

# Financial Policy, Monetary Policy and Macroprudential Regulation

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## Executive Summary

In the aftermath of the economic and financial collapse of 2006-2009 there has been extensive international analysis of the causes of the crisis. The focus of this has been on the extreme levels of leverage that built up in the international banking system and the desire to protect both the state and its citizens from shouldering the cost of market and institutional failure. Policy responses to these issues have included strengthening banks' capital positions, controlling leverage and ensuring higher liquidity ratios.

Much of this work sits within the existing regulatory paradigm of *microprudential* oversight. That is to say: by ensuring individual banks are safe, we make the system as a whole safe. However, since the crisis the debate has expanded with a widespread agreement that *macroprudential* structures should be put in place.

To this end, the UK government and the Bank of England announced the establishment of an interim Financial Policy Committee (FPC) on 17 February 2011. This body is modelled on the Monetary Policy Committee (MPC). It meets quarterly, with minutes taken, and publishes a Financial Stability Report twice a year. After its Q1 2012 meeting the interim committee will make recommendations to the Treasury on which directive powers the FPC should have. This paper is a contribution to the current debate.

Macroprudential regulation concerns itself with the stability of the financial system as a whole. The consensus in this recent debate has coalesced around three ideas: counter cyclical capital requirements, an emphasis on rules to balance political intervention, and the importance of liquidity and leverage buffers. All of these recommendations require some analysis of the duration and amplitude of economic cycles.

At domestic, European and international level, regulators and banks are grappling with these issues and have already begun the design of a new architecture which will change the face of the financial sector for many years to come. Britain's status as a global financial hub, with bank balance sheets of over four times

GDP, makes these changes particularly important. Since the financial crisis, many of these reforms have been positive: special resolution regimes and 'living wills', for example, should facilitate the orderly winding up of insolvent institutions and reduce the necessity for taxpayer bailouts to tail-end events. Other changes have achieved positive outcomes in sub-optimal ways, such as reductions in maximum leverage ratios, facilitating more liquid assets on bank balance sheets and additional capital buffers. However, new tax initiatives, new regulatory burdens and cost pass-through have the potential to damage the competitiveness of UK financial services.

Rules at the European level could also limit the freedom of manoeuvre of the new FPC. At its September 2011 meeting the interim FPC "urged HM Treasury to continue its efforts to ensure that developments in European legislation did not provide an impediment to the ability of the Committee to use macroprudential policy instruments in the interests of financial stability in the United Kingdom."

In particular, European proposals covering transaction taxes, living wills, the trading and composition of financial instruments, bank capital rules and market infrastructure all have the potential to affect UK-based institutions and their international operations.

Some of these reforms are well defined whilst others are still at the proposal stage, with many details yet to be decided. This paper reviews this subject in two stages:

Section 1 explores the current state of play in these proposals: what they are, where they are likely to lead and their potential implications.

Section 2 examines the academic theory behind the proposals and the theoretical role of macroprudential and monetary policy in mitigating financial crises relating to asset price bubbles. We argue that discretionary supervision works better than hard rules, and that localised regulation works better than broad-brush international mandates (whether through the Basel process or EU initiatives).

In summary, an adequate macroprudential policy framework should encompass:

- Identification and monitoring of early warning indicators that signal increased vulnerability in the financial system;
- Rapid use of policy tools to address these vulnerabilities;
- Macroprudential regulators with the institutional and political capital to conduct policy effectively.

Though significant progress has been made, it is not yet clear that this framework yet exists. This paper makes a number of suggestions:

## Macprudential institutions

- *We should rebuild macroprudential supervision resources within the Bank of England.* These were hollowed out following the formation of the Financial Services Authority (FSA). It is important that policy continues to reflect the concept that macroprudential oversight is a central bank function.
- *There should be more external members with experience as market practitioners on the Financial Policy Committee, Prudential Regulation Authority and Financial Conduct Authority.* For example, only four out of 13 members of the FPC (including two non-voting members) are external, and all appointed by the Chancellor. We suggest that a majority of external members should be the norm.
- *The political independence of the FPC should be strengthened to ensure regulators are able to ‘take the punch bowl away’ regardless of political pressures.* This could include finding an alternative mechanism for the appointment of external members without the Chancellor's approval, as well as replacing a Treasury representative as a non-voting member. Giving the Treasury Select Committee veto power over appointments to the FPC and MPC, with a two-thirds majority necessary for approval would reinforce their procedural and political independence. This process is already in place in the United States.
- *We should maximise disclosure of these committees’ deliberations as far as possible to ensure clear communication with the market.* This will ensure the committees’ deliberations have teeth without resorting to direct market interventions wherever possible.

## Macprudential policy

- *Macroprudential indicators need to be better developed and incorporated into macroprudential governance.* Measures such as bank balance sheet liabilities (especially cross-exposures and non-core to core liabilities), credit to GDP ratios and monetary aggregates must be combined with consideration of the behavioural and empirical properties of these indicators which may not be evident from a legalistic or quantitative analysis. If the latter is the sole means of prudential oversight, regulatory failure may occur systemically.
- *Measures such as capital adequacy ratios and liquidity requirements are microprudential measures which do not address system risks to the financial system* such as the problem of excessive asset price growth during booms and sources of vulnerabilities in the financial system: in particular, reliance on short-term (particularly foreign currency denominated) funding bank balance sheet liabilities and resultant wholesale funding gaps. (We will explore this issue more in Section 2).

