

Macro-prudential policy: is it really so new?¹

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Abstract

This paper discusses current proposals for a macroprudential policy function, from both micro- and macroeconomic perspectives. The microeconomic perspective suggests adopting a relatively narrowly defined policy objective, avoiding widespread disruption of financial flows or something similar, rather than reducing or eliminating unsustainable credit growth or asset bubbles. This sidesteps unnecessary disputes about government seeking to second guess market outcomes. The macroeconomic perspective indicates that macroprudential is not as new a policy function as many think. Macroeconomic policy has often sought to avoid a disruption of access to overseas borrowing as well as achieving price stability, through an appropriate combination of monetary and fiscal instruments. Avoiding disruption to financial flows in modern capital markets requires a wider range of instruments, but fiscal policy must still play an essential role and its use coordinated internationally, especially so as to address aggregate savings imbalances. [144 words]

¹ I am grateful for comments from David Vines and from Geoffrey Wood. Errors and omissions remain my own responsibility. The views expressed here are not necessarily those of the Bank of Finland.

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1. Introduction

The chairman of the UK Financial Services Authority argues that the major failing of the financial and regulatory authorities in the years 2004-2007 was not recognizing and responding to growing system wide financial risks; and that it was this, much more than any flaws in the arrangements for supervising the activities of individual institutions, that allowed the global financial crisis of the past two years to take place (Turner (2009)). This opinion is widely shared and there is now broad agreement that we need new arrangements to ensure that policy makers do in future respond in a timely fashion to emerging system wide financial risks.

Governments in the US and the UK and continental Europe, believing they recognize the need for such a 'macroprudential' approach to economic policy making, are creating a number of new bodies with responsibility for containing systemic financial risks (Section 4 below reviews these developments). But creating new committees and institutions is only the starting point. There can be little confidence in the success of these initiatives without a clearer understanding of the various sources of systemic financial risk and of how these can best be controlled.

Several economists have pointed to the role of excessive growth of bank credit in past episodes of financial stability and some have argued that these can better be contained by using monetary policy to achieve financial as well as price stability. According to this viewpoint, rather than being focused purely on control of inflation, interest rates should also be used to dampen unsustainable credit expansion and asset price growth. As William White puts this argument in a recent paper (White (2009)), monetary policy can be used pro-actively to 'lean' against the credit cycle, instead of just being used to 'clean' , i.e. to deal with a collapse of credit and asset prices after the event.

But this implies that central banks step back from their current focus on price stability, relaxing the inflation targeting regimes adopted by the ECB, the Bank of England and other central banks or adding new objectives for the Federal Reserve. The Governor of the Bank of England argues to the contrary, that monetary policy arrangements need not be changed. In King (2009), page 5, he states that: "Inflation targeting is a necessary but not sufficient condition for stability in the economy as a whole. When a policy is necessary but not sufficient, the answer is not to abandon, but to augment it. Indeed, the overarching lesson of this crisis is that the authorities lacked sufficient policy instruments to take effective actions."

This statement reflects the well known necessary condition, associated with Tinbergen, that for a policy maker to be able to achieve n -distinct targets must have access to n -different policy instruments.³ This raises the question of what other instruments might be

³ This necessary condition is one part of the Tinbergen (1963) theory of economic policy. For a discussion of the importance of this theory to macroeconomic modelling and policy see Hughes-Hallet (1989).

used to contain systemic financial risk. One widely promoted suggestion is of varying bank capital requirements over the cycle, increasing the amount of capital that banks must hold during credit expansions in order to limit the growth of bank lending and of asset prices and the tendency of banks to underestimate risk in economic booms (see in particular Goodhart and Persaud (2008), Brunnermeier et. al. (2009), and Griffiths-Jones et. al. (2009)). But there is as yet no agreement on how to determine the magnitude of such adjustments, on whether they should be automatic or discretionary, and whether using capital requirements in this way can successfully avoid future episodes of financial instability.⁴

There are many other suggestions about how we might contain system financial risk, but as yet no agreement on the best approach. This lack of consensus is a serious obstacle to effective macroprudential policy. Consider the success in controlling inflation, one of the major economic policy achievements of the past third of a century. The economics profession established a consensus on the mechanisms that cause inflation. This enabled us to move beyond the rather fruitless 'Keynesian-Monetarist' debates of the late 1960s and early 1970s, taking monetary policy out of the political realm and placing it where it belongs, as a challenging, important but ultimately technocratic responsibility. In order to achieve a similar success in the pursuit of financial stability we need to reach a similar consensus about the determinants of systemic financial risk and how it is affected by different policy actions.

The need to establish such a consensus provides the motivation for this present paper. Avoiding future crises requires us to do more than identify policy responses that might have averted the credit losses of 2007-2008. We need to reach broad agreement on the objectives and operation of macroprudential policy. In this paper this objective will be taken to be avoidance of widespread disruption of financial flows. This may seem rather a narrow approach, compared to the more ambitious goal of restraining asset price bubbles and unsustainable credit expansions. But it is relatively easier to establish a consensus on how to achieve a more limited policy goal. The more ambitious agenda can always be pursued later on.

With this assumption, this paper then examines closely the operation of macroprudential policy, from both microeconomic and macroeconomic perspectives, aiming to identifying a core or minimum remit for macroprudential policy on which there can be a general agreement.

The microeconomic analysis helps us identify underlying market failures if any and hence discuss how macroprudential instruments can improve on market outcomes. Certainly both financial institutions and participants in financial markets often make costly mistakes and do so rather often, resulting in disruption of bank lending and financial market

⁴ See for example the discussion in Borio (2009), who points out that any automatic adjustment of capital requirements, based for example on the growth of lending over recent quarters, are necessarily backward looking and, as a result, unlikely to adjust downwards rapidly enough in a financial crisis.

intermediation. But the fact that private sector decisions can be destabilizing does not justify interventions seeking to directly control financial flows or asset prices. We would also need to show that the official interventions would improve the situation. This is one reason why, if we are to achieve consensus on its operation, we need to agree on a more limited role for macroprudential policy, limiting its function to ensuring that adjustment of credit flows and of financial markets to shocks is orderly and gradual, so that widespread disruption of financial flows is avoided.

The macroeconomics requires us to think in terms of targets as well as instruments. We must consider what instruments can be used to achieve the objectives of price stability and financial or macroprudential stability and how and when these instruments will be applied. They are likely to interfere with each other. In particular measures such as higher capital requirements have very similar impact to monetary policy (both higher interest rates and higher capital requirements discourage bank lending). So we need to understand their interaction and determine how their use is coordinated. We also need to achieve effective international policy co-ordination. As this paper points out, these problems of co-ordination are rather familiar from past debates about macroeconomic policy.

