirements are calculated in an inherently subjective manner, using internal models and much judgment, debates between banks and bank supervisors will typically arise. In this context, a gross leverage ratio backstop could limit these debates.

That said, because it is such a blunt instrument, a gross leverage ratio also arguably constrains positive economic activity. Further, it makes no distinction between credit extended on high-grade assets, such as treasury securities, and higher-risk products such as exotic securitized products.

Gross leverage ratios have been employed by a number of supervisors. For example, Canada uses an asset-to-capital multiple ratio of 20 to 1. In the United States, a gross leverage maximum has been

applied to the Generally Accepted Accounting Principles assets of bank holding companies, though not to the assets of investment banks. The apparent limitation on bank holding company leverage is somewhat misleading, however, since bank holding companies made greater use of special purpose vehicles to evade gross leverage limits. Indeed, some have argued that the recent experience in the United States shows that a gross leverage ratio is an ineffective means to combat the build-up of leverage at the systemic level because of its dependence on accounting conventions and its lack of recognition of different qualities of assets. However, it is important to keep in mind that a leverage ratio could be just one component of a larger macroprudential package, functioning as a complement to tightened capital adequacy standards.

Of course, the introduction of a gross leverage ratio backstop would necessarily involve a tradeoff between economic benefits in good times and the reduced risk of adverse economic events in times of crisis. Although it is impossible to predict fully the costs and benefits of leverage regulation, it is clear from recent history that the cost imposed by a financial crisis is enormous. Overall, the use of a gross leverage ratio as a tool of macroprudential supervision should thus be seriously considered.

## LIQUIDITY

The macroprudential toolkit must also include means to bolster liquidity regulation and supervision, in order to make systemic liquidity events less frequent and less severe.

From a macroprudential perspective, it is particularly important that liquidity risk be understood and addressed. Liquidity risk is inherently systemic, since one financial institution's liquidity strains may directly create corresponding strains in another institution. In addition, liquidity risk management has become increasingly complex over time. Moreover, managing liquidity risk necessarily involves striking a complicated balance between

increased systemic stability and aggregate benefits to nonbank sectors of the economy, which typically profit from banks' roles in maturity transformations. Banks traditionally hold long-term assets and fund them with short-term liabilities. Because short-term funding is less expensive for banks, banks can then offer more favorable interest rates to nonbank sectors, encouraging long-term investment by those sectors. However, by using short-term funding to make long-term loans, banks expose themselves to the risk that they will not be able to roll over their short-term funding, which could then generate liquidity problems.

A number of supervisory instruments could thus be employed to manage systemic liquidity, including:

- A requirement that institutions provide supervisors with much more extensive information, including detailed maturity ladders and analysis of the assumed liquidity of their trading assets and off-balance-sheet positions;
- A requirement to produce detailed individual liquidity assessments, to be used by supervisors in issuing individual liquidity guidelines;
- A requirement that firms price and include in internal systems the liquidity risks associated with certain classes of activity;
- The periodic publication of systemwide reports analyzing systemic trends in liquidity; and
- Increasing cross-border flow of information regarding cross-border institutions, while simultaneously increasing the macroprudential supervisor's power to impose tougher local liquidity requirements on the national branches and subsidiaries of cross-border banks.

### 1. Liquidity Buffers

The use of liquidity buffers could also reduce the reliance on overly risky sources of funding that contribute to systemic liquidity problems. As evidenced by the 2007–08 financial crisis, the

riskiness of an asset is greatly affected by the way in which it is funded. An asset funded with short-term money-market debt is much riskier than the same asset funded by long-term debt. Especially in periods of growth, and in the absence of supervision, financial institutions are incented to use short-term funding, due to its lower cost compared to long-term funding. To reduce incentives to purchase assets using short-term funding, a liquidity buffer whose size is tied to the maturity mismatches between assets and liabilities could be employed. Such a buffer would work by requiring firms to build up a reserve of highly saleable assets for which there is an active market, which could be drawn down upon in times of decreased liquidity.

## 2. Core Funding Ratio

The measures outlined above are largely focused on the individual financial institution. Another potential tool is a core funding ratio, to be applied across the financial system as a macroprudential complement to these more individualized tools. Such a core funding ratio could be applied either as a gauge of overall systemic risk or as a supervisory backstop, limiting, in the style of the gross leverage ratio discussed above, high asset growth financed by less stable funding.

The ratio would measure the portion of a financial institution's "core funding" relative to all other non-core funding used to purchase assets. Although the nature and scope of the ratio might in practice be calibrated in several different ways, at a minimum, "core funding" would include sources of funds that are sustainable through all phases of the economic cycle, such as retail deposits and long-term wholesale funding. It would not include riskier sources of funding, such as short-term, credit-sensitive deposits or money-market instruments. If applied as a supervisory backstop, the core funding ratio would function countercyclically, limiting the ability of financial institutions to rely on risky sources to fund growth in boom periods and thereby minimizing the impact of liquidity crises during bust periods.

A core funding ratio could, in particular, work effectively alongside a gross leverage ratio, though the two instruments would achieve very different objectives. Whereas a gross leverage ratio would constrain the underestimation of asset risk, a core funding ratio would impact the amount and quality of liabilities, and therefore could be varied to dampen excessive balance sheet growth during boom times.

## 3. Capital Surcharge on Liquidity

Finally, liquidity risk could be reduced through the imposition of a capital surcharge. This surcharge could be integrated with the existing capital charge, although it could also be imposed as a completely separate charge. If the former route were chosen, adjustments to capital could be made to reflect maturity mismatches between assets and liabilities as multiples to current capital requirements based on the credit quality of assets. This tool presents an alternative to liquidity buffers.

Ultimately, the liquidity-monitoring measures outlined above would tend to decrease the financial system's reliance on short-term, risky sources of funding, incent financial institutions to obtain a greater amount of liquid assets, and check bank lending during the growth phase of the economic cycle. Maturity mismatches would thus become less frequent, although as a result, the economy might grow at a slower pace during boom phases. Compared with the tremendous costs generated by financial crises, however, the costs of these liquidity measures are worth considering, in order to reduce systemic risks to future financial stability.

## CREDIT EXTENSION

In addition to capital requirements, leverage limits, and liquidity regulation and supervision, limitations on the extension of credit could also be considered in certain areas.

Much of the 2007–08 financial crisis played out in the housing market. The crisis was in large

part caused by the rapid extension of mortgage credit between 2005 and 2007. As the percentage of new loans with a high loan-to-value (LTV) ratio increased, the riskiness of these high LTV mortgages increased, too. The bubble in property prices also grew, raising the probability of a subsequent price collapse. When the bust phase arrived, mortgage lending tightened, exacerbating the effects of the economic cycle.

In light of this relationship between mortgage lending and the financial cycle, greater mortgage product supervision should be seriously considered. There are four benefits of placing limits on LTV ratios:

- First, from a consumer protection perspective, such limits would protect individuals against the dangers of imprudent borrowing. Importantly, LTV ratios would also protect against imprudent borrowing at the commercial level by, for example, placing limits on commercial real estate lending.
- Second, requirements for lower initial mortgage LTVs would protect banks from the tendency toward imprudent lending. In this sense, LTV ratios are the lender analogue to countercyclical capital buffers.
- Third, at a systemic level, mortgage lending limits would constrain the expansion of credit that amplifies both the up phase and the down phase of the economic cycle.
- Fourth, LTV ratios could act as an indicator of systemic issues and provide a national-level tool that might remain effective despite cross-border lending.

Of course, a number of critiques can be applied to the use of LTV ratios as a macroprudential tool. If LTV limits on mortgage lending were imposed, new entrants to the housing and commercial real estate market might be discouraged. Alternatively, individuals might obtain equal or greater amounts of credit

by obtaining unsecured loans, such as credit card borrowing. Moreover, LTV limits could be avoided in most instances by taking out a second mortgage. LTV limits would thus be rendered less effective due to the “squeeze the balloon” syndrome, where restrictions in one area of lending simply move market participants toward other forms of lending instead of actually limiting the overall supply of credit. Although the relative merits of the arguments for and against the imposition of mortgage lending limits should be debated, LTV ratios should not be discounted as a macroprudential tool to address systemic risk as a lender constraint.

If a maximum LTV ratio were in fact adopted, an important question would be whether it should be varied in different phases of the economic cycle to inhibit the swings of the cycle. For example, the LTV maximum could be set at 80 or 90 percent and then lowered or raised depending on housing prices.