- *Discretionary supervision is the best mechanism with which to address systemic risks.* The Basel III process (proposals for countercyclical capital buffers and capital surcharges for systemically important institutions for example), EU and to a large degree Vickers proposals all rely on ‘hard’ rules which proved inadequate in preventing the financial crisis and are unlikely to provide adequate protection or warning for future systemic crises. Probabilistic methods for the estimation of risks were instrumental in the banking system’s collapse; such an approach also encourages the gaming of regulatory loopholes. Initiating behavioural change through discretionary means, particularly compensation, will be key. Policy Exchange will return to this subject in a later report.
- *We should explore alternatives to ‘one-size-fits-all’ capital requirements.* Capital buffers are there to be used in an emergency. The approach regulators have taken – of increasing capital requirements when credit is scarce – is procyclical and counterintuitive. A discretionary approach, which allowed the Bank of England to mandate differing capital requirements (related to the riskiness of a firm’s balance sheet as well as the economic cycle for example, as mooted through the FPC) would allow more flexibility.

## Section 1: Current Proposals

### EU regulation

Around 50 regulatory changes are currently proposed at the EU level which would significantly affect the functioning of financial institutions in the UK, including transaction taxes, bank capital regulation, financial instruments and market infrastructure. The UK has already undertaken stringent regulatory reforms (the importation of Basel capital requirements, a new liquidity regime and living wills most notably), some of which have pre-empted, or gone beyond, EU proposals. Among other things, the European Commission, in response to Basel III standards, has proposed a limit on capital adequacy ratios that national regulators could mandate, running contrary to the recommendation of the Vickers Commission, which advocated higher capital buffers combined with a semi-ringfence around investment and retail banking operations.

We will not seek to comment on all of these proposals here or provide a ‘running commentary’: many of the negotiations are ongoing and the proposals being debated could change significantly before agreement is reached. Nevertheless, it does appear that several of them will significantly restrict financial activity in a way which would materially affect the City of London’s status as a global financial hub and its access to the European single market. In particular:

- *A Financial Transaction Tax*: This ‘Tobin tax’, proposed by EU internal market commissioner Michel Barnier, would disproportionately affect financial transactions of UK-based firms, which account for around 60% of EU net exports in this area.
- *A short-selling ban*: on equities and so-called ‘naked’ credit default swaps. Several such restrictions have been introduced at state level, such as short-selling bans on bank equities and sovereign credit default swaps (this has already occurred several times since the economic crisis began).<sup>1</sup>
- *An ECB ‘location policy’*: That Euro-denominated financial products should exclusively be cleared by Eurozone-based counterparties, in effect, mandating that such activity by clearing houses would have to take place in the Eurozone states rather than the UK (though the UK is set to challenge this policy in the courts as contrary to the single market).
- *Rebase the European Banking Authority*: currently based in London, to be consolidated with the European Security and Markets Authority in Paris.
- *Markets in financial instruments directive and regulation II*: regulations to force OTC equities and derivatives markets onto public exchanges.

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<sup>1</sup> <http://www.ft.com/cms/s/0/85b01408-c434-11e0-ad9a-00144feabdc0.html#axzz1gEJNF06w>

It has been suggested that the UK should veto future EU treaties delivering these proposals, seek a single market protocol committing the EU to pro-trade financial rules and an 'emergency brake' on future financial regulation which would adversely affect the participation of UK-based firms in Eurozone financial services, or opt-out of EU financial regulations entirely.<sup>2</sup> Any changes enacted through the EU treaties allow the UK a veto power, though it is far from clear this route will be chosen (the alternative being an independent treaty between the Eurozone and/or other EU states).

The incompatibility of the UK's oversight approach through the Bank of England's prudential supervision role and adding credibility to market disciplines on the one hand, and the predominance of hard rules-based proposals emanating from the EU on the other, may widen over time. It may be prudent to seek a 'double lock' through a guarantee to refer anti-competitive or disproportionate laws to both the EU Commission and the European Council.<sup>3</sup> The UK's failure to obtain an assurance of a veto over additional powers for EU financial regulators, and an end to proposals that financial services activity will not be artificially pushed within the Eurozone through legal mechanisms, led to a veto of changes to the Lisbon treaty on 9 December 2011, and it remains to be seen at the time of writing how this will affect financial regulation within the UK or the EU generally.<sup>4</sup>

#### The Vickers Commission

The Independent Commission on Banking's (ICB) recommendation to impose higher capital requirements on banks conflicts with the European Commission's proposal in July 2011 to place a cap on EU-wide standards: Capital Requirements Directive IV, as a vehicle for EU implementation of Basel III. Similar to the Dodd-Frank reforms in the United States, these additional capital buffers are supplemented with 'living wills' for orderly winding-up of firms (though, significantly, the American model also prohibits bail out from the Federal Reserve and does not mandate a separation of investment and retail banks into the quasi-Glass-Steagall mould Vickers does, despite other complex prohibitions such as on proprietary trading through the so-called 'Volcker rule').

The ICB had two core objectives: to promote banking competition and prevent future taxpayer bailouts. A proposed flexible 'ringfence' separating core domestic retail functions from global wholesale and investment banking functions, amounting to between a sixth and a third of bank assets, (with non-financial company banking services sitting either in or outside the ringfence) is the key mechanism by which the latter objective is to be achieved. This places very significant restrictions on financial activities which are not

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<sup>2</sup> Open Europe, 'Continental shift: Safeguarding the UK's financial trade in a changing Europe', December 2011, <http://www.openeurope.org.uk/research/continentalshift.pdf>

<sup>3</sup> <http://blogs.telegraph.co.uk/finance/andrewlilico/100013618/open-europe-how-to-safeguard-the-uk-financial-sector-in-a-changing-eu/>

<sup>4</sup> <http://www.bbc.co.uk/news/world-europe-16115373>

deemed to be core to retail banking functions within the ringfence:

*“Services should not be provided from within the ringfence if they are not integral to the provision of payments services to customers in the European Economic Area (EEA) or to intermediation between savers and borrowers within the EEA non-financial sector, or if they directly increase the exposure of the ringfenced bank to global financial markets, or if they would significantly complicate its resolution or otherwise threaten its objective.”<sup>5</sup>*

In addition, within the ringfence, it mandates a primary loss-absorbing capital cushion of up to 20% of which equity must be at least 10%, rising to up to 17% for systemically important institutions, with discretion for the remaining 3% to be mandated in bonds and equity should the supervisor fear a taxpayer bailout due to lack of credible recovery and resolution mechanisms. This is markedly more stringent than Basel III’s requirements of 7% equity capital by 2019 (subject to stricter requirements on risk weighting), with an additional maximum of 2.5% for systemically important institutions, and an additional 1% if their importance increases, alongside a leverage cap of 33 to one (which Vickers also condemned as “too lax”), as a macroprudential restraint on new lending. Basel III’s liquidity requirements are also toughened up by the Vickers proposals.