The paper is organized as follows. Section 2 is the microeconomic analysis. It discusses the identification of financial stability with the avoiding widespread disruption of financial flows. It then suggests that we need to view both monetary and macroprudential policy in the same way, as responses to market frictions. Microeconomic frictions in goods and labour markets limit the short-term response of wage- and price- setting to changing economic conditions and it is this that creates the possibility that high levels of inflation leads to disorderly and abrupt changes in relative prices and hence an economic role for monetary policy. Similarly a variety of credit market frictions create the possibility of widespread disruption of financial flows and it is this that creates a role for macroprudential policy.

This has two substantive implications. The goal of macroprudential policy need not be, as many assume, the control of aggregate financial flows or asset prices. Policy makers are in no better position than they were in 2006 to identify bubbles or other major departures from long run sustainable valuations. The second implication is that we should adopt a broad conception of macroprudential policy, one that seeks to avoid not just disruption of bank credit and payments but also disruption in the markets for both government and corporate bonds and for other traded instruments.

Section 3 turns to the macroeconomics, discussing the objectives and operation of macroprudential policy. These issues involved here are not so new as current policy debates might suggest. For countries with limited access to international capital flows, such as the major industrial countries in the period 1945-1970 and almost all emerging markets, maintaining orderly markets for foreign exchange has always been a central objective of macroeconomic policy. This objective has been pursued, mostly although not always successfully, by maintaining 'external balance' or more precisely by avoiding an unsustainable external deficit. Today's sophisticated international capital markets mean that it is no longer possible to identify a single source of potential disruption of financial

flows. Instead there are several possible sources of systemic financial risk, not just foreign exchange markets, and we need to use a number of additional instruments to address them all.

But there are still key lessons to be learnt from the comparison with the simpler situation of relatively underdeveloped capital markets. Perhaps the most salient is that fiscal policy must still be considered as one of the principal available macroprudential instruments. There are several other potential macroprudential instruments, such as policies on liquidity and maturity mismatch or on capital and leverage requirements. But these can at best avoid disruption of financial flows taking place in individual markets or via individual instruments. As long as there are substantial aggregate imbalances of capital flows, then reducing risk of disruption in one part of the financial system threatens to create offsetting increases in the risk of disruption in other parts. We thus need to retain the option of using fiscal policy as an additional macroprudential instrument, using it to offset the build up of unsustainable stocks of debt. This also requires us to confront the challenges of the international co-ordination of fiscal policies and their relation to the continuing global imbalances of savings and investment.

Section 4 then provides a brief review of the crisis of 2007-2008 and the subsequent current policy initiatives, in the light of the preceding micro- and macro- analysis. The main concern that emerges here is that macroprudential policy is being conceived too narrowly. Policy makers have not, as this paper has argued they should, generally accepted that fiscal policy should be included within the macroprudential ambit. And the challenges of international macroprudential policy co-ordination are receiving insufficient attention. Section 5 provides some brief conclusions.

2. The microeconomics of financial stability

Thinking coherently about macro-prudential policy requires us to go back to fundamentals. What do we mean by financial stability? Why is there a need for policy makers to concern themselves with either monetary or with financial stability at all

This paper assumes that financial stability can be equated with avoiding widespread disruption of financial flows. Some such definition is needed to support any precise analysis. The phrases financial stability and financial instability and their close cousin 'systemic financial risk' are typically used far too loosely. Their definition and measurement have however been attracting increasing attention of late.

Adrian and Brunnermeier (2009) propose the use of 'CoVar' as a measure of an individual financial institution's contribution to systemic risk. CoVar is defined as the covariance of the returns on an institution's portfolios with the returns of other institutions, *conditional* on a systemic financial event having taken place. CoVar is useful because it draws attention to the tendency for correlations to increase sharply in stressed market situations. A well managed institution should allow for this increase in correlation and in principle this can be measured using CoVar.

CoVar is a potentially useful tool, but it does not help us determine what makes an event systemic. Widespread disruption of financial flows seems to be a useful if somewhat subjective description that can be used for this task. The term 'widespread' is not precise, it is a matter of degree, and disruption is also a somewhat subjective term. This paper will not enter into the questions of what counts as disruption or how much disruption of financial flows is required to qualify an event as being systemic. But this description is helpful because it emphasizes that for a financial event to be systemic it must have a major impact on household and corporate expenditure and also because it reminds us of the possibility that systemic financial problems can affect many forms of financial intermediation not just bank lending. They can also arise in foreign exchange markets and in the markets for government bonds, corporate bonds, equities, and derivatives.

It is worth comparing this description with the definition of systemic events offered by Booth et al. (2009). They propose that a systemic event can be defined as one involving "... damage or degradation of the networks of interconnections that link households, firms and financial intermediaries". Systemic events need not just be financial (Booth et al. refer to the possibility of systemic disruption of electricity supplies) but financial markets and credit extension are two of the most important economic networks linking firms, households, and financial institutions. Any widespread disruption to financial flows would count as a systemic event according to their definition.

Having discussed the definition of systemic financial events we can think about how to model them. Just as we need to add frictions to standard models in order to create a role for, monetary policy, we also have to introduce the possibility of contractual failure to create a role for macroprudential policy. If inter-temporal financial contracts are always available and always fulfilled then there is no need for financial intermediaries or financial intermediation and no possibility of financial instability. There can be no bank runs and no failure of borrowers to repay. Individual borrowers might make mistakes about prospective incomes and the inter-temporal allocation of their expenditures. But such outcomes would not create any disruption to financial flows and not be of any macroeconomic concerns.

This indicates that we can think of a sequence of models, of increasing complexity, successively allowing for the possibility of monetary non-neutrality and of disruption to financial flows:

- (a) the first and most basic is the pure flex-price equilibrium, the standard setting for thinking about general equilibrium and an appropriate model for thinking about long-run productivity growth and the trend of potential output. This is the standard Arrow-Debreu general equilibrium set-up, although it can be extended to justify a role for public policy, for example through the introduction of public goods or of investment externalities.
- (b) The standard model can be generalized by introducing wage and price frictions (and possibly also financial market frictions), resulting in more realistic macrodynamics and a role for expectations. It is in this setting – that of dynamic stochastic general equilibrium – that monetary policy is no longer neutral and a policy regime such as inflation-targeting can be analysed. But in this setting

financial flows financial intermediary balance sheets cannot have any macroeconomic impact, they are purely endogenous phenomena of no direct interest.