In addition to an LTV maximum, the creation of a separate mortgage origination authority might also be considered. The financial regulatory reform law enacted in the United States in July 2010 includes the creation of a consumer protection bureau that will have the authority to regulate mortgage lending abuses, which could limit the ability of unqualified buyers to bid up housing prices by obtaining easy credit.

## **SUPERVISION OF MARKET INFRASTRUCTURE AND BUSINESS CONDUCT**

This section has primarily focused on making the financial system more resilient through the use of institutional-level tools such as capital and leverage requirements. Two critically important additional components of any macroprudential toolkit include robust market infrastructure oversight and application of appropriate business conduct standards.

Supervision of financial market infrastructure is crucial. A failure of a systemically important market utility, such as a payment, clearing, and settlement system, could have material adverse consequences

on individual financial institutions and on the financial system as a whole.

Supervisors have recently focused on the mandated use by financial institutions of certain market utilities as a means of decreasing the likelihood and cost of systemic failure. For example, supervisors in several jurisdictions are considering requiring central clearing of swaps as a means of mitigating undue credit exposure. Among other benefits, central clearing mitigates the build-up of credit exposure and decreases the cost of the failure of a market participant by requiring robust initial margin, introducing regular daily settlement, netting offsetting exposures, and providing a mechanism for portability of trades in the case of the insolvency of a clearing member.

In the United States, the Dodd-Frank Act mandates central clearing of virtually all swaps as a means of mitigating systemic risk. The Act also provides for heightened prudential supervision of systemically important market utilities, as designated by the new Financial Stability Oversight Council. Once designated, the financial market utility will be supervised by its functional regulator, with back-up authority by the Federal Reserve and ultimately the Council. The statutory objectives for the risk management standards to be adopted by the functional regulators under the Act are to promote robust risk management and safety and soundness, reduce systemic risk, and support the stability of the broader financial

system. The standards will address areas such as risk management policies and procedures, margin and collateral requirements, participant or counterparty default policies and procedures, the ability to complete timely clearing and settlement of financial transactions, and capital and financial resource requirements for designated financial market utilities.

A somewhat overlooked macroprudential tool that can have broad systemic implications is business conduct oversight. The 2007–08 financial crisis highlighted the extent to which investor protection issues can impact the broader financial system. Unscrupulous mortgage origination practices infected the financial markets through the mortgage securitization process and ultimately led to a subprime crisis that had worldwide implications. Functional regulators must have the necessary authority and be vigilant in enforcing business conduct standards, with input from macroprudential supervisors, where appropriate, in order to protect the broader financial system.

\* \* \*

This section has considered possible tools that might be employed by the macroprudential supervisor to reduce systemic risk and increase the resilience of the financial system to absorb such risk. How these tools might be implemented, and by whom, is considered in the following section.





## SECTION IV

# Implementation of Macroprudential Policy

## IMPLEMENTATION OF MACROPRUDENTIAL POLICY

The previous sections of this report explored the need for a macroprudential approach to financial supervision and possible macroprudential policy tools. Central to the efficacy of any macroprudential policy regime, however, are structural choices that governments must make relating to the implementation of macroprudential policy and the powers to be given to a macroprudential supervisor. This section explores such issues, including the institutional structure of the macroprudential supervisor, its mandate, its ability to collect relevant data and perform appropriate analyses, its ability to engage in “preventive medicine” through the use of macroprudential tools, and its ability to inform and be informed by other supervisors in areas interconnected with macroprudential policy. Others have also addressed these complex matters of structure and mandate, notably Andrew Large, in the 2010 paper on the “Future of Finance” (see the Key Sources section at the end of this report).

## INSTITUTIONAL LOCATION AND STRUCTURE

A threshold question that national governments must answer in creating a macroprudential policy regime is the institutional design of the body or bodies to be charged with analyzing macroprudential concerns and effecting macroprudential policy. This section highlights some key decisions that must be made in this regard and, where appropriate, provides recommendations.

Macroprudential supervisory authority could be vested in a single supervisor. Alternatively, a number of supervisors could be instructed to take into account macroprudential concerns as part of their individual mandates and given access to macroprudential tools. While it may be appealing to spread macroprudential authority among many supervisors in this way, as a practical matter, it would be very difficult for multiple supervisors

to coordinate the deployment of macroprudential tools. In addition, disagreements would certainly arise among supervisors, who would naturally view macroprudential policy concerns from different points of view. Therefore, it is preferable that macroprudential authority be vested in one supervisor.

The single macroprudential supervisor could be either an existing institution, such as a country’s macroeconomic or prudential supervisor, or a specialized systemic risk supervisor. There are several strong arguments in favor of granting this macroprudential supervisory authority to a country’s central bank or anchoring a new macroprudential supervisory vehicle or committee within a country’s central bank. First, in most countries, the central bank has traditionally had at least implicit responsibility for ensuring financial stability. Second, monetary policy, the principal responsibility of the central bank, complements macroprudential policy in significant ways. Specifically, credit and liquidity—the primary concerns of a macroprudential supervisor—are closely related to the inflation and price concerns of macroeconomic supervisors. Third, the similarities between monetary and macroprudential policy, discussed more fully in Section I, mean that central banks already possess much of the expertise and institutional capacity required to implement macroprudential policy, and the institutional reputation required to effect such policy. In particular, in most jurisdictions, only the central bank can act as a lender of last resort. Finally, and as discussed below, the relative independence that typically characterizes a central bank’s relationship with a country’s political authorities will be necessary in order for a macroprudential supervisor to be viewed as credible.

Nevertheless, there are arguments against placing macroprudential supervisory authority in a country’s central bank. Although closely related, monetary and macroprudential policy are ultimately distinct. Indeed, recent experience demonstrates that monetary policy authorities can be successful at maintaining price stability even while developments

in the credit markets push the financial system toward crisis. Moreover, placing the central bank in charge of both monetary and macroprudential policy could encourage the central bank to rely on the tools of monetary policy to effect macroprudential policy, and vice versa, resulting in inferior outcomes in both spheres. This cross-reliance, however, could be minimized or avoided if the supervisor's mandate were made sufficiently specific, and if the construct for monetary policy as opposed to systemic policy were made sufficiently distinct, accountable, and transparent. If, due to these arguments or other concerns, macroprudential supervisory authority is not placed with a country's central bank, it is critical that the central bank still play a pivotal role in the macroprudential supervisory regime.

Some countries have a single prudential supervisor that could also serve as a candidate for a macroprudential supervision program. Execution of macroprudential policy will often rely on tools that are within a prudential supervisor's arsenal, such as capital requirements. The relationship between macroprudential and prudential supervision is particularly strong in the case of the regulation of securities markets, products, and the financial institutions that trade them, and thus it is important that the macroprudential supervisor have a close working relationship with the securities regulator. Further, the data collected by prudential supervisors regarding the capital and liquidity of individual institutions will be necessary (though not sufficient) for macroprudential analysis. Thus, where such a consolidated prudential supervisor exists, the overlap between macroprudential and prudential supervisory policy could lend support to placing macroprudential supervisory authority in that agency.

Combining prudential and macroprudential policy in one supervisor, however, creates the risk that one of these fields would receive insufficient institutional attention. For example, there is a significant risk that during periods of steady market appreciation, the single, combined supervisor would not be

vigilant in acting to minimize potential systemic risks if there were no violations of prudential rules. There is also a risk that a prudential supervisor that may inevitably have reached compromises in the application of prudential standards would be unable to effectively address the application of these rules in a macroprudential role. In addition, as discussed in Section I, prudential and macroprudential concerns may conflict. In the case of rapid declines in asset prices, prudential concerns may dictate requiring individual firms to sell such assets at "fire sale" prices, which could decrease liquidity and send the financial system into further turmoil as such asset prices continued to drop.

Creating a new macroprudential supervisor would reduce some of the benefits of vesting macroprudential authority in an existing institution such as the central bank, but would also mitigate or eliminate the specific costs highlighted above. A new macroprudential supervisor could approach the economic analysis and use of macroprudential tools from a vantage point outside that of existing supervisors, and independently of other mandates. As discussed further below, such a new macroprudential supervisor could be provided the ability to comment when other areas of economic policy, including prudential, fiscal, and monetary policy, affect the systemic risk environment. Although creating such an institution and providing it with resources would be a large endeavor, it may be that these advantages and the important role of macroprudential policy generally justify the effort and expense.