Since Vickers’ proposed ringfence is not complete (for example, it does not prohibit the movement of capital in and out of the ringfence subject to the above), it is not clear that arguments against full separation have validity. As we will explore later in Section 2, high increases in asset prices are closely connected with rapid increases in non-core liabilities and thus greater systemic risk through the growth of cross-holdings between intermediaries. Trying to limit this process by curtailing the deemed systemically important (retail) banking sector’s ability to increase such liabilities makes intuitive sense.

The issue of banking competition is largely incomplete subject to a potential market investigation in 2015, save rather vague policies to make it easier to switch bank accounts and promote challenger banks in the market. Measures to limit taxpayer liabilities through bail-in/debt-equity swaps and putting more ‘skin in the game’ for bondholders through the reclassification of depositors as senior creditors are welcome steps.

However, a number of significant issues remain to be addressed:

#### Capital ratios

- *Lending booms (as we have just seen), are associated with high profits and low measurement of risk which tend to both bolster capital ratios and reduce lending standards – they do not provide an ‘early warning signal’ as such and are unlikely to prove sufficient to prevent bailouts or damage to*

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<sup>5</sup> Independent Commission on Banking Final Report, p. 11.

the real economy (though they may be associated, inter alia, with slower and less volatile growth). As the Vickers final report itself stated, “a leverage cap of thirty-three is too lax for systemically important banks, since it means that a loss of only 3% of such banks’ assets would wipe out their capital.”<sup>6</sup> Capital buffers failed to stop the financial crisis: even without Vickers, the industry average for core Tier 1 capital stands at around 10% – both Lehman Brothers and Northern Rock had around 11% at the point of collapse. Slightly increasing their scale is unlikely to have a significant impact. We believe that discretionary policies through the FPC which change behaviours, particularly on compensation, will have a more significant impact.

- *Despite some countermeasures, capital buffers are still vulnerable to gaming without greater discretionary oversight.* As the new FPC has already identified (see below), wide and opaque variations in the definition of risk-weighted assets are liable to undermine market confidence.<sup>7</sup> On the international level, there is no guarantee that laxer oversight in some jurisdictions might undermine the new rules without a standardised metric (though this is being pursued by the Basel Committee and EBA). In the final analysis, capital adequacy ratios create the potential for distortions (for example, rendering safe assets risky, such as gilts) that do not improve the safety of the financial system.
- *Capital buffers are there to be used in an emergency.* It is procyclical and counterintuitive to raise them significantly when credit is scarce. A discretionary approach, which allowed the Bank of England to mandate differing capital requirements (related to the riskiness of a firm’s balance sheet as well as the economic cycle) would allow more flexibility.
- *Microprudential measures do not address the excessive asset growth during booms:* loss absorbency does not address systemically important metrics. In particular, it ignores reliance on short-term (particularly foreign currency denominated) funding and bank balance sheet liabilities and vulnerabilities to external shocks.

#### Ringfence

- The ringfences’ objective was to “avert contagion, avoid taxpayer liability, and [ensure] the continuous provision of necessary retail banking services”.<sup>8</sup> However, it is not clear that it achieves this. Retail banking is not intrinsically less risky than investment banking (and, as we shall explore in Section 2, is more vulnerable to systemic shocks arising from asset price bubbles, particularly in the housing sector).

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<sup>6</sup> Independent Commission on Banking Final Report, p. 9.

<sup>7</sup> <http://www.bankofengland.co.uk/publications/records/fpc/pdf/2011/record1112.pdf>

<sup>8</sup> Ibid.



- *Vickers largely ignores the phenomena of disintermediation of banks as holders of cash assets: in pensions, investments and short-term money market instruments. The ‘shadow’ banking system has grown rapidly in recent years and is liable to increase once regulations are tightened on the formal sector.*
- The cost to the wider economy of operating this ringfence might be substantial, restricting capital flows within the ringfence from making economically significant business investments.
- The ringfence might effectively prevent the investment banking arm from mitigating the risks of activities taking place within the ringfence. Retail banking is not risk-free and a ringfenced retail operation may take advantage of depositor guarantees to increase risk taking, in turn imperilling sovereign creditworthiness.
- The erosion of the ‘one-stop shop’ of universal, retail and investment banking services (a key strength of the City of London) which might arise from the ringfence might encourage customers to do business elsewhere (wealth management clients, for example). The report’s position is that retail banks would act as ‘agents’ for the investment arm, but this is ill-defined and could significantly add to industry costs. The cost of additional capital buffers alone will be several billion pounds, with some industry leaders stating that Vickers underestimates the true cost of compliance.<sup>9</sup>
- ‘Policing’ allowable activities within the ringfence may add greatly to operational and compliance costs and prove very complex (for example, would investment banking-type activity – such as securitisation – to mitigate legitimate risks within the ringfence be allowed – and how could this be judged?) Implicit guarantees within the ringfence may raise barriers to entry and lower the likelihood of exit, running contrary to the objective of promoting competition.