- (c) In order to allow for potential financial instability we need to make further generalizations, incorporating not just wage and price frictions, but also a more explicit modeling of financial intermediation and the possibility of widespread disruption of financial flows. Introducing this type of mechanism into models of macroeconomic behaviour is a largely undeveloped field of economic modeling.

In order to model a disruption of financial flows, it is *not* enough just to introduce financial market frictions (as for example in the financial accelerator of Bernanke, Gertler and Gilchrist (1999)). Microfinancial frictions of this kind create a linkage between the private sector corporate or household net worth and the cost of external finance, but the resulting external finance premium itself behaves in a fairly orderly manner, altering fairly smoothly down and up in economic expansions and recessions. Similarly modeling macro-banking instability requires more than introducing a banking sector into standard dynamic macroeconomic models.⁵ We need to allow for the possibility of a sudden disruption to the supply of bank lending or other financial flows.

What then is missing from our standard macroeconomic models, preventing them from capturing the possibility of a widespread disruption of financial flows? Milne (2009a) provides a more extended discussion of the market failures that can result in a disruption of financial flows. One possibility is 'behavioural' departures from rational decision making. Over recent years there has been a growing interest in the possibility that psychological mechanisms such 'framing' or 'regret' may allow substantial increases in asset prices to much higher levels than can be justified on fundamental grounds. Shiller (2002) makes a case for believing that wider social and cultural mechanisms can also fuel asset price bubbles. Whatever the reason it appears that asset prices can depart substantially from fundamental values generated by standard macroeconomic models and can correct suddenly.

But such departures from fundamentals are hard to identify at the time they take place and when they correct need not necessarily have much impact on financial flows and expenditure (for further discussion see Collyns et. al. (2009) in this volume). Yes, the emergence and correction of asset price bubbles is likely to have a substantial distributional impact, with major losers as well as major gainers, but this will not necessarily result in financial instability. There is little clear evidence that stock prices, whether rising or falling, have any major direct impact on financial flows or aggregate demand. Declines in property prices, following the bursting of a price bubble, when combined with the financial accelerator, can result in a sudden reduction in access to credit (or equivalently a sudden increase in the external finance premium) and this can have in turn often

⁵ See Kilponen and Milne (2008) for an example of a standard dynamic macro-model with a banking sector; they find that allowing banking interactions makes only a relatively small difference to output inflation tradeoffs.

suddenly reduced financial flows and expenditure, at least in small countries or regions of large countries [references to be added here. One possibility Anna Schwartz on "Real and Pseudo Financial Crises" .]

Another possible source of disruption of financial flows is a sudden weakening of the balance sheets of banks or financial market traders. In standard models, where the Modigliani-Miller propositions about the irrelevance of capital structure apply, changes in the net worth or maturity structure of financial intermediaries can have no impact on financial flows. Allowing for standard financial market frictions, such as taxation or costs of financial distress, creates a link between financial intermediary balance sheets and financial flows. But a disruption rather than a gradual reduction of financial flows requires that there should be some large sudden change to financial intermediary balance sheets and this is difficult to explain and model.

There are several possible mechanisms. One possibility is a sudden deterioration in expectations about either asset values or credit quality. A related possibility is a sudden increase in anticipated correlations in the returns on lending or other credit exposures. Yet another is a change in perceived counterparty exposure to other financial intermediaries. And there is also the possibility of a withdrawal of short term funding of the kind modeled in the classic banking models of Bryant (1982) and Diamond and Dybvig (1983).

Any of these mechanisms can lead to a sudden weakening of the balance of sheets of intermediaries and lead them to reduce the supply of credit or to cutback on their trading portfolios. Institutional and governance arrangements can magnify these potential disruptions of financial flows. Because of the essential economic role of banks, providing both transactions services and short term credit to smaller 'bank dependent' borrowers, it can be socially and economically costly to close down a bank that has experienced large scale losses and to allocate those losses to equity and debt holders. Whether or not there is explicit deposit insurance, this creates an expectation of public sector support in order to allow a failing bank to continue to provide these essential services. The anticipation of this support then creates a moral hazard, encouraging banks to take accept a relatively large risk exposures, encouraging a more pronounced credit expansion and asset price boom during economic upturns, and a consequently large disruption in the availability of credit in the ensuing downturn. Weaknesses of shareholder governance and control can similarly encourage over lending in the economic upturn and disruption in the supply of credit in the downturn.

To summarize, there are wide variety of possible mechanisms which can result in disturbance of financial flows, especially of bank credit. This makes macroeconomics that incorporates the possibility of financial instability very different than the conventional kind and rather challenging:

- (a) our usual representative agent assumption become very restrictive, because assuming representative agents rules out the co-ordination problems that are one of the main sources of reversals of capital flows. there is a literature on liquidity (discussed by Freixas (2009) in this volume) that helps us understand some of these phenomena, but as yet this does not extend beyond liquidity problems in financial

markets to encompass either the underlying financial flows that can generate liquidity problems or the macroeconomic impact of liquidity crises.

- (b) we are interested in the possibility of a sequence of events taking place that undermine financing flows. This requires that investors have a range of expectations; but are then surprised by the consequences when a negative outcome materializes. So we are *not* looking at rational expectations equilibria.
- (c) Standard macroeconomic modeling relies on linearization around steady-state solutions. This is a natural approach to the modeling of monetary transmission but unhelpful for understanding financial instability, because the mechanisms that disrupt flows of financial intermediation are inherently non-linear, having little impact on small scale but becoming much more powerful on a larger scale.
- (d) There is an emerging body of recent work on the stability of financial networks (see for example (see for example recent work at the Bank of England (Nier et. al. (2008) and Aikman et. al. (2009))). But this type of analysis is still very much in its infancy and is along way from being reliable for forecasting or risk-quantification.
- (e) the potential exposure to a financial crisis depends on many underlying institutional details, including arrangements for resolution of distressed firms and financial institutions, governance and control of investment institutions, and the extent to which the public authorities offers and are expected to offer assistance in the event of problems. Again, while we are aware of the mechanisms, we have no good macroeconomic models that quantify their impact.

Two final points are worth making about the microeconomics of macroprudential policy. First, it is clear that the primary objective of macro-prudential policy should be on limiting potential disruption to financial flows, not attempting to improve on private sector decision making. It is tempting, with the benefit of hindsight, to argue that policy makers should have intervened aggressively to slow the recent credit boom, preventing the unsustainable build ups of consumer debt and of financial institutional leverage and maturity mismatch that triggered the recent crisis. But against this must be balanced the costs of state interference in private sector decision making and the difficulties of determining when asset prices or debt stocks are unsustainable.