In the end, the choice between granting macroprudential policy authority to an existing supervisor and creating a new systemic risk supervisor will have to be made by individual countries after weighing the costs and benefits of each approach and the capabilities of their existing institutions. Variations are possible, as evidenced by the proposal for the Financial Stability Oversight Council (recently established in the United States), the European Systemic Risk Board (established based on the

recommendations of the de Larosière Report), and the Financial Policy Committee (located within the central bank in the United Kingdom). For example, a new macroprudential supervisor could be created as a formal department within an existing supervisor, or could be a “board” or “committee” constituted of some of the country’s central bankers and prudential supervisory authorities, outside experts, and political officials with economic responsibility, such as ministers of finance. This variation may be one way to capture some of the benefits of each approach.

However, there are risks to “shared responsibility.” First, such a system may place individuals with a lack of expertise in macroprudential matters in positions of influence. Second, shared responsibility may slow decision making, which, particularly in times of economic crisis, could be problematic. Third, due to institutional interests, political compromises may have to be crafted in order to obtain the deciding vote on any particular matter. These dynamics could lead to economically suboptimal outcomes.

Finally, and perhaps most important, the shared responsibility approach may dilute the authority of the macroprudential supervisor. As already noted, under a shared responsibility approach, a macroprudential supervisor may be structured such that it acts, to varying degrees, through independent, preexisting supervisory bodies or functional regulators, the leaders of which compose a macroprudential supervisory board. Under this structure, the effectiveness of the macroprudential supervisor depends on the vigorous implementation of its prescriptions by its member supervisors. There will no doubt be occasions, however, when the supervisory body charged with implementing a macroprudential policy measure disagrees with the supervisory board’s chosen course of action. In these situations, the entity with actual control over implementation may in effect negate the actions of the macroprudential supervisor. It is important that the institutional structure for the macroprudential supervisor be carefully crafted to avoid these problems.

One way to approach these problems may be to give macroprudential supervisors a spectrum of authority, where the new body has different amounts of power for different policy tools. In a given policy area, a macroprudential supervisor could be vested with a level of authority including:

- The power to direct policy;
- A duty to recommend policy, with the expectation of compliance on the part of other supervisors;
- A right to make recommendations to be taken into account by other supervisors; or
- No power to recommend on issues where the policy stance of other supervisors should take precedence.

A spectrum of authority approach would allow a government to delineate clearly in advance which policy areas macroprudential supervisors have priority in directing and which policy areas should incorporate the concerns and comments of other supervisors.

## EXECUTION OF THE MACROPRUDENTIAL MANDATE

A macroprudential supervisor must have at least three core capabilities in order to implement an effective macroprudential policy:

- First, a macroprudential supervisory body must possess the capacity to collect and analyze firm-, market-, economy-, and global-level data in order to detect risks to the financial system before they develop into full-scale crises.
- Second, once a macroprudential supervisor has identified such risks, it must have the ability to employ macroprudential policy instruments, such as countercyclical capital requirements, which will mitigate threats to financial stability.
- Third, while giving due regard to the independence and authority of other economic

policymaking bodies, a macroprudential supervisor must be responsive to and able to influence monetary and fiscal policy and the prudential decisions of other supervisors, since these distinct areas and decisions both affect and are affected by macroprudential policy decisions.

A macroprudential supervisor's institutional design and operational principles must be crafted with these tasks in mind. The appropriate resources must be provided to the supervisor, the supervisor must engage in a transparent and accountable process and, perhaps most important, the supervisor must be given the requisite executive and enforcement authority. Keeping these themes in mind, this section discusses the collection and analysis of macroprudential data, the execution of macroprudential policy, and the interaction between the macroprudential and other supervisors.

### **1. Systemic Monitoring—Data and Analysis**

A goal of macroprudential supervision is to mitigate severe downturns and to reduce their cost. To do so, the macroprudential supervisor must actively and continuously monitor the financial system in order to become aware of risks developing within the financial system before they result in a crisis. Preventive monitoring of the financial system requires that a macroprudential supervisory body have both access to and the ability to analyze several types of data at the firm, market, national, and international level, on a regular basis.

In general, a macroprudential supervisor will require data on value and other characteristics of the assets and liabilities of financial institutions, including the distribution of assets and liabilities among institutions and across national borders. In certain cases, data from entities outside the financial system, such as corporate entities, will also be essential.

Much of the required data are already being collected by central banks, prudential supervisors, or other entities. As a matter of necessity, the

macroprudential supervisor will institutionally be required to have the legal and executive authority to access such data regularly and reliably. It is also important that the macroprudential supervisor maintain strong working relationships with the bodies that directly collect this data, in order to facilitate information sharing. Due to the interconnected nature of the global financial markets, some data will need to be collected from supervisors in other countries. Preventive monitoring of systemic risk thus requires cooperation not only among the various supervisors of a single country, but also among macroprudential supervisors in different countries and international financial institutions.

It is certain, however, that some of the data that a macroprudential supervisor will require is not currently being collected by central banks, prudential supervisors, or any other entities. In other instances, data that are on topic are being collected, but not at a sufficient level of detail or on a cycle frequent enough to be of use for the preventive monitoring of systemic risk. For example, the Bank of England voiced a concern in November 2009 that it lacked the information it believed it needed to effectively monitor systemic risk in connection with the financial relationships between corporate parents and their subsidiaries and affiliates, the exposure of financial institutions to derivative products, and cross-border liabilities. As such, the systemic risk supervisor should possess the institutional authority and executive power to collect data directly and regularly from financial or other institutions—at least when the necessary data are not already being collected by another supervisor—or to request that the central bank or relevant microprudential supervisor expand its data collection activities to accommodate the needs of the macroprudential supervisor. These requirements, to be sure, involve a significant commitment of resources, not only to collect the data but also to sort and process the most relevant information. Finally, because failures in the area of governance may contribute to systemic risk

and to risk taking by institutions, the macroprudential supervisor must also possess the capacity to collect and review data concerning corporate governance and related matters.

Most critically, as the required data are collected, the macroprudential supervisor will be required to analyze it routinely in order to come to conclusions about the systemic stability of the economy and the steps that should be taken to strengthen or maintain stability. Indeed, the key for the supervisor will often be sorting through the voluminous amount of information collected in order to detect relevance. In the years leading up to the 2007–08 financial crisis, there was no shortage of data pointing to various potential risks to financial stability. The main challenge facing supervisors was to identify those risks that truly did pose systemic hazards to financial stability. To do so successfully in the future will require the development of a better understanding of the linkages between financial institutions and the stress points of the financial system. In order to engage in these difficult analytical tasks, any macroprudential supervisor must be staffed by individuals with expertise in central banking, prudential supervision, financial markets, and newly developed financial products. In addition, these individuals, in the aggregate, must mix real-world experience with an academic understanding of systemic crises.

Finally, the macroprudential supervisor might also be responsible for publishing regular assessments drawing on the data collected, as an important external input to the work of risk committees of bank boards and others and so that risk appetites can be adjusted in advance of the need for particular macroprudential tools.

## **2. Implementing Preventive Measures**

As discussed throughout this report, a critical role of the macroprudential supervisor will be to implement preventive measures, in order to avoid significant harm to the financial system. The preventive tools themselves are the focus of Section III of this report.

This section explores the ways in which such tools are implemented by the macroprudential supervisor, concentrating in particular on the macroprudential supervisor's executive and enforcement authority and its need for both independence and legitimacy.

### **a. Executive Authority**

A macroprudential supervisor needs the authority to exercise, either directly or indirectly, whatever policy instrument is determined to be most appropriate for effecting macroprudential policy. Merely monitoring and analyzing the financial system and identifying systemic risk is not sufficient for an effective macroprudential policy supervisor. Once a macroprudential supervisor detects developments or practices that may threaten financial stability, it must be able to act to mitigate that risk. The policy instrument or instruments a macroprudential supervisor should use to prevent risks from developing into crises, and the factors that affect that choice, are the topics of the previous sections of this report. However, it is worth noting here how such a decision might bear on the institutional structure of the macroprudential supervisor and its relation to other supervisors and governing bodies.

First and foremost, the macroprudential supervisor must be given the requisite authority to directly implement the tools provided to it by a country's government. While the details of such executive authority will vary depending on the particular country, a mandate to oversee the macroprudential concerns of a financial system will be useless without provisions for rulemaking and enforcement authority.