#### Successors to the Financial Services Authority

The UK is attempting to address some of these issues through the formation within the Bank of England of an independent Financial Policy Committee (FPC), Bank subsidiary Prudential Regulation Authority (PRA) and Financial Conduct Authority (FCA). In essence, the FPC is to fulfil the Bank’s macroprudential role, to:

*“contribute to the Bank’s financial stability objective by identifying, monitoring, and taking action to remove or reduce, systemic risks with a view to protecting and enhancing the resilience of the UK financial system.”<sup>10</sup>*

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<sup>9</sup> <http://www.thisislondon.co.uk/standard-business/article-24016585-bank-chiefs-warn-the-costs-of-vickers-will-be-much-higher.do>

<sup>10</sup> <http://www.bankofengland.co.uk/financialstability/fpc/index.htm>

The FPC will pass on concerns about increased vulnerability in the financial system to the PRA, which will act as supervisor to financial institutions, while the FCA will act as the regulator of services to consumers. Once fully rolled out, these bodies will incorporate the prudential oversight functions of the subsumed Financial Services Authority within the purview of the Bank of England. Initial signs are that the new bodies are keen to take aggressive action, some of which is welcome (a FPC mandate that UK banks must publish their leverage, i.e. non-risk weighted, ratio by 2013 for example) could provide supplementary transparency to risk-sensitive capital measures

Other proposals, however, may have unintended consequences. Forcing banks to limit compensation (again proposed by the FPC), may lead to gaming or drive financial activity abroad. Improving balance sheet 'resilience' by increasing capital buffers is difficult to achieve without curtailing lending to the real economy and exacerbating economic and financial fragility,<sup>11</sup> and is to a large degree contradictory.<sup>12</sup> However, overall, it is desirable that these functions are conducted within the Bank of England's core prudential oversight function, and these changes should be an improvement on the opaque division of responsibilities between the Bank and an arms-length FSA.

As identified above, a discretionary approach to supervision will be vital to ensure these bodies work effectively. To ensure this it would be prudent to:

- *Continue to rebuild macroprudential supervision resources within the Bank of England.* These were hollowed out following the formation of the Financial Services Authority (FSA). It is important that policy continues to reflect the concept that macroprudential oversight is a central bank function.
- *Place more external members with experience as market practitioners on the Financial Policy Committee, in the Prudential Regulation Authority and Financial Conduct Authority.* For example, only four out of 13 members of the FPC (including two non-voting members) are external, and all appointed by the Chancellor. We suggest that a majority of external members should be the norm.
- *Strengthen the political independence of the FPC to ensure regulators are able to 'take the punch bowl away' regardless of political pressures.* This could include finding an alternative mechanism for the appointment of external members without the Chancellor's approval, as well as replacing a Treasury representative as a non-voting member. Giving the Treasury Select Committee veto power over appointments to the FPC and MPC, with a two-thirds majority necessary for approval would reinforce their procedural and political independence. This process is already in place in the United States.

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<sup>11</sup> <http://www.bankofengland.co.uk/publications/records/fpc/pdf/2011/record1112.pdf>

<sup>12</sup> <http://ftalphaville.ft.com/blog/2011/12/01/776021/>

- *Maximise disclosure of these committees' deliberations as far as possible to ensure clear communication with the market.* This will ensure the committees' deliberations have teeth without resorting to direct market interventions wherever possible.

## Section 2: Theories of Monetary Policy and Macroprudential Regulation

### Introduction

The financial crisis has produced, among other consequences, a change in the perception of the roles of financial regulation and monetary policy. The pre-crisis conventional wisdom stated that capital requirements and other prudential instruments were supposed to ensure, at least with high probability, the solvency of individual banks, with the implicit tenet that stable banks would automatically translate into a stable financial system. On the other side, monetary policy should largely disregard financial matters and concentrate on pursuing price stability (low and stable consumer price inflation) over some appropriate time horizon.

Recent events have challenged the accepted wisdom in two ways. Firstly, the traditional formal requirements for individual bank solvency (asset quality and adequate capital) are no longer seen by some as sufficient for systemic stability; as we have seen, regulators are evolving a 'macroprudential' approach through the introduction of other instruments (in addition to monetary policy) to maintain financial stability. Secondly, some economists have argued that a single monetary policy instrument could be an effective mechanism in dealing with asset price bubbles if fluctuations in asset prices are monitored and considered while setting policy.

This section will assess the different tools available to central bankers, both monetary and macroprudential, to mitigate the strain placed on the financial system by asset price bubbles.

### UK Central Banking – a primer

The Bank of England was originally created to act as the government's banker and debt-manager, and in its capacity as a commercial enterprise also took deposits and issued notes. The Bank has since acquired roles as the lender of last resort to banks under its supervision (and arguably, via quantitative easing, the government) and as the guardian of issued sterling currency. Currently the Bank's mandated core purposes are to "ensure monetary stability and to contribute to financial stability".<sup>13</sup>

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<sup>13</sup> <http://www.bankofengland.co.uk/about/corepurposes/index.htm>

### The Bank's monetary policy role

What is meant by monetary stability? Put simply, stable prices and confidence in the currency. The twin economic aims of employment and growth are inevitably shared by the Bank, however there is the belief that the best way for the central bank to contribute to long-term economic growth is to provide price stability over a long horizon. Confidence in prices decreases risk premia and enables businesses and households to plan and allocate their resources more efficiently. Whilst it could be argued that the actual rate of inflation is unimportant as long as it remains stable, empirical studies have suggested that in the long-term, higher inflation is associated with lower economic growth.<sup>14</sup>

In a market economy central bankers must rely on monetary tools, such as interest rates and reserve requirements, to influence the path of inflation. They must also determine what measure they are targeting, for instance whether it is an intermediate target for the exchange rate or growth in a particular monetary aggregate, or a final target for future inflation such as the one currently employed by the Bank of England.