Using restrictions on capital and leverage to contain credit growth imposes costs on market participants and on firms and households. It also interferes with the transmission of monetary policy, creating a potential conflict between macroprudential and monetary authorities, one seeking to restrain credit growth with the other seeks to increase credit growth. As Calvo and Loo-Kung (2009) have recently argued, it is possible that asset price bubbles and economic fluctuations are economic beneficial, encouraging socially worthwhile innovation in booms and allowing the removal of unwanted capacity in downturns. In any case, even if the benefits of restricting credit growth can sometimes exceeds the costs, it is difficult to achieve the right amount of control of credit aggregates in practice. While asset price bubbles and excess credit creation can be very obvious after a downturn, it is far from clear at the time when

asset prices or credit creation have gone too far above fundamental levels and thus when if at all the authorities might intervene to correct them.

This is not to say that capital, leverage and liquidity requirements should not be adjusted countercyclically; or that supervisors should not pay very close attention to lending and portfolio decisions at the height of an economic boom. But the reason for doing this is not to restrain credit but to ensure that financial institutions themselves are able to cope with macroeconomic disturbances, without having to sharply cut lending or portfolio holdings. The aim need not be to directly control credit or portfolio decisions. This has the further implication that such macroprudential requirements have to be very flexible. In the face of a macroeconomic shock financial institutions must be able to reduce capitilisation, to increase leverage and to make use of liquidity reserves, otherwise the disruption of financial flows may amplified rather than avoided.

This discussion also suggests that, while the objective should be relatively narrow one of avoiding disruption to financial flows, the sectors and institutions covered by macroprudential policy should be drawn as widely as possible. The current crisis has focused attention on overextension of mortgage lending, especially to subprime borrowers, and on the maturity mismatch and inadequate risk assessments associated with securitization of mortgage and other credit exposures. But future episodes of financial instability could well arise elsewhere, for example in the markets for either corporate or government borrowing, not in household mortgage lending and could have more impact on bond markets than on banks. We need to establish a wide a scope as possible for macroprudential policy, and respond to potential financial instability affecting other sectors or other instruments, not just those that have been affected this time around.

3. The macroeconomics of financial stability

Mervyn King's view, quoted in the introduction, that financial authorities have lacked sufficient policy instruments to achieve financial stability, is reminiscent of the once widely accepted framework of 'two targets – two instruments' and the control of both external and internal balance that was core macroeconomics in the early 1970s. In the Bretton-Woods world of fixed exchange rates it was appropriate to target both price stability (keeping aggregate output close to aggregate supply) *and* current account balance. The two independent instruments that could be applied to this task were monetary and fiscal policy.

This older setting was in fact not so far removed from the current concerns about macroprudential policy objectives. The desire to maintain an external current account balance was a reflection of a national or in effect government solvency constraint – limited ability to borrow foreign currency reserves. Even when Bretton-Woods had broken down, capital controls were still widespread and as a result international capital markets remained relatively thin. Thus even developed countries faced the threat that inability to

finance current account deficits would bring about a disorderly fall of the exchange rate, costly disruption to the flow of funds to government, household and corporate borrowers, and the ignominy of a 'bailout' (for example when the UK turned to the IMF in 1976.)

In our present system of liberalized capital accounts, floating exchange rates and deep global capital markets, external borrowing limits are no longer a binding constraint on developed countries. But the old '2-targets – 2 instruments' framework is still relevant. As well as maintaining aggregate demand in line with long run aggregate supply, macroeconomic policy also needs to avoid solvency / liquidity shocks. This issue never went away entirely for smaller countries. For example there are the well known problems faced by many emerging markets in maintaining access to external capital flows, and the substantial literature on 'sudden stops' in emerging markets, when they are suddenly cut off from access to external borrowing. [Cite Eichengreen.]

In recent years, the US and other current account deficit countries have relied increasingly on international borrowing to finance the difference between their absorption of goods and services and domestic output. Some, for example Paul Krugman, predicted a sudden stop of these international capital flows and a consequent collapse of dollar exchange rate. In the event there was a sudden stop of global capital flows, triggered by illiquidity and solvency concerns about banks and doubts about credit market instruments, but the consequence was that it was the most heavily leveraged and illiquid banks, rather than the deficit nations, that could no longer attract funding. Because of the substitution of government for private sector borrowing in the deficit countries there has been no sudden stop of international capital flows to deficit developed nations, and any such stop has been put off at least for now.

While there is an analogy between the macroeconomic objectives of the 1960s and those of today, there are also major differences. Then policy makers could pursue a single and simple measurable target, the avoidance of a large current account deficit, and be confident that by achieving this target they could avoid a costly disruption to financial flows. But this approach to policy is no longer applicable in a world of deregulated banking and financial markets and external capital account liberalization (and any attempt to return to that world would impose substantial economic costs by limiting access to capital markets).

Disruption of international financing available to a developed country is now a relatively unlikely development, at least as long as we avoid military conflict amongst the major nations. But in our modern world there can easily be disruption of financing flows to any individual sector – household, corporate or government – and to financial intermediaries. The previous section has discussed the different ways in which this can occur, and especially how disruption of funding flows can be triggered by a sudden deterioration of financial institution balance sheets. What this means is that today, compared to forty years ago, there is no longer a single and simple measure of the risk of disruption of financial flows. Hence, while it is still appropriate to devote monetary policy to achieving price stability, it is no longer possible to operate macro-prudential policy by applying a second instrument (fiscal policy) to achieve a single target (current account balance).

There are now several potential disruptions of financial flows and, as the Tinbergen necessary conditions for achieving a policy target suggests, we need to have a different macroprudential instrument for each one of these potential disruptions. There is a considerable amount of research, yet to be undertaken, identifying these potential disruptions and the steps that can best be taken to limit the risk of their occurrence. Here are just some very brief remarks on how to pursue these more diffuse macroprudential objectives, drawing on the analysis of the previous subsection that identifies different mechanisms that can undermine financial institution balance sheets:

- (a) one mechanism of disruption is an unexpected deterioration of asset values; or the related problem of unanticipatedly high level of correlation of returns between different exposures. Here protection against disruption of financial flows requires that all financial institutions have sufficient free buffers of capital that they can absorb any potential losses, even in a highly unlikely extreme scenario. There will have to be countercyclical variation of these buffers, they will have to be built up as loan and trading portfolios expand, but the objective is protection of institutions not control of any associated credit boom.
- (b) A second mechanism is a high level of unrecognized counterparty risks. This requires a different approach, a summary of counterparty risks at an aggregate level, ensuring that individual firms now how far they are exposed, directly and more important indirectly; and are aware of their counterparties own exposure to aggregate risks, and hence of the developments that could trigger a counterparty default. There is a strong case for institutionalizing this aggregation by establishing a central counterparty for all significant insurance and trading risks. This would impose substantial costs in terms of data requirements and management of exposures, but these are costs which are difficult to avoid if counterparty risk is to be effectively controlled.
- (c) A third mechanism is withdrawal of short term funding. Avoiding this risk depends on an having an appropriate liquidity policy, ensuring that all financial intermediaries that make substantial use of short term funding have considerable protection against unexpected loss of this funding, whether through assets sales, borrowing from other firms or from the central bank.