However, it is clear from the discussions in this report that policy instruments employed by other supervisors, including a country's macroeconomic and prudential supervisors, can have a definite systemic impact. Thus, the macroprudential supervisor will need a role in the application of these policy instruments. For example, if the principal tool of the macroprudential supervisor is countercyclical capital requirements, the macroprudential supervisor will

need to be able to influence a prudential supervisor's determinations regarding capital reserve requirements. The macroprudential supervisor may also need to employ other policy instruments, particularly with regard to nonbank financial institutions, for which capital reserves may be irrelevant. The macroprudential supervisor may thus also need the institutional authority to influence the decisions of prudential supervisors more broadly, depending on the specific tools that are needed with respect to nonbank financial institutions.

However, such dual authority over certain policy tools would introduce significant confusion into the system. For example, if the macroprudential supervisor were given a voice regarding interest rates, there would be confusion as to the relative roles of the macroprudential and macroeconomic supervisors and, almost surely, significant conflict between these agencies. As a result, the most effective method for cross-supervisor interaction may be for the supervisor to analyze and develop views on whether macroeconomic and prudential policy affect the macroprudential landscape, with the specific decisions being reserved for the entity with primary responsibility.

Although not the focus of this report, another question national authorities will need to answer when designing their macroprudential supervisory architecture is where to vest what has come to be called "resolution authority"—that is, the power to manage the orderly restructuring of a systemically important financial institution that is on the verge of collapse. Since resolution authority is aimed at maintaining financial stability, it has a natural relationship with the type of macroprudential supervision discussed in this report. Some countries may therefore choose to give the same entity both resolution and macroprudential supervisory authority. Doing so, however, may result in the macroprudential supervisor being less focused on preventing systemically important financial institutions from reaching the point of collapse in the first place.

#### **b. Independence, Legitimacy, and Transparency**

A macroprudential supervisor must be able to act independently of short-term political pressure, and must also be possessed of independence of thought and analysis. The policies of the macroprudential supervisor may not always be popular. Specifically, policies aimed at mitigating systemic risks will likely involve limiting the amount of credit in the economy as a growth cycle approaches its peak. This could result in reductions in the availability of credit for consumers and business, lower profitability for financial institutions, and lower short-term economic growth rates. As such, implementing macroprudential policy may run counter to the short-term interests of important political constituencies. A macroprudential supervisor is therefore likely to face political pressure to ignore systemic risks and to allow credit growth to continue. Similarly, during times of lackluster economic performance, the macroprudential supervisor is likely to find itself under political pressure to act to increase the amount of credit in the economy, even if financial stability concerns would caution against such actions. In order to resist such pressure, it is essential that a macroprudential supervisor be independent of political authorities.

The supervisor's independence, however, must be balanced by transparency and accountability, in order for the public to view the supervisor and its actions as legitimate. Importantly, a consequence of granting the supervisor independence might be that the public will come to view the supervisor as less legitimate, because the supervisor will be perceived to be less politically accountable. However, it is critical that the public view the supervisor as legitimate, because even though the premise of macroprudential policy is that the long-term benefits of avoiding a systemic crisis outweigh the short-term costs resulting from limits on credit, those short-term costs may nonetheless be acute for affected businesses and households. Moreover, as the recent financial crisis demonstrates, if the macroprudential

supervisor fails to prevent a crisis, the cost to the public treasury will be high. As such, some degree of involvement and oversight by political officials in the establishment and implementation of macroprudential policy is both inevitable and beneficial to the degree it improves the perceived legitimacy of the macroprudential supervisor.

Ultimately, each country will determine how best to balance independence with political accountability and legitimacy in the context of its own political culture. More or less political involvement in the setting of macroprudential policy may be appropriate in different countries. Regardless of the specific arrangement, however, transparency and procedural accountability can always do much to bring about legitimacy in the eyes of the public. Thus, the macroprudential supervisor should operate under a clearly articulated mandate provided by the country's political leadership, and should be accountable to legislatures and the public. Giving due regard to privacy and confidentiality concerns—indeed, in certain circumstances, it may be necessary to withhold certain facts for systemic purposes, in light of concerns about adverse behaviors—the macroprudential supervisor's process should be as transparent as possible.

In this regard, the experience of central banks is instructive. Like a macroprudential supervisor, an effective central bank must be independent of political authorities. To balance this independence, central banks and the political authorities that create them have instituted numerous mechanisms to engender transparency and accountability. For example, the world's major central banks now generally provide the public with detailed explanations of their monetary policy decisions and views on the economic environment. Some central banks, such as the Bank of England and the U.S. Federal Reserve, release on a delayed basis minutes of their meetings that open the policy-making process to the public. Furthermore, it has become common for central bankers to present written and oral public

testimony to a country's political leaders.

Any or all of these methods of creating transparency and accountability in independent central banks may, with appropriate adaptations, accomplish the same goals for a macroprudential supervisor. As with central banks, what exactly is required of a macroprudential supervisor in this regard will differ across jurisdictions. In general, however, a macroprudential supervisor's mandate could be such that it must offer regular testimony to political leaders and also provide, on a regular basis, detailed assessments of the financial environment and explanations for its policy actions, including how those actions will help protect financial stability.

One important difference between a central bank and a macroprudential supervisor, however, involves the role of discretion. Some central banks operate under legislatively mandated inflation targets. Many other central banks have a legislative mandate to maintain price stability, and thus take it upon themselves to limit their discretion by announcing a specific inflation target. In these countries, inflation targets are a major contributor to the central bank's legitimacy in the eyes of the public. Such automatically triggered rules as specific inflation targets are best in terms of predictability, which is crucial in financial transactions, and also guarantee that officials cannot be swayed by illegitimate factors.

In the context of macroprudential supervision, however, automatically triggered rules akin to inflation targets are likely impossible to implement. The vast number of factors that may contribute to financial instability make it difficult to define in advance precise conditions that should trigger macroprudential stability actions. A macroprudential supervisor must therefore have the discretion to act when it sees fit. Discretion, however, can result in reduced legitimacy for the macroprudential supervisor, and also increase the possibility of supervisory capture by affected interests. The relative ambiguity of macroprudential policy compared to macroeconomic policy, and the potential overlap between

macroprudential policy supervisors and tools with preexisting macroeconomic supervisors and tools, makes the need for transparency and accountability in the process of setting macroprudential policy even more important.

Even if the supervisor cannot rely on such automatically triggered rules as specific inflation targets, however, its actions might nonetheless be viewed as legitimate. For example, the U.S. Federal Reserve does not operate under a firm inflation target, but its actions are nonetheless viewed as legitimate. Furthermore, even if firm rules cannot be established, it may be possible for a macroprudential supervisor to announce its own views regarding what amounts and concentrations of credit it believes constitute threats to financial stability, and to provide “early warnings” when targets are approached.

### c. International Coordination

As discussed more completely in Section II, the global financial system makes it possible for one country’s financial sector to pose systemic risks to another country’s system. Furthermore, the effect of a macroprudential policy instrument may be limited if a financial institution can avoid its effects by structuring its transactions and holdings to take advantage of different or more lax supervisory environments. The effective use of macroprudential policy instruments therefore requires international cooperation. Despite the resources that such international coordination would require, and the logistical difficulties that it will inherently involve, the mandate of national macroprudential supervisors should allow and encourage national supervisors to cooperate with macroprudential authorities in other countries.

Furthermore, it is possible that a more formal international body could help coordinate the macroprudential efforts of individual countries. In fact, financial supervisors have already taken some steps in this direction. For example, the leaders of the G-20 countries transformed the Financial Stability

Forum into an enhanced Financial Stability Board, which provides a forum for national central bankers and prudential supervisors to discuss and coordinate policy. In addition, the Bank for International Settlements and the International Monetary Fund have engaged in research to develop the analytical resources and policy tools macroprudential supervisors will require to maintain financial stability. Priorities and perspectives will of course differ across jurisdictions, but mechanisms that facilitate communication and joint action will help make international macroprudential supervision as seamless as possible.

## **INFLUENCING AND RESPONDING TO OTHER SUPERVISORS**

Monetary, fiscal, and prudential supervisory policy can significantly affect whether the financial environment is systemically risky or stable. As a result, the supervisors charged with implementing macroprudential policy, whether through a new macroprudential supervisor or as part of an existing institution, must inform and be informed by monetary, fiscal, prudential, and other government policies—for example, competition and antitrust policy. While an argument could be made on these grounds for giving the macroprudential supervisor direct access to monetary and other policy instruments, the practical difficulties of coordination and perspective described above strongly favor, instead, an institutional structure in which the macroprudential supervisor can provide information and insight to, and receive it from, other supervisors as their actions implicate systemic concerns. In periods of crisis, macroprudential supervisors may need to comment on and influence diverse areas of government policy, such as antitrust and competition policy, though many of these areas are also relevant in noncrisis periods. While the interplay among macroprudential and monetary, fiscal, and prudential policy was discussed at length in Section II, this section briefly summarizes these interactions as they

relate to the implementation of the macroprudential mandate.