Following the collapse of the Bretton Woods fixed exchange rate system in 1971 and the advent of floating exchange rates, monetary policy was thrust to the fore and much of the policy direction that was subsequently taken can be understood in the context of the searing and uncontrolled inflation that the UK and the US experienced in the 1970s. The UK has since experimented (with limited success) in setting targets for the growth of the broad money supply under Thatcher's 'Medium Term Financial Strategy', as well as the growth of narrow money, and exchange rate targets culminating in joining the ill-fated European Exchange Rate Mechanism.

In the 1990s the UK adopted an explicit inflation target for the first time, with the Chancellor setting interest rates to achieve this based on advice from the Bank's Governor, until 1997 when the Labour government placed the interest rate decision in the hands of an independent Monetary Policy Committee at the Bank of the England. At this point the price stability benefits of credible, independent monetary policy were perceived to outweigh the advantages of closely co-ordinated fiscal and monetary policy. The actual measure of inflation that is used by the Bank of England in its targeting regime has since been changed from the Retail Prices Index excluding mortgage interest payments (RPIX) to the Consumer Prices Index (CPI), with the perhaps crucial dropping of the housing component, in a move towards greater harmonisation with the inflation targeting regime of the European Central Bank.

### The Bank's financial policy role

The Bank's role in protecting financial stability, which was primarily as an intelligence gatherer and a lender of last resort, was formerly conducted in conjunction with the microprudential work of the Financial Services

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<sup>14</sup> Fischer 1993 and Barro 1995.

Authority (FSA). As a consequence of the financial crisis the Banking Act 2009 created a new Financial Stability Committee within the Bank of England, giving it a statutory objective in this area. However recent regulatory reforms will adapt the Bank's role to a more holistic approach, encompassing both the microprudential regulation of financial institutions and the macroprudential overview of the financial system as a whole through the Prudential Regulation Authority and Financial Policy Committee respectively.

As we have seen, the proposed Financial Policy Committee will have primary statutory responsibility for maintaining financial stability, and it is understood that it will have powers to require an increase in the capital held by firms at a point of its choosing during the economic cycle. The new main objectives of macroprudential policy are:

- "To improve the overall resilience of the financial system by addressing aggregate risks and vulnerabilities across the system that have the potential to threaten stability"
- "To enhance macroeconomic stability by addressing cyclical imbalances through the financial system, e.g. by damping the credit cycle."

As the objectives clearly reflect, systemic failure is not just about pro-cyclicality, but also counterparty risk, lack of transparency and hence confidence. We will look at both in detail later.

#### Interaction between Monetary Policy and Financial Stability

Inflation is regarded as one of the major factors creating financial instability in the first place, i.e. inflation increases the likelihood of misperceptions about future return possibilities. Inflation can worsen the asymmetric information problem between lenders and borrowers. High inflation is almost always related to high inflation volatility, which adds to the problems of predicting real returns. A business cycle boom accompanied by high inflation is traditionally considered as the typical environment in which real over-investment and asset price bubbles develop. Excess liquidity provided by the central bank is one of the main factors responsible for the development of inappropriately lax lending standards. Credit growth, which is excessive in view of realistic return expectations, is often the foundation for financial instability. In other words, stable prices and monetary policy focused on that objective play an important role in ensuring stable financial markets.

Price stability and financial stability tend to mutually reinforce each other in the long run. This widespread view is supported by empirical evidence that many financial crises were caused by major shifts in the price level.<sup>15</sup> Moreover, historically most banking crises occurred during recessions,<sup>16</sup> often following periods of

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<sup>15</sup> Bordo, Dueker and Wheelock (2000)

<sup>16</sup> Calomiris and Gorton (1991)

high inflation. Thus the policy stance required to maintain price stability will also be appropriate for the state of the financial system. According to the conventional view there is no general trade-off between monetary and financial stability.

We know, however, that financial imbalances can build up even in an environment of stable prices – for example in the US in the 1920s and 1990s, Japan in the late 1980s as well as the recent financial crash. Thus, it is clear that price stability is not a sufficient condition for financial stability. Recent events have shown that deflationary pressures in the economy lead to low and stable prices, resulting in low interest rates which have contributed to the boom in asset prices. Thus, in practice, situations may arise where there has to be a trade-off between monetary and financial stability.

#### Asset Price Misallocations and Financial Stability

Asset price bubbles can be very damaging to the financial system when they burst. If increases in asset prices are not based on fundamentals, a correction in prices is inevitable. When the correction occurs it can be very costly if during the period of increasing prices, financial institutions have extended credit for the purchase of assets, or accepted assets as collateral for loans. In such cases, falling asset prices can lead to large losses for financial institutions and endanger the stability of the financial system.

Historically, large swings in asset prices feature prominently in many accounts of financial instability. Indeed, a boom and bust in asset prices is perhaps the most common thread running through narratives of financial crises. This is true for both industrial and emerging market countries alike. Typical examples in recent decades include Latin America in the late 1970s and early 1980s, the Nordic countries in the late 1980s, and East Asia in the mid to late 1990s. Likewise, while perhaps more controversial, the experience of the United States in the late 1920s and early 1930s also exhibits similar features. The recent episodes of asset price misallocation in the UK housing market as well as equity markets were key staging posts in the build-up to the financial crisis.

Next, we shall look at some of the more recent episodes of asset price misallocations in the real estate and equity markets, particularly those relevant in the lead up to the financial crash.