The practical details of containing these and other macroprudential risks will be the subject of considerable attention from policy makers and practitioners over coming years. The risks themselves will have to be assessed on a system wide basis, taking into account the position of all firms. Obtaining sufficient access to data in order to carry out this task remains a concern. The available models of these risks (briefly reviewed in the previous section) are still in their infancy and much work will have to be done to make them of value to policy makers. Even when our assessment of macroprudential risks is improved, there will still be different viewpoints about the use of macroprudential instruments to contain these risks. We can expect that financial institutions will attempt to limit their use, not because they wants to experience another major financial disruption, but because the social costs of disruption are greater than their private costs. Thus financial institutions

will accept a greater risk of such disruption than are policy makers, in order to be able to continue pursuing a greater number of profitable business opportunities.

Nowadays macroprudential policy will be put into practice largely by applying capital, leverage, liquidity and other exposure limitations on individual institutions. Macroprudential has become primarily a supervisory rather than a fiscal responsibility. One issue that then emerges is how, institutionally, to ensure that supervisory intervention is intensified when macroprudential risks rise and not neutered by resistance from individual firms. Milne (2009b) discusses this issue, arguing that the financial stability committee or other body responsible for coordinating macroprudential policy, should operate a 'traffic light system', making public their assessments of the level of macroprudential risk, and that supervisors should be empowered to intervene more aggressively in the business decisions of individual firms as the assessment of risk is increased, say for example from green to orange and from orange to red. The traffic light analogy is useful, but if necessary there could be a more finely grained numerical scale, to avoid market disruption when the level of risk assessment is altered. This is a detail. The main point is to institutionalise a shift in the balance of power between supervisor and regulated firm, allowing increasing interference in business decisions when risks rise.

A related point made by Borio (2009) is that it is helpful to distinguish the cross-sectional and time series aspects of systemic financial risk. As he puts it, when market participants have large common exposures or all rely on short term funding, then they can react in a similar way to a disturbance and this common response can lead to an amplification of the initial disturbance, perhaps because of 'fire sales' of assets at deeply discounted prices. This can disrupt a particular part of the financial system, for example markets for relatively illiquid securities or for short term money. The main driver of these risks are the cross-sectional pattern of assets and liabilities.

At the same time the risk of systemic financial risk can be heightened by a rise in corporate, household or other debt to unsustainable levels. It is usual for borrowing to increase in a business cycle expansion and this can be encouraged by 'pro-cyclicality' of financial intermediation i.e. the tendency to lower lending standards and increase credit in economic booms.

Recently proposed regulatory instruments such as capital and liquidity requirements appear likely to be effective in strengthening specific parts of the financial system against system wide disturbance (the cross-sectional dimension); but may not be enough to prevent large increases of domestic debt when monetary policy is used to sustain aggregate expenditure (the time-series dimension). Indeed it is possible that using regulatory instruments alone could actually increase systemic risk, since if individual markets and institutions are better able to carry a large amount of intermediation, then overall stocks of domestic borrowing and lending can be increased yet further to even higher levels.

The employment of these individual macroprudential tools will increase the perceived costs of financial intermediation and limit the build up of debt, but this then leads to a different concern, that these tools might be so effective in limiting expenditure and the

growth of credit, that monetary policy might then prove unable to maintain price stability. Instead we could experience a sustained periods when output is below capacity and unwelcome price deflation.

Thus it seems likely that a further aggregate macroprudential tool could be required to achieve the desired policy goals. The most obvious candidate for this role, just as it was in the Bretton-Woods era, is fiscal policy.

But how far should macroprudential concerns be taken into account when determining fiscal policy, when it no longer makes sense to use fiscal policy to target the external balance? This is a contentious and unavoidably political issue. It is clear that irresponsible fiscal policy could eventually, through a loss of public sector credit standing, trigger financial instability; especially when this threatens the ability of the public sector to provide liquidity support to banks and to maintain essential banking services. A public sector that is unable to borrow freely will struggle to fulfill these tasks and this in turn greatly heightens macroprudential risks.

It is tempting to argue that, even today, fiscal policy should be used to achieve current account balance. It is true that if this policy was accepted worldwide, then we would see a relatively rapid correction of the high current levels of global structural current account imbalances, imbalances that pose a major threat to future financial stability. But a return to the adoption of current account balance as a macroprudential policy target is a mistaken response, in effect asserting a superiority of central government decision making over private sector decision making. Households and corporations may have good reasons for making decisions that generate large external surpluses or deficits.

In any case a policy of pursuing current account balance could in some situations increase rather than reduce macroprudential risks. As the case of Japan in the late 1980s and early 1990s illustrates, it is possible to have a financial crisis and major disruption of financial flows, even while at the same time running a substantial current account surplus. Japan, targeting a current account balance, would have run a relatively large fiscal deficit at the time of the bubble economy and so fuelled rather than restrained the boom experienced in their 'bubble' economy.

A more limited answer can be hazarded as follows. Just as banks should be required to increase their buffers of capital and liquidity to contain macroprudential risks, so also should government be required to build up a surplus buffer (or in practice lower their indebtedness) during a boom in order to be able to respond to financial instability should it materialize. Thus the financial stability committee or other body charged with containing macroprudential risks should be given power to issue recommendations on the levels of public sector deficits and the appropriate level of debt stock. Such recommendations may not always be appropriate and can of course always be ignored. Some stronger form of external discipline on public sector finances might be ideal, but it is far from obvious how this could be achieved in a politically acceptable way.

There is one final issue highlighted by this comparison between macroprudential policy today and that of the Bretton-Woods era. One of the greatest problems of

macroeconomic policy in the years of fixed exchange rates was the difficulty in co-ordinating macroeconomic policy amongst different countries. The key concern was about asymmetric burdens of response, with deficit countries forced to contract their output while surplus countries avoided their corresponding responsibility to expand their output. As modern scholarship has established, this same asymmetry under the restored gold-standard of the interwar years, was to a large extent responsible for the extreme depth and length of the international great depression of the 1930s.⁶ Matters appeared quite different during the years of the great moderation prior to the recent crisis. Under the policy regime established in the late 1980s and early 1990s, we operated with freely floating exchange rates, liberalized international capital markets and inflation targeting. Monetary policy was focused on price stability and the risks of a systemic crisis disrupting financial flows seemed very remote. In this favorable environment it appeared that macroeconomic policy co-ordination was no longer a concern, that deep and liquid international capital markets would ensure consistency of policy amongst the major nations of the world.