### 1. Monetary Policy

Interest rates, the principal tool by which central banks execute monetary policy, directly affect the extent of credit creation in the economy, a key contributor to systemic financial risk. On the other hand, the use of capital reserve requirements or caps on loan-to-value ratios, which would likely be a core tool of macroprudential policy, would affect the transmission mechanisms of monetary policy. Central banks, in addition to their monetary policy responsibilities, already have a key role in overseeing the payments and settlement infrastructure that is central to the modern financial system. Furthermore, the types of macroeconomic expertise and analytical capabilities that are needed for the effective implementation of monetary policy share some key commonalities with those that are required for an effective macroprudential policy. Thus, as discussed above, there are good reasons to consider vesting macroprudential supervisory authority in a central bank. If such a consolidation does not occur, however, it is crucial that the macroprudential and macroeconomic supervisors work together to coordinate their activities. While the central bank must be free to implement monetary policy without interference from other regulators, the fact that monetary policy may have consequences for macroprudential supervision may make it appropriate for the macroprudential supervisor to comment in certain circumstances.

### 2. Fiscal Policy

Politicians and government officials responsible for fiscal policy have a major stake in the work of the macroprudential supervisor, because that work could prevent crises and thus reduce or eliminate the need for a crisis resolution process involving recourse to taxpayers in the future. While it seems unlikely that this interest on the part of those responsible for

fiscal policy would lead to guidance or preference as to the selection and deployment of particular macroprudential policy tools, the macroprudential supervisor may need to be closely attentive to the potential or actual impact of specific fiscal arrangements on financial stability. In addition to having the expertise to recognize the effect of tax policy, the macroprudential supervisor should have access to the institutional channels necessary to communicate its concerns to fiscal authorities, and the reputational capital to ensure that these concerns are taken seriously.

### 3. Prudential Supervision

At a minimum, a macroprudential supervisor's relationship with the prudential supervisory authorities that oversee financial institutions and markets must allow the macroprudential supervisor to influence, either directly or indirectly, prudential supervisory policy with respect to the particular policy tool that the macroprudential supervisor is assigned. Other prudential supervisory decisions, however, may indirectly support or frustrate the macroprudential supervisor's exercise of its policy tools. For example, prudential supervisors may pursue policies that increase the amount of credit in the financial system while the macroprudential supervisor is seeking to reduce credit exposure. The macroprudential supervisor must therefore also have a close working relationship with the securities regulator, and the ability to comment on and influence prudential decisions other than just those regarding its particular policy instrument. Moreover, it is only through close cooperation with prudential supervisors that a macroprudential supervisor can effectively implement such policy tools as countercyclical capital requirements, since only the prudential supervisors will have the day-to-day familiarity with the balance sheets and activities of individual financial institutions that is needed to determine compliance.

\* \* \*

This section has focused on the many challenges facing policymakers as they seek to implement macroprudential policy. It has underscored that effective implementation requires the political will to create the necessary institutional structures and establish a clear and distinct mandate. Once these matters have been addressed, the macroprudential supervisor must ensure it has the capability to collect relevant data to perform appropriate analysis, to identify potential risks, and, when required, to

engage in preventive medicine through the use of various tools. Finally, the section has addressed the balancing act required as the macroprudential supervisor seeks to both inform and be informed by other supervisors engaged in monetary, fiscal, and prudential policy. Ultimately, this is where the effectiveness of macroprudential policy will be tested. Well implemented, the policy should buttress resilience and help arrest future crises before they become too big and too contagious to stop. Poorly executed, the policy might not achieve this complex dual goal.





**SECTION V**  
**Conclusion**

## CONCLUSION

This report has sought to clarify the definition of macroprudential policy and to make a strong case in support of the use of such a policy. The report has further sought to identify tools that can be used for this purpose and has identified issues with implementation that ought to be addressed as the policy-making community moves to take on this difficult new role. It is hoped that the report will add to the debate and help drive agreement over the definition, scope, and tools required to meet this challenge.

Overall, the Group of Thirty Working Group underscores the need for national governments to develop a system whereby central banking, supervisory, and financial communities implement macroprudential policy. The events of 2007–08 provided ample evidence that major systemic economic risks could emerge from within the financial market system and be triggered and amplified by the behavior of individual institutions acting both separately and collectively in times of stress or market panic. The damage done to the financial system, to the real economy, to public confidence in financial markets, and to global growth is simply too high to ignore.

We hope that macroprudential policy can, in the future, achieve two principal aims. First, it should seek to moderate the severity of the booms and busts in the economic cycle. Second, it must address the fundamentally interconnected nature of financial markets and implement policy that strengthens the system throughout the economic cycle by using variable and fixed tools as needed.

In essence, supervisors must develop macroprudential policy capable of action as future asset

bubbles develop, while also designing a series of safeguards that make the system as a whole more resilient to shocks and their amplification that can occur due to the interconnected nature of our markets and systems.

These twin goals will be difficult to achieve, and they will often be controversial in nature and execution. Taking the punchbowl away during the party is never popular. Therefore, those charged with these new responsibilities, whether they are inside or outside a central bank, should be assured of their independence and authority, and that independence should be balanced by a necessary degree of transparency and accountability.

Looking ahead, macroprudential policy is not expected or designed to completely alleviate the financial system's susceptibility to cyclicity and shocks. That would be an unrealistic and undesirable goal. Macroprudential policy cannot deliver a new financial system free of all fluctuations and volatility. Certainly achieving the correct balance between enhanced financial stability and resistance to shocks while retaining flexibility is essential, and it will require further work by national and international supervisors.

The Working Group emphasizes the need to implement a macroprudential policy, country to country, which is sensitive to national economic, financial, and cultural differences. However, the desired policy goals must be achieved in a manner that is, where possible, consistent across markets and national borders. To that end, the international standard-setting bodies will continue to play a very important role in driving standard setting, peer reviews, and early warning functions of future systemic risks.



## ANNEXES

# ANNEX I

## Macroprudential Tools and Implementation of Macroprudential Policy: *Key Observations and Recommendations*

### MACROPUDENTIAL TOOLS

Both variable and fixed tools should be used by central banks and supervisors to buttress financial stability and achieve their macroprudential goals. The first type of tool may have variable parameters and change depending on what point we are in in the economic cycle, and the second type of tool may not necessarily need to be changed during the cycle.

The tools that are proposed below are not meant to prevent the economic cycle, which is a natural part of the functioning of the economy, but rather are designed to moderate the worst boom and bust effects and to address excesses that can be unduly damaging.

### LEVERAGE

The relationship between leverage and the economic cycle was clearly displayed during the 2007–08 financial crisis. Considering the impact of excessive leverage on the cyclicity of the financial system, the macroprudential toolkit should include instruments to reduce incentives to take on additional leverage during boom phases and to deleverage during bust phases. These are addressed in recommendations 1 and 2 below.

#### 1. Capital Adequacy Requirements

The Group of Thirty Working Group recommends that macroprudential supervisors consider the use of four types of tools that would address capital adequacy requirements. These are:

- a. *The inclusion of capital multipliers reflecting systemic importance, growth of credit, and maturity mismatches.* Tools or transparent rules that vary capital adequacy requirements based on specified objective

criteria would provide one means of achieving targeted financial supervision that mitigates macroprudential risks without hindering appropriate risk taking.

- b. *An increase in the capital required against trading books.* The current capital regime has required relatively low levels of capital against trading books on the theory that assets can be rapidly sold and positions unwound. However, as the 2007–08 crisis revealed, this rationale overlooks significant liquidity risks. To reduce these risks, a macroprudential policy could require an increased level of capital to be held against trading books to reflect a more realistic assessment of these risks.
- c. *The adoption of countercyclical capital buffers.* The mechanism for adjusting the buffers could be rule based, discretionary, or a hybrid of the two approaches. The precise implementation and make-up of the countercyclical buffers is up to national authorities, but the Working Group is convinced of the need to adopt such mechanisms.
- d. *The use of stress tests with a macroprudential focus.* The Working Group believes that recent events have demonstrated the usefulness of such tests for supervisors and market participants. The data used to perform such tests will change over time and from market to market. Supervisors must be vigilant in their collection and application of the data necessary to perform credible stress tests.