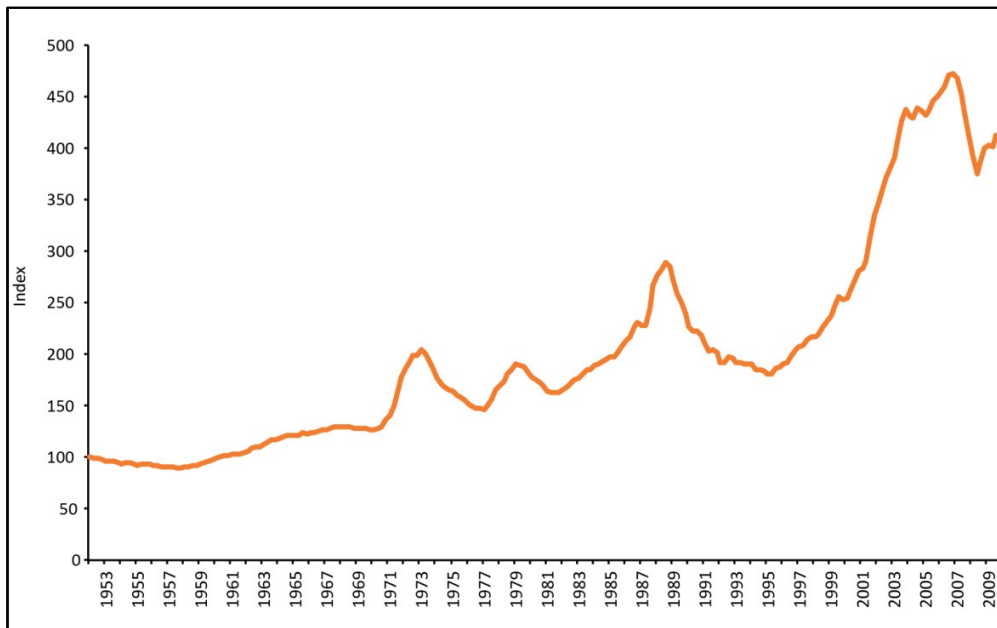
#### Asset Price Bubbles in the Housing and Equity Markets

##### The UK housing market

In the UK the collection of house price data has been under-developed. The longest data set is the Nationwide House Price Index (since 1952) with additional indices being developed more recently: Halifax (1983), UK Land Registry (1995), Council of Mortgage Lenders Survey (2002), Office for National Statistics (2005). What is clear is that this housing market data has received relatively little attention until very

recently, and that the discussions around them have remained focused on nominal not real price trends. In fact, Nationwide currently only publish real price data since 1975 rather than 1952, when their data starts. The recent rate of real house price increases looks less exceptional in this context.

Figure 1. Real House Price Index (Nationwide)



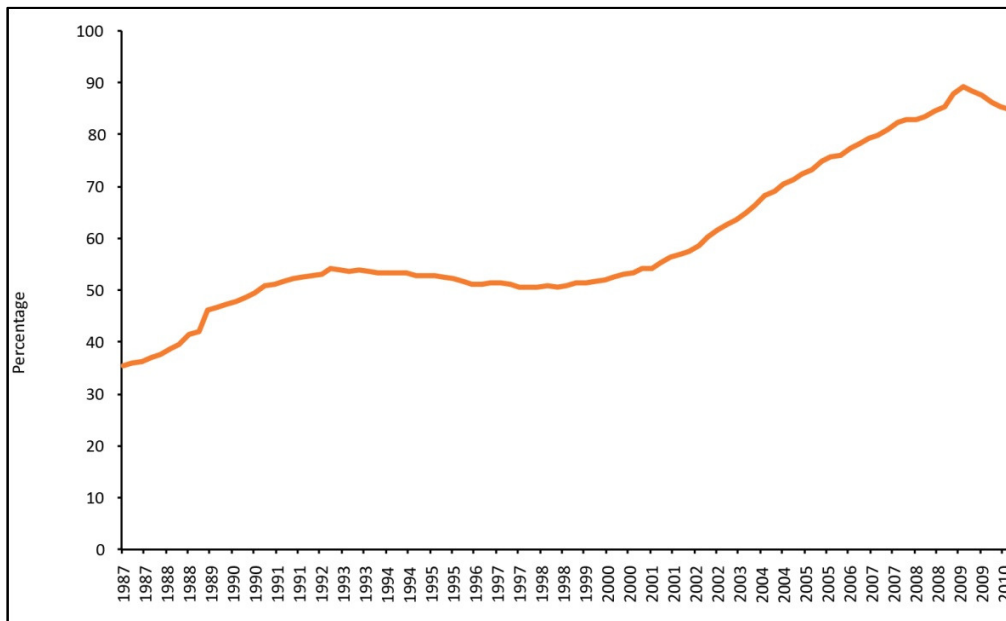
Source: Nationwide, Brown Vanneck Partners.

In the UK, similarly to the US, dramatic real house price rises were not seen in the data before 1970. Real house prices rose by 50% between 1952 and 1982 or 1.5% p.a. From 1953 to 1996 real house prices rose by 75% or 1.7% p.a. But from 1996 to 2007 the real house price increase was 157% or 14.2% p.a. Against the background of a global property boom where large increases took place simultaneously around the world, this data strongly suggests that the creation of a bubble was in progress over this period.

#### UK household leverage

Nominal and real house price increases have themselves fed an upward price-on-price feedback loop. This has coincided with an increasing leverage against UK residential property. Mortgage debt outstanding as a percentage of GDP has risen from 35% in 1987 to 85% in 2009. Some have suggested that this trend has been driven by gradually declining interest rates over the period and the subsequent dilution of the debt service burden. No doubt this was true in the early stages of the increase in property prices, as purchasers calculated affordability against declining interest rates.