We can now see that this may have been an excessively optimistic view. In the wake of the global financial crisis, the problems of international policy co-ordination are very much to the fore, and are proving to be a highly contentious agenda item at the meetings of the G20. This is another issue that will require intensive research and debate. One position is that all we need is freely floating exchange rates at global level, including in particular that of the Chinese Reninmbi, and this will avoid future disruption of financial flows at an aggregate level. Certainly this would aid stability, by providing a further price signal and a mechanism to prevent a build up of debt in deficit countries to such a level where a disruptive adjustment cannot be avoided.

However this may not be enough. Avoiding further global financial crisis may also require substantial institutional reforms are required, especially in some of the major current account surplus economies, for example greatly improved social security in China, to encourage higher levels of domestic expenditure. It is also arguable that even with floating exchange rates, if surplus countries do not do more, using fiscal policy, to increase their domestic expenditure, then there will an insufficiency fo aggregate demand at global level.

These are difficult and contentious issues even though they are clearly central macroprudential concerns. All that can be realistically hoped for in the near term, is that the newly established national bodies responsible for macroprudential stability, will work together under the auspices of the G20, and do what they can to ensure that global savings flows and fiscal policy remain at the top of the international political agenda.

⁶ Especially Eichengreen and Sachs (1985), Eichengreen (1992) and Bernanke and James (1995).

4. The crisis and the response

The previous sections have discussed macroprudential policy and what it can achieve. This section takes a brief look at the recent financial crisis and the regulatory reforms now being undertaken in its wake. The goal is not to cover all these developments in detail. Rather it is to examine how far a macroprudential policy function might have helped limit the scale of the recent crisis and to assess current regulatory reforms from a macroprudential perspective.

how banks got into trouble

At the heart of the crisis was the rapid growth and extensive securitization of US sub-prime residential mortgage lending.⁷ But as Table 1 (from Milne (2009a)) indicates, subprime residential mortgage-backed securities amounted to only around \$800bn, about one-ninth of the total issue of loan backed and other structured credit securities in the US and Europe. Total US sub-prime residential mortgage lending, both securitized and retained on balance sheet peaked, at about \$1.2 trillion, less than 1½% of global banking assets. Underwriting standards deteriorated badly in sub-prime lending, especially in 2006 and 2007, the final years of the US credit boom. But total loan losses (net of recoveries) on sub-prime lending, even if they climb as high as \$250bn or 20% of total lending, are far too small to explain the subsequent impact on the global financial system.

Table 1 about here.

The initial disturbance that triggered the crisis, the peaking of the US housing market in the second half of 2006 and its subsequent gradual decline through the course of 2007, emerged gradually accompanied by rising assessments of losses on sub-prime mortgage lending. But, for two closely related reasons, the impact on the global financial system was greatly amplified and far from gradual. These reasons could have been highlighted and addressed by an analysis of macroprudential risks:

1. The first was the global imbalance of savings (discussed in more detail by Collins et. al. (2009) in this volume). This put downward pressure on real rates of interest and encouraged several kinds of mortgage borrowing and other forms of debt finance. These savings were channelled not just into sub-prime residential mortgage lending but also to prime mortgage borrowers, into commercial mortgages and to the 'leveraged' financed boom that supported an unprecedented value of private equity deals.

2. The second was unstable funding. Instead of bank lending being financed by retail deposits, or from the issue of long-term securities (bonds and equity), banks relied on short term unsecured wholesale borrowing or on the packaging of loans into securities so that they could be financed through collateralized borrowing in repo markets or through the issue of asset backed commercial paper (ABCP) by off balance sheet vehicles. Much of

⁷ The following account of the crisis draws on Brunnermeier (2009) and on Milne (2009a).

this intermediation operated through a parallel system of banking and ended up in the trading portfolios of the large investment banks, such as Bear Stearns, Merrill-Lynch, UBS and others; in the investment portfolios of many European banks with an excess of retail deposits to invest; and also held by the two giant US government sponsored enterprises Fannie Mae and Freddie Mac.⁸ These institutions were relying too much on leverage i.e. debt finance, to hold these instruments and, were exposed to substantial maturity mismatch.

The instability of funding was exacerbated by counterparty risk. For securities held in trading books or as investments, it became standard practice to purchase insurance against the possibility of either mark-to-market or cash flow credit losses. This insurance was purchased from a relatively small number of specialized 'monoline' insurance companies, such as AMBAC and MBIA, and from the financial products division of the global insurance giant AIG, often using the traded credit default swap. On the face of it, seemed like prudent housekeeping, to hedge risks and to lock in profits. But in practice the insurance was illusory because the sellers of this insurance, while claiming large profits from the premiums they received, had far too little capital to honour the promises they were making.

Several other factors increased the susceptibility to systemic financial collapse. These included the legal uncertainties following Lehmans failure, compensation arrangements that encouraged traders to hold large highly leveraged positions, failures in the ratings of complex 'restructured' instruments, gross weaknesses in the regulation and oversight of some internationally active institutions (the 'Icelandic' problem), accounting standards that amplified the impact of illiquidity on bank balance sheets, and weaknesses of governance in a number of individual institutions (although certainly not all) that led them to them making some very imprudent lending and investment decisions.⁹

Another important factor undermining financial stability, alongside the excessive leverage and maturity mismatch, was the widespread underestimation of correlations in the loans underlying the new structured credit securities. Banks holding these securities, as well as the rating agencies, insurance companies, and regulators, assessing their risk, all made the same mistake. They failed to appreciate that in the event of a large common shock, many tranches of these securities that in more normal economic circumstances would be expected to repay in full, would default and return little or nothing to investors. Their assessment of this correlation risk was based on data drawn for a period of only a few years, a period in which correlations of house prices and mortgage and other loan default were relatively low (for example there was no nationwide fall in US house prices). The re-assessment of correlation of default revealed that many of these securities were much

⁸ The phrase 'parallel' banking is more appropriate than the phrase 'shadow banking' widely used by journalists, since this intermediation did not operate in the shadows. As documented by Adrian and Shin (2008) the build up of these portfolios was quite obvious from the accounting statements of the US broker dealers and other institutions.