#### 2. Gross Leverage Ratio

The financial crisis demonstrated the relationship between leverage and the exacerbation of the

boom and bust tendencies in the economic cycle. The Working Group believes that excess leverage contributed to the severity of the financial crisis. Supervisors are therefore urged to adopt tools that decrease the incentives toward excessive leverage at the peak and mitigate the extent of rapid deleveraging at the bottom of the trough.

*The use of a Gross Leverage Ratio is recommended.* This could be in the form of an absolute limit on gross assets to a defined category of capital. The Working Group believes that the benefits of a gross leverage ratio are clear and compelling and notes that a number of countries already employ this type of tool.

## LIQUIDITY

The macroprudential toolkit must also include means to bolster liquidity regulation and supervision, in order to make systemic liquidity events less frequent and less severe. The Working Group recommends that three tools be considered by supervisors as they seek to achieve this goal:

- a. *A liquidity buffer or buffers.* To reduce incentives to purchase assets using short-term funding, a liquidity buffer whose size is tied to the maturity mismatches between assets and liabilities could be employed.
- b. *A core funding ratio.* This could be applied either as a gauge of overall systemic risk or as a regulatory

backstop, limiting high asset growth financed by less stable funding.

- c. *The imposition of a capital surcharge on liquidity.* This surcharge could be integrated with the existing capital charge, or it could be applied as a completely separate charge.

## CREDIT EXTENSION

The Working Group notes the link between the excessively aggressive extension of credit in the housing market and the financial crisis.

*It is recommended that supervisors consider an adjustable loan-to-value (LTV) ratio.* If required, the LTV ratio could be varied through the cycle to inhibit the swings of the economic cycle. Some supervisors have already adopted this approach.

## SUPERVISION OF MARKET INFRASTRUCTURE AND BUSINESS CONDUCT

Supervision of financial market infrastructure is crucial. A failure of a systemically important market utility, such as a payment, clearing, and settlement system, could have material adverse consequences on individual financial institutions and on the financial system as a whole.

Macroprudential supervisors also need to be mindful of business conduct practices and the impact that investor protection issues can have on systemic risk.

## IMPLEMENTATION OF MACROPRUDENTIAL POLICY

### INSTITUTIONAL STRUCTURE

Supervisors have various options in implementing macroprudential policy and in the institutional design of the body or bodies charged with analyzing and implementing macroprudential policy. Macroprudential supervisory authority could be vested in a single existing or new supervisor. Alternatively, a number of supervisors could be instructed to take into account macroprudential concerns as part of their individual mandates and be given access to macroprudential tools.

The Working Group recognizes that the choice of institutional structure must be made by individual countries weighing the costs and benefits of each approach and the capabilities of their existing institutions.

*The Working Group believes that there are strong reasons in favor of designating a single supervisor, such as a central bank, as principal macroprudential supervisory authority.*

Other variations are possible and many countries also adopt some form of coordinating Financial Stability Council or Economic Systemic Risk Board. Such coordinating bodies may ultimately be the best way to ensure that a degree of shared responsibility is demonstrated by all the actors.

*The Working Group believes that when governments design a financial stability council or board, the lines of communication and respective responsibilities for carrying out macroprudential policy decisions must be clear and unambiguous.*

### EXECUTION OF THE MACROPRUDENTIAL MANDATE

The macroprudential supervisor must have three core capabilities if it is to successfully implement such a policy:

- First, a macroprudential supervisory body must possess the capacity to collect and analyze firm-,

market-, economy-, and global-level data in order to detect risks to the financial system before they develop into full-scale crises.

- Second, once the risks are identified, the macroprudential supervisor must have the ability to employ macroprudential policy instruments that will mitigate risks to financial stability.
- Third, the macroprudential supervisor must be able to influence and be responsive to monetary and fiscal policy and the prudential decisions of other supervisors, since these distinct areas and decisions both affect and are affected by macroprudential policy decisions.

With regard to these three core capabilities, the Working Group recommends:

#### 1. Systemic Monitoring, Data, and Analysis

Preventive monitoring of the financial system requires that a macroprudential supervisory body has both access to and the ability to analyze many different forms of data at the firm, market, national, and international level on a regular basis. Some of the data are already collected by central banks and financial stability regulators, but there may be gaps in their sources and data types.

*The Working Group recommends that the systemic risk supervisor be given the institutional authority and executive power to collect data directly from financial or other institutions, when the data are not already available, or to request that the relevant agency expand its data collection activities to accommodate the needs of the macroprudential supervisor. In general, such data should then be made publicly available, such as through financial stability reports, to strengthen market discipline and to enhance the performance of macroprudential tools by making the policy stance of the macroprudential supervisors known.*

The Working Group underscores that the macroprudential supervisor must be appropriately staffed by individuals with the necessary expertise in central banking, prudential regulation, financial markets, and newly developed financial products to carry out its duties.

## 2. Implementing Preventive Measures

The macroprudential supervisor must be able to implement preventive measures in order to avoid significant harm to the financial system. In order to carry out this task the supervisor will require executive and enforcement authority; independence, legitimacy, and transparency; and effective international coordination. The Working Group makes the following recommendations related to each of these areas.

### a. Executive and Enforcement Authority

*The macroprudential supervisor must have the authority to exercise, either directly or indirectly, whatever policy instrument is determined to be most appropriate for effecting macroprudential policy.*

The macroprudential supervisor must be given the requisite authority to directly implement the tools provided to it by a country's government. While the details of such executive authority will vary depending on the particular country, a mandate to oversee the macroprudential concerns of a financial system will be useless without provisions for rulemaking and enforcement authority.

Where there may be dual authority or mandate issues, the Working Group recommends that the macroprudential supervisor be able to analyze and comment on conditions of the financial environment.

### b. Independence, Legitimacy, and Transparency

*The Working Group underscores that the macroprudential supervisor must be independent of political authorities.* The supervisor's independence, however, must be balanced by transparency and accountability, in order for the public to view the supervisor and its actions as legitimate.

*The Working Group believes that the macroprudential supervisor must be accorded the necessary degree of discretion to employ its policy tools.* This is essential since it is difficult to define in advance precise triggering conditions for future market innovations and development.

*The Working Group recommends that the macroprudential supervisor operate under a clearly articulated mandate provided by the country's political leadership and should be accountable to legislatures and the public.* Giving due regard to privacy and confidentiality concerns, and avoiding moral hazard and herd behavior around unclear messages, the macroprudential supervisor's process should be as transparent as possible.

The government creating the macroprudential supervisor may wish to require it to periodically announce its views regarding credit concentrations and risks it believes constitute threats to financial stability and provide early warnings when targets are approached. The Working Group also suggests that a macroprudential supervisor's mandate could be such that it must provide detailed explanations for its policy actions, including how those actions will help protect financial stability, and offer regular testimony to political leaders.

### c. International Coordination

The effective use of macroprudential policy instruments requires a greater degree of international cooperation, coordination, and the establishment of common standards. The Working Group observes that such common standards are necessary to avoid a race to the bottom. In the absence of such standards, the effect of a macroprudential policy instrument may be limited if a financial institution can avoid its effects by structuring its transactions and holdings to take advantage of lax supervisory environments.

Priorities and perspectives will of course differ across jurisdictions, but mechanisms that facilitate communication and joint action will help make international macroprudential supervision as seamless as possible.

The Working Group supports the work that is already under way under the aegis of the Financial Stability Board, the Basel Committee, and other collaborative mechanisms and bodies. The Working Group underscores the importance of a successful conclusion to these standards negotiations and the subsequent national implementation of the agreed standards in a consistent manner.

### **3. Influencing and Responding to Other Supervisors**

The Working Group notes that monetary, fiscal, and prudential supervisory policy can be significant contributors to creating a systemically risky or stable financial environment. As a result, the supervisors charged with implementing macroprudential policy, whether through a new macroprudential supervisor or as part of an existing institution, must thus inform and be informed by monetary, fiscal, prudential, and other government policies.

#### **a. Monetary Policy**

Interest rates, the principal tool by which central banks execute monetary policy, directly affect the extent of credit in the economy, a key contributor to systemic financial risk. On the other hand,

capital reserve requirements, which would likely be a core tool of macroprudential policy, alter the magnitude of the effect that changes in monetary policy have on the money supply and therefore influence price levels. As a result, some communication and coordination between the macroprudential and monetary supervisors is necessary, although this must be achieved with due regard to the entities with primary responsibility in these areas.