Figure 2. UK Mortgage Debt Outstanding (Percentage of GDP)



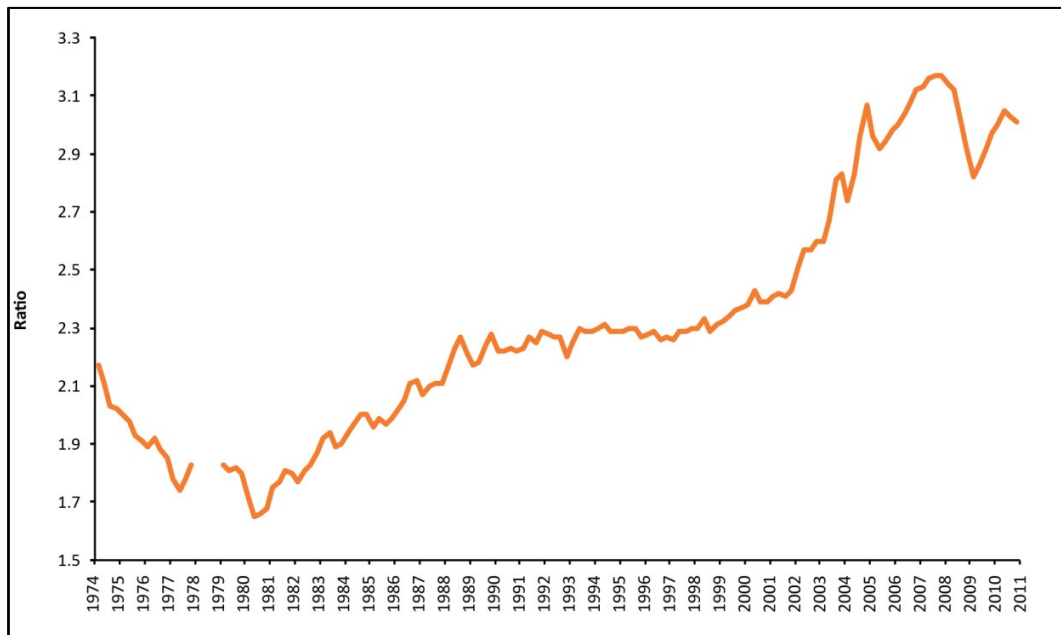
Source: Brown Vanneck Partners, Bank of England, OECD.

Over the last eight years, though, the median mortgage payment as a percentage of income in the UK has risen dramatically. In 2002 median mortgage payments took up 11.7% of income whereas that figure rose to 18.5% of income by 2008.

This is a consequence of a relaxation of mortgage conditions on the part of lenders again reacting firstly to demand but also to the explosion of cheap liquidity and the advent of securitisation markets.



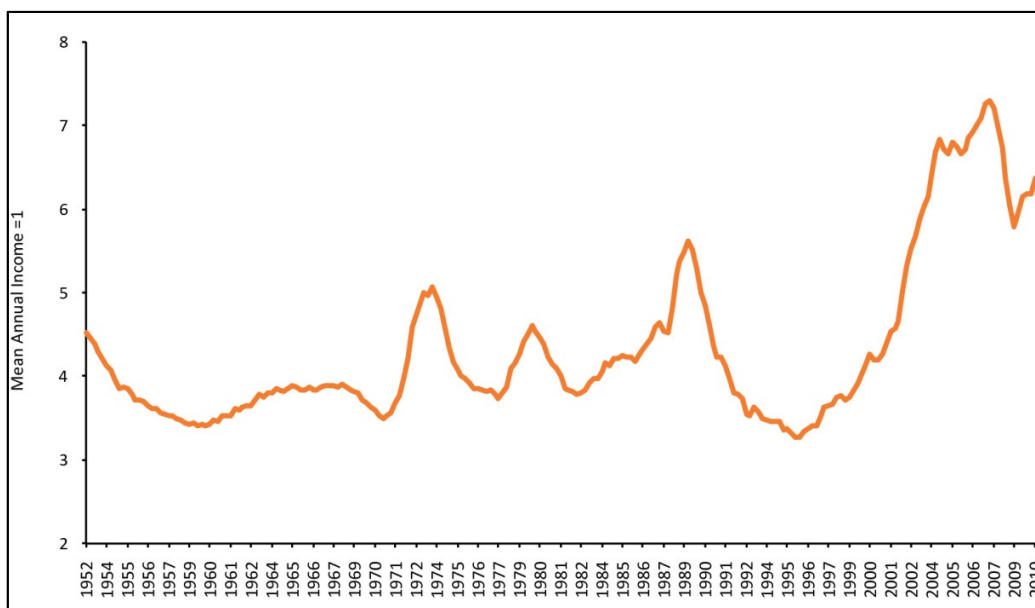
Figure 3. UK Median Loan to Income Multiple for Mortgages Advanced in the UK



Source: Brown Vanneck Partners, Council of Mortgage Lenders

The relaxation in loan conditions is not just a consequence of the most recent period, but can also be seen as a consequence of the financial liberalisation seen in the early 1980s as currency controls were lifted and lending and capital controls rescinded. Over the period 1979 to 1987 loan to income (LTI) ratios rose from 1.6 times to 2.3 times. It is the rise in LTI's since 1997, however, that is most strongly apparent – rising from 2.3 times to 3.2 times by 2004.

Figure 4. UK House Price to Earnings Ratio 1952-2010



Source: Brown Vanneck Partners, Nationwide, Measuringworth.

According to the Organisation for Economic Cooperation and Development (OECD), in the UK between 1997 and 2008 house prices went up by more versus incomes than in any other member state. In fact the UK house price to income ratio has risen by 80%, versus 63% in France, 38% in Italy, 30% in Canada, 11.4% in the US and declines of 27% in Japan and Germany.

It looks highly likely that a significant housing bubble has developed in the UK. Real house price declines are necessary to bring the UK housing market back into line with long-term trends, although the rate of this correction is uncertain. The UK housing market is both at an all time cyclical high and has never been more leveraged, which poses a real and continuing threat to the financial stability of the UK.

#### Equity/Stock market bubbles

Equity prices do boom in periods of excess liquidity associated with low real interest rates and capital bonanzas, but interestingly do not have the same importance in the creation of credit booms and the frequency of banking crises. Property bubbles are recognised as having much higher economic costs than equity bubbles. The economic impact of stock market crashes is caused by the destruction of investor wealth and the economic effects that has on consumption and investment. The relative lack of leverage on equity assets does insulate the banking system from the feedbacks associated with poor collateral and forced asset sales.

Equity markets tend to peak before a crisis breaks and decline for two to three years as the crisis approaches. Within three years real equity prices have historically recovered to pre-crisis levels. Equity booms are often associated with the adoption of major new technologies and innovations, and can lead to excess investment through ‘irrational exuberance’ (e.g. railroads, fibre capacity, dotcoms etc.). These occasions can have positive spill over effects, accelerating the adoption of new technologies. It can also be very difficult to judge if new technologies are overpriced, whereas bubbles in the housing market rarely involve new technology and should therefore be easier to benchmark.

In the following graphs we look at the FTSE, NASDAQ, Dow Jones, and S&P 500 stock indexes over the last 30 years. We can see that from the late 1990s, in contrast with the 1980s and early 1990s, there have been many periods of overvaluations and subsequent corrections that have been damaging to stability of the financial system.

In particular, the degree of overvaluation in the NASDAQ bubble is striking. The index rises almost three-fold in three years and subsequently falls to its previous value in two and a half years.

Figure 5. FTSE bubble

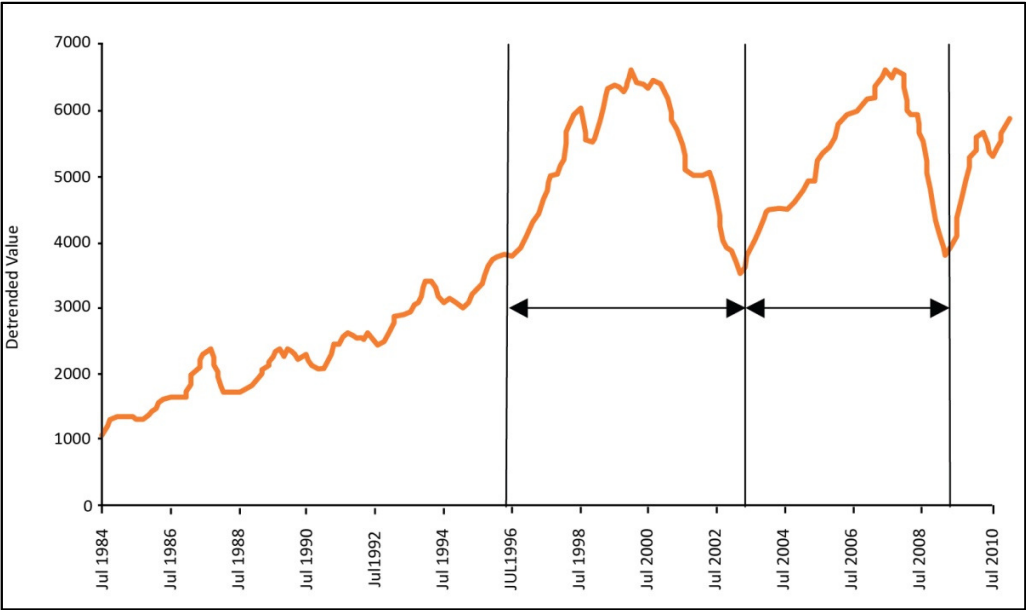


Figure 6. Nasdaq bubble

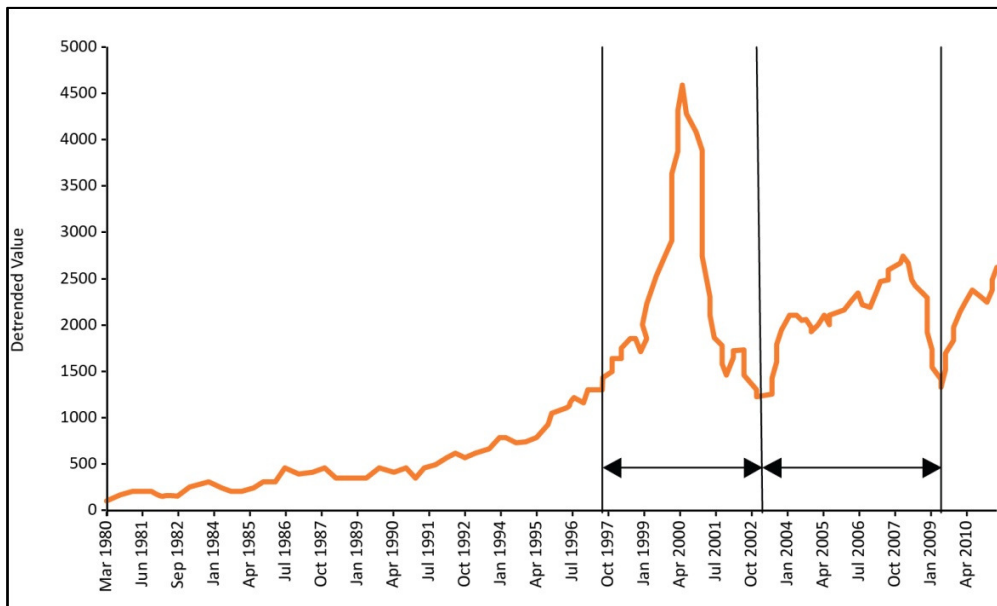


Figure 7. Dow Jones bubble