⁹ Milne (2009a) chapter 8, provides a comparative review of some of the largest global institutions.

riskier than previously thought, and created a loss of investor confidence in the entire asset class.

What followed was a cumulative collapse in liquidity and pricing of the new structured credit instruments. This was driven by what engineers call 'positive feedback loops', with falling asset prices and worsening bank balance sheets triggering widespread withdrawal of short term money market deposits, which further worsened bank balance sheets and forced them to sell structured securities. The resulting weakening of bank balance sheets also lead to reduced lending and so worsened the macroeconomic downturn and further undermined bank balance sheets. These feedback loops culminated, after the failure of Lehman Brothers in September 2008, in the collapse of wholesale money markets and a major global contraction in both credit availability and in household and consumer expenditure. According the IMF (Global Financial Stability report, October 2009) global bank losses on their credit exposures have risen to []trillion.

The initial disturbance and its global financial impact is illustrated by Figures 1 and 2 (updated from Milne (2009a)). This shows the peaking and then steady decline of US house prices, and how this in turn triggered first a collapse in the price of sub-prime mortgage backed securities (measured by the ABX indices) and also produced major stresses in short-term money markets (Figure 2), as revealed by the spreads, between unsecured and collateralized 3-month borrowing rates. Eventually, very slowly, these stresses have abated, helped by government and central bank support for the financial system and exceptionally loose fiscal and monetary policy.

Figures 1 and 2 about here.

The financial sector remains very fragile. The initial shock was, relatively speaking, rather small, and this suggests that the collapse in the valuation of structured securities has been greatly overdone. As underlying loan principal and interest are paid, much of the writedown of bank assets will be reversed. At the same time the prospects for global economic growth are relatively poor, especially as the global fiscal and monetary stimulus is withdrawn. This can be expected to weaken corporate and household earnings, increase loan losses, and reduce bank returns and asset growth.

Could a macroprudential policy function have limited the scale of the crisis?

With the benefit of hindsight, we can see that a macroprudential policy function could have addressed many of the factors contributing to the global financial crisis. In particular we can see that more conservative standards for capital and leverage, and an insistence on maintaining liquidity and avoiding excessive maturity mismatch, would have done a great deal to reduce the fragility of banks around the world.

A macroprudential intervention in the business decisions of individual institutions could also have helped prevent some banks building up unusually large exposure to a reversal of property markets or a loss of confidence in structured credit, for example Halifax Bank of

Scotland and Northern Rock in the UK, the Anglo-Irish Bank in Ireland, or the US mortgage banks IndyMac and Washington Mutual..

But it not so clear that a macroprudential policy function would have avoided all systemic financial risk. We would still had a unsustainable pattern of global savings and as a result, assuming that monetary policy had continued to maintain aggregate demand in the US, the UK and other deficit countries, a continuing growth in the stock of household debt in these countries that could well still eventually have triggered financial problems.

The counterfactual question, one that can probably never be clearly answered, is whether with effective macroprudential policy function in place, we would then eventually have achieved a 'soft landing' with a gradual rise of household savings rates in the deficit countries achieving stability in debt to income ratios. In order to maintain aggregate demand at the global level, such a soft landing would have required a corresponding decline in savings rates in the high saving countries. This adjustment need not have taken place rapidly. But without such an adjustment then the outcome would seem inevitably to have been an eventual major loss of global output, either from a postponed financial crisis or simply from a gradual weakening of the stimulative impact of monetary policy in the deficit countries with high levels of household borrowing.

It may be that the application of proposed macroprudential regulatory instruments , such as capital and liquidity requirements, together with exchange rate flexibility, and a consequent appreciation of the Chinese Renimbi, would have been enough to ensure such a 'soft landing'. But this remains an open issue. The alternative view is that achieving such a soft landing would also have required expansionary fiscal policy in the surplus countries.

Which ever view is taken on this issue, it is clear that the scope of macroprudential policy needs to be drawn very broadly, to include international exchange rate arrangements and, if fiscal policy does prove to be necessary for maintaining aggregate global expenditure, international co-ordination of fiscal policy. Focussing, narrowly, on avoiding disruption of financial flows in individual markets will not be enough.

the policy responses

Since the crisis reform of financial regulation has been a top level agenda item at the twice yearly meetings of the G20 meetings of the world's political leaders, and the subject of several studies co-ordinated by the Financial Stability Board (formerly the Financial Stability Forum) and the various Basel regulatory committees (see in particular Financial Stability Board (2009)). By the early autumn of 2009 these bodies had agreed on several proposals for far reaching changes in financial regulation.

The Basel banking committee has announced two major changes in banking regulation, the introduction of a new regime for liquidity risk and a major revision of the Basel accord on capital regulation (Basel Committee on Banking Regulation (2009a, 2009b)). The

minimum capital requirements of the Basel II pillar 1 will be substantially increased (through requiring banks to calculate the risk weights for their credit exposures used in calculating minimum regulatory capital on 'stressed' PDs i.e. one year ahead default probabilities in a stressed economic situation; and by imposing substantially increased capital for securities and derivatives trading) and supplemented by two further measures: (a) a requirement to hold an additional cyclical buffer of capital that will be built up in economic expansions and can be run down (b) a simple unweighted leverage requirement that will discourage bind when banks rapidly expand their holdings of low risk assets.

Further regulatory measures are being introduced, internationally, for example improved oversight of hedge funds, of credit rating agencies and of off-shore financial centres; the promotion of central clearing arrangements in over the counter markets; arrangements for the more orderly resolution of large firms when they are in financial distress; and new rules on retaining risk when loans are securitised. The most contentious issues, on which there is not yet an international agreement, are on control of bonuses (the issue here is whether regulators should limit themselves to the mechanics of bonus payments, e.g. requiring them to be spread over time, paid largely as shares, and allowing for clawback should profits prove to be temporary; or should also attempt to control the level of bonuses) and on the regulation and supervision of internationally active firms with substantial cross-border activities (the problem here is how in practice to do this job, who is responsible, the authorities in the 'home country' where the group is headquartered or the various authorities in the 'host countries' where branches and subsidiaries operate; and how are these different authorities to co-ordinate their work).