#### **b. Fiscal Policy**

While a close relationship with fiscal authorities is necessary, the Working Group believes that the macroprudential supervisor should not be so closely linked to the fiscal authorities that its political independence is, or appears to be, compromised.

#### **c. Prudential Supervision**

A macroprudential supervisor's relationship with prudential supervisory authorities must allow the macroprudential supervisor to comment on and influence, either directly or indirectly, prudential supervisory policy with respect to the particular policy tool or tools that the macroprudential supervisor is assigned.

## ANNEX II

# Examples of Discretionary Prudential Interventions in Response to Property Market Developments

ECONOMY	DATE OF FIRST INTERVENTION	INTERVENTION
Hong Kong SAR	1991	Limits on LTV ratios (LTV limits) varying by value of property; supervisory letters encouraging prudence in residential property lending; advice to limit to industry average the ratio of property-related lending to total loans for use in Hong Kong SAR; advice to limit growth rate of residential mortgages to nominal GDP growth rate
Malaysia	1995	LTV limits; limits on loan growth in property sector
Singapore	1996	LTV limits
Republic of Korea	2002	LTV limits and limits on ratio of debt service to income applied to specific property lending markets defined regionally and with variation depending on maturity and collateral value
India	2005	Risk weights and provisioning requirements for housing and commercial real estate, differentiated by size and LTV ratios; requirement for board-level policy on real estate exposure covering exposure limits, collateral, and margin

Source: Bank for International Settlements, *80th Annual Report*, June 2010.



# KEY SOURCES

**Bank for International Settlements, Basel Committee on Banking Supervision, Annex to Press Release, “The Group of Governors and Heads of Supervision Reach Broad Agreement on Basel Committee Capital and Liquidity Reform Package,” July 2010**

As reflected in the Annex to the press release following their July 26, 2010, meeting to review the Basel Committee’s December 2009 capital and liquidity reform package, the Group of Governors and Heads of Supervision—the oversight body of the Basel Committee on Banking Supervision—reached broad agreement on the design of capital and liquidity reform measures. These measures include modifications to the treatment of counterparty credit risk; the calibration of a simple, transparent leverage ratio; a countercyclical capital buffer; forward-looking provisioning; a capital surcharge; and a liquidity coverage ratio. The calibration and phase-in arrangements for these measures were to be finalized at the Group’s September 2010 meeting, and the regulatory buffers were to be finalized before the end of 2010.

**Bank for International Settlements, Basel Committee on Banking Supervision, “International Framework for Liquidity Risk Measurement, Standards and Monitoring,” December 2009**

Recognizing the need for internationally active banks to improve their liquidity and risk management and control their liquidity risk exposures, the Basel Committee on Banking Supervision outlines for implementation two regulatory standards for liquidity risk, a Liquidity Coverage Ratio and a Net Stable Funding Ratio. In addition, it presents a set of common monitoring tools

to be used by supervisors in their monitoring of liquidity risk at individual institutions, which includes regular assessments of such metrics as contractual maturity mismatch, concentration of funding, and available unencumbered assets. The Committee also discusses implementation issues associated with these recommended standards and tools, including the frequency with which banks are to calculate and report the metrics and the amount of public disclosure that is appropriate.

**Bank for International Settlements, Basel Committee on Banking Supervision, “Strengthening the Resilience of the Banking Sector,” December 2009**

The Basel Committee on Banking Supervision presents its reform package to strengthen global capital and liquidity regulations, which includes a number of key elements: raising the quality, consistency, and transparency of the capital base; strengthening capital requirements for counterparty credit risk exposures arising from derivatives and securities financing activities; introducing a leverage ratio as a supplementary measure to the Basel II risk-based framework, introducing a countercyclical capital buffer framework; and incorporating a global minimum liquidity standard for internationally active banks that includes a 30-day liquidity coverage ratio.

**Bank for International Settlements, Committee on the Global Financial System, “Macroprudential Policy Instruments and Frameworks: A Stocktaking of Issues and Experiences,” May 2010**

Prepared following a meeting of the Committee on Global Financial Systems, which comprises deputies of Bank for International Settlements member institutions, this paper evaluates various macroprudential policy tools and how those tools should be implemented. Specifically, it examines both the usefulness and limits of reserve requirements, dynamic provisioning, and tighter controls on mortgage lending. The paper also considers the implementation challenges arising from cross-border regulatory arbitrage and the need to balance discretion with predictability and transparency.

**Bank for International Settlements, “Macroprudential Policy and Addressing Procyclicality,” Chapter 7, 80th Annual Report, June 2010**

This chapter explores the key elements of a macroprudential framework. The chapter argues that the current focus on systemic risk makes this an opportune time to properly incorporate macroprudential concerns into supervisory policy. It explores and makes recommendations regarding the goals of macroprudential policy and their relation to other supervisory policies, the limits of macroprudential policy, prudential tools that can also be used for implementing macroprudential policy, the governance arrangements necessary to ensure effective macroprudential policy, and the implications of a macroprudential view on monetary policy. The chapter’s recommendations include (a) support for an initial focus on increasing financial system resilience before trying to moderate credit and asset price cycles; (b) the use of simple tools with fixed limits, automatic stabilizers, and adjustments; and (c) an expanded macroprudential role for monetary policy, including increasing the time horizon of monetary policymakers’ views.

**Bank for International Settlements, “Marrying the Macro- and Micro-Prudential Dimensions of Financial**

**Stability,” BIS Papers, No. 1, March 2001**

This volume is a compilation of papers presented at the Bank for International Settlements’ annual meeting of central bank economists, October 9–10, 2000, which focused on “Marrying the macro- and microprudential dimensions of financial stability.” The papers address these questions: “How do central banks monitor the risk of financial instability?” “What mechanisms amplify or dampen financial cycles?” and “How should policymakers respond to developments that pose a threat to the stability of the financial system?”

**Bank of England, “The Role of Macroprudential Policy: A Discussion Paper,” November 2009**

As part of the exploration of the most recent financial crisis and its causes, the Bank of England examines the origins of systemic risk, the appropriate goals of macroprudential policy, which tools are best suited to achieve those goals, and how to operationalize a macroprudential policy regime. It argues in favor of using procyclical capital requirements to manage systemic risk, and also highlights institutional challenges posed by the establishment of a macroprudential supervisory apparatus, including how to coordinate macroprudential policy with other areas of economic policy, and where to house and how to exercise macroprudential authority.

**Bernanke, Ben S., Federal Reserve Chairman, Speech at the Squam Lake Conference, New York, New York, June 2010**

This speech centered around a discussion of *The Squam Lake Report: Fixing the Financial System*. Chairman Bernanke notes his support for the recommendations of the Report and for the steps already being taken by the Federal Reserve to address systemic risk, including (a) the development of a systemic approach to supervision, (b) the strengthening of capital and liquidity regulation, (c) the improvements to

informational infrastructure and the resolution regime, and (d) the strengthening of the financial infrastructure through the regulation of central counterparties. The Squam Lake Group is a nonpartisan, nonaffiliated group of fifteen academics who work together to offer guidance on financial regulatory reform.

**Bernanke, Ben S., Federal Reserve Chairman, Speech on the Economy at the Jackson Hole Conference, August 2008**

This speech was presented at the Federal Reserve Bank of Kansas City's annual conference in Jackson Hole, Wyoming. Chairman Bernanke describes the Federal Reserve's response to the financial crisis, focusing in particular on the activities of the Federal Reserve, other regulators, and private institutions to strengthen the financial system's infrastructure and resilience to downturns. Chairman Bernanke suggests that financial supervisory oversight in the United States needs to develop a systemwide approach.

**Brainard, Lael, Under Secretary of the Treasury for International Affairs, Testimony Before the United States Senate Committee on Banking, Housing, and Urban Affairs, Subcommittee on Security and International Trade and Finance, July 2010**

In her testimony, Under Secretary Brainard discusses the international financial reform agenda of the United States in the wake of the passage of the 2010 Dodd-Frank Act. She emphasizes the need to set internationally consistent, high-quality standards to avoid regulatory arbitrage; to address the risks posed by firms that are internationally deemed to be "too big to fail"; and to strengthen the international architecture of financial regulation.

**Brunnermeir, Markus A., Andrew Crockett, Charles Goodhart, Avi Persaud, and Hyun Shin, "The Fundamental Principles of Financial Regulation," 11th Geneva**

**Report on the World Economy, June 2009**

The authors explore the sources of systemic risk and their relationship to the economic cycle, and argue that rule-based macroprudential regulation should be introduced as a complement to microprudential regulation, in order to mitigate the effects of financial swings. In particular, they call for the adoption of countercyclical capital adequacy requirements, which should be set nationally and applied only to systemically significant institutions and to financial institutions subject to deposit insurance.

**Commission of the European Communities, "A Proposal for a Regulation of the European Parliament and of the Council on Community Macro Prudential Oversight of the Financial System and Establishing a European Systemic Risk Board," September 2009**

In its proposal, the European Commission—the executive body of the European Union—puts into effect one of the key recommendations of the de Larosière Report, namely the establishment of a European Systemic Risk Board (ESRB). The proposal also describes the activities, powers, governance, and structure of the new ESRB.

**Crockett, Andrew, "Marrying the Micro- and Macroprudential Dimensions of Financial Stability," BIS Speeches, September 2000**

This speech by Andrew Crockett, General Manager of the Bank for International Settlements and Chairman of the Financial Stability Forum, was made at the Eleventh International Conference of Banking Supervisors in Basel, Switzerland, September 20–21, 2000. Mr. Crockett argues for a "strengthening of the macro-prudential orientation in supervisory and regulatory arrangements." In developing his argument Mr. Crockett explores, among other topics, the differences in the objectives of prudential and macroprudential policy, the costs of financial instability, financial cycles and their contribution to financial instability, and

the implications of a macroprudential orientation for supervisors.

**Davis Polk & Wardwell LLP, “Summary of the Dodd-Frank Wall Street Reform and Consumer Protection Act, Enacted into Law on July 21, 2010,” July 2010**

This document summarizes and provides a preliminary analysis of the provisions of the 2010 Dodd-Frank Act, including those provisions that introduce new systemic risk regulations. The document is intended to serve as an informational tool for financial institutions seeking to comply with the new law.

**de Larosière, Jacques, Chairman, and Leszek Balcero-wicz, Otmar Issing, Rainer Masera, Callum Mc Carthy, Lars Nyberg, José Pérez, and Onno Ruding, “Report of the High-Level Group on Financial Supervision in the EU,” February 2009**

This report examines the economic and regulatory causes of the recent financial crisis and proposes new standards to govern, among other things, bank capital levels, the insurance industry, and credit rating agencies. Highlighting the global nature of the crisis and the economic trends that brought it about, the report also presents ways to improve regulatory coordination at the European and international level. The recommendations—which served as the foundation for the European Union’s new European Systemic Risk Board proposal—include introducing new tools to reduce procyclicality, strengthening “systemic shock absorbers,” requiring better risk management at the firm and regulatory level, and creating more effective crisis management mechanisms.

**European Union, MEMO/09/405, “New Financial Supervision Architecture: Q&A on the European Systemic Risk Board,” September 2009**

This European Union press release describes the structure and chief activities of the new European Systemic Risk Board (ESRB). It addresses such

topics as the need for the ESRB as a complement to existing European financial supervision, the kinds of risks the ESRB monitors, the actions the ESRB can take when it identifies risks, and the prominent role of central banks in the ESRB.

**Financial Services Authority, “The Turner Review: A Regulatory Response to the Global Banking Crisis,” March 2009**

Exploring the economic origins of the recent financial crisis and why regulators failed to prevent it, Lord Turner, chairman of the United Kingdom’s prudential regulator, highlights the need for a comprehensive approach to macroprudential supervision, involving close coordination among national regulators within a country and at the cross-border level. He calls for improvements in the quantity and quality of capital in the global banking system, and for the adoption of a countercyclical capital adequacy regime, a maximum gross leverage ratio, and tighter liquidity regulation and supervision. Lord Turner also calls for new standards and frameworks for deposit insurance, credit rating agencies, executive compensation, risk management, and corporate governance in financial institutions. Although explicitly written with the U.K. experience in mind, Lord Turner’s analysis and conclusions are broadly informative.

**Group of Thirty, “Financial Reform: A Framework for Financial Stability,” January 2009**

In this report, the Group of Thirty makes a number of recommendations vis-à-vis the regulation and supervision of banks, nonbank financial institutions, money market mutual funds, private pools of capital, and government-sponsored enterprises. These proposals, which are organized into five “Core Recommendations,” broadly include subjecting all systemically significant institutions to prudential oversight by a single supervisor; improving the quality of

prudential supervision by providing supervisors with better structural resources and emphasizing international coordination; strengthening standards for governance, risk management, capital, and liquidity; and making financial markets and products, including securitized credit markets and over-the-counter markets, more transparent and resilient.

**HM Treasury, “A New Approach to Financial Regulation: Judgment, Focus and Stability,” July 2010**

The U.K.’s Treasury, in a report presented to Parliament at the Queen’s request, explores the weaknesses in the U.K. regulatory framework that both contributed to and exacerbated the financial crisis in the U.K., and proposes for consultation reforms that would correct these operational failings. These reforms include (a) the creation of a new Financial Policy Committee within the Bank of England, which is to have primary statutory responsibility for maintaining financial stability at the macroprudential level; (b) bridging the gap between macro- and microprudential regulation by further establishing the Prudential Regulation Authority as a subsidiary of the Bank of England and making it responsible for prudential regulation of all deposit-taking institutions; and (c) creating a Consumer Protection and Markets Authority, which will take over the Financial Services Authority’s responsibilities for the conduct of business regulation and the supervision of all firms and also regulate all aspects of the conduct of participants in wholesale markets and investment exchanges. More detailed proposals are to be presented for further consultation in early 2011.

**International Monetary Fund, “A Fair and Substantial Contribution by the Financial Sector: An Interim Report for the G-20,” April 2010**

At the request of the G-20 leaders, the IMF staff examines instruments that would shift the costs

of macroprudential supervision onto financial sector participants. In particular, the IMF staff discusses the substantial fiscal costs incurred by governments to minimize the economic fallout from the recent financial crisis—costs that could be avoided in a future financial crisis if macroprudential supervision succeeds in preventing market risks from growing to the point where they threaten the entire financial system.

**Large, Andrew, “Future of Finance, Systemic [Macroprudential] Policy: A Framework for Delivery,” May 2010**

Addressing systemic financial failure, Large proposes the features of a policy framework for containing systemic dangers, highlighting the general lack of such frameworks in the run-up to 2008. Such a framework needs to include (a) regular assessments of emerging risks (relying on such indicators as leverage and overall indebtedness); (b) preemptive action using appropriate policy instruments, including overall capital ratios; and (c) clear mechanisms for disclosure and accountability. The author discusses issues relating to the implementation of such a framework, including where to vest supervisory authority, recognizing that implementation will necessarily vary across jurisdictions. These issues are relevant globally, but by way of illustration he examines the case of the United Kingdom.

**Persaud, Avinash, “Macro-Prudential Regulation,” ECFI Commentary No. 25/4, August 2009**

This paper defines macroprudential regulation and argues that macroprudential measures such as countercyclical capital adequacy requirements must be introduced in order to mitigate the procyclical practices and behaviors that are associated with the economic cycle. Distinguishing among three broad types of financial risk—credit risk, liquidity risk, and market risk—Persaud points out that capital requirements should distinguish

among financial institutions based on how they are funded, and encourage those with a capacity to absorb a given type of risk to hold that risk. Finally, Persaud calls for a rule-based approach to macroprudential regulation, and for the selective application of macroprudential measures to only those institutions that are systemically significant based on size of exposures, degree of leverage and maturity mismatches, and interconnectedness with the financial system.

**Trichet, Jean-Claude, President of the European Central Bank, "The Economist's 2nd City Lecture: Macroprudential Supervision in Europe," December 2009**

This lecture, delivered in London, addresses: (a) the desirability of macroprudential supervision, particularly in light of the way in which systemic risk was triggered by the collective behavior of

financial institutions in the most recent financial crisis; (b) how macroprudential supervision should be organized; and (c) the implications of macroprudential supervision for the financial sector. Trichet emphasizes that macroprudential supervision, which is to be a complement to microprudential regulation, must include a combination of policy and oversight, risk surveillance, and detection using early-warning indicators and the publication of recommendations addressed to regulators and supervisors, though it should avoid imposing too excessive a regulatory burden. Trichet also mentions the planned establishment, on the recommendation of a group chaired by Jacques de Larosière, of a European Systemic Risk Board, to which the European Central Bank is to provide support.

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