A fairly similar architecture of macroprudential bodies is also being established in several jurisdictions, even if the details of how these will operate in practice is, as yet, largely undetermined. The EU has made most progress. The three existing high level supervisory committees for banking, securities markets, and insurance are to be transformed into supervisory bodies with their own resourcing and the right to impose rules on cross-border institutions (these new bodies will be referred to as **European System of Financial Supervisors (ESFS)**). In addition there will be a new European Systemic Risk Board (ESRB) that will issue warnings about systemic financial risk and, where necessary, supplementary policy recommendations. Responsibility for response to these warnings and recommendations will remain with national authorities and the European Central Bank (ECB). The general board of the ESRB will be the 27 governors of the national central banks, plus president and vice-president of ECB, plus chairs of the three European supervisory authorities and member from European Commission. The ESRB will liaise with IMF, the Financial Stability Board (FSB) and third country counterparties. The initial announcements indicate it will adopt a 'multiplicity of approaches' to analysing financial stability. Early attention is being paid to the creation of what is described as a "comprehensive and relevant" information base and to mechanisms to "ensure the implementation of macro-prudential recommendations". The ECB will be supplying appropriate analytical, statistical and administrative support to the ESRB.

The Obama administration issued a 'white paper' in mid-June, 2009, setting out their proposals for reform of the US regulatory structure. This Proposes two new authorities, a National Bank Supervisor and a Consumer Protection Agency. The National Bank Supervisor will supervise all federally chartered banks (combining Office of Thrift Supervision and Office of Comptroller of the Currency). In addition a new body, the "Financial Oversight Council" that will identify systemic risks and improve co-operation among US regulators. The members of the council will be the US Secretary to the Treasury, and the heads of the Federal Reserve, National Bank Supervisor, FDIC, SEC, Commodities

Futures Trading Commission, Consumer Protection Agency and Federal Housing Agency. Finally the administration proposes to give the Federal Reserve new responsibilities to supervise all institutions that could represent a threat to financial stability, including bank holding companies and non-banks. By August the administration had sent some nine pieces of legislation to Congress covering these and other regulatory reforms. But members of congress have fiercely criticised a number of these proposals, especially the granting of additional powers to the Federal Reserve, and these arrangements could change substantially before receiving legislative approval.

The UK authorities have issued a white paper (HM Treasury (2009)) which amongst a range of recommendations, announces the UK governments plans to legislate so as to create a Council for Financial Stability (CFS), chaired by the Chancellor of the Exchequer (the UK minister of finance), that will provide oversight of the regulatory system and its effectiveness in responding to systemic financial risk. The white paper also proposes altering the statutory objectives of the UK Financial Services Authority to include a responsibility for addressing systemic financial risk and strengthening the powers of the FSA to better enable it to pursue this objective.

These policy responses, made directly after the crisis, are fairly similar across the major countries. Amongst the major developed economies, only Japan has not established a body with specific responsibility for co-ordinating the response of the financial authorities to systemic financial risk, and this is not so surprising since Japanese financial institutions have been relatively unaffected by the financial crisis and because Japan is in any case only part way through a major programme of regulatory reform (see Japanese FSA (2009)). Financial institutions will have to operate much more conservative balance sheets. Financial regulation is going to be much more intrusive than in the past, although the full extent to which regulators will be able to intervene in individual business decisions is as yet unclear. Supervisors are going to have considerable greater powers to obtain information and have greater rule making powers that will allow them to respond to this information without specific legislation.

A major unagreed issue, something which emerged as the principle issue of discussion at September 2009 Pittsburgh meetings of the G20, are over the international co-ordination of fiscal and exchange rate policies. There is considerable pressure on surplus countries to increase their domestic demand and on China in particular to move closer to a freely floating exchange rate. The arguments made in this paper support the view that this international co-ordination is critical to achieving systemic financial stability.

The institutional responsibility for this international co-ordination could be based on Borio (2009)'s distinction between the cross-sectional and time-series dimensions of systemic financial risk. The Financial Stability Board, and the other bodies for the international co-ordination of financial regulation, will need to take the lead in addressing the cross-sectional contributions; but because the time series dimension responds mainly to fiscal, monetary and exchange rate policy, rather than financial regulation, it will have to be the International Monetary Fund working through the G20, that takes the lead in addressing the time-series contribution to systemic financial risk. For this to be effective the new committees and councils being established in Europe and the US, for example the European Systemic Risk Board and the US Financial Oversight Council, will need to be given responsibility for making recommendations and warnings about macroeconomic imbalances as well as about emerging risks in the financial system, and be able to participate directly in the international arrangements for the co-ordination of macroeconomic policy. This will require them to have a substantial degree of independence from direct political control, so they are not simply reflecting short term political pressures to avoid longer term disciplines.

5. Conclusions

Proposals to use new macroprudential policy instruments to reduce risks of financial instability are being pursued in many countries in the wake of the global economic crisis. This paper considers the scope for such policies, exploring both the microeconomics and macroeconomics of macroprudential policy.

Macroprudential policy is here interpreted as any policy actions taken to reduce the risk of disruption to financial flows, whether these flows be to households, corporate or government borrowers. This interpretation implies that the remit of the bodies responsible for macroprudential policy should be fairly broad, relating not just to banks and bank credit but also to the possibility of disruption to markets such as those for corporate and government bonds, and extended to making recommendations on the conduct of fiscal policy and on international policy co-ordination, as well as on the regulation and supervision of the financial system.

This interpretation also implies that the goal of macroprudential policy should *not* be control of credit aggregates or asset prices. This would be counterproductive goal of policy making, for several reasons. It can conflict with monetary policy transmission, which operates through credit and asset prices. It can impose substantial costs on market participants and their customers and, by limiting the access of firms to credit, could reduce levels of productivity improvement in the wider economy.

Instead the appropriate goal of macroprudential policy is to protect individual firms and market participants from major aggregate shocks. The reason for doing this is to ensure the resilience and robustness of the financial system and that widespread disruption of financial flows to households and firms occurs very rarely if at all.

As the title of this paper indicates, macroprudential policy in this sense is far from being new. Macroeconomics, in the years before global capital account liberalization, had to meet two rather than one objectives, domestic price stability and avoiding disruption of financial flows caused by external financing constraints. The success of inflation targeting during the years of the great moderation distracted the attention policy makers, capital market liberalization seemed to have banished external financing constraints, and policy makers failed to recognize the growing risks of disruption of financial flows posed by increasingly deregulated credit markets.

This further implies that we need to extend the remit of macroprudential policy to exchange rate arrangements and to public finances and international capital flows, since these, rather than specific exposures in individual financial markets, are the roots of most financial crises. Here it seems appropriate for the G20 and the International Monetary Fund to play a central role, in discussing and promoting sustainable fiscal and exchange rate policies. Direct intervention in fiscal policy by macroprudential officials will not be politically acceptable, but we need to give the new macroprudential policy institutions – such as the European Systemic Risk Board and the US Systemic Risk Council –

responsibilities for addressing macroeconomic imbalances such as unsustainable fiscal and current account imbalances.

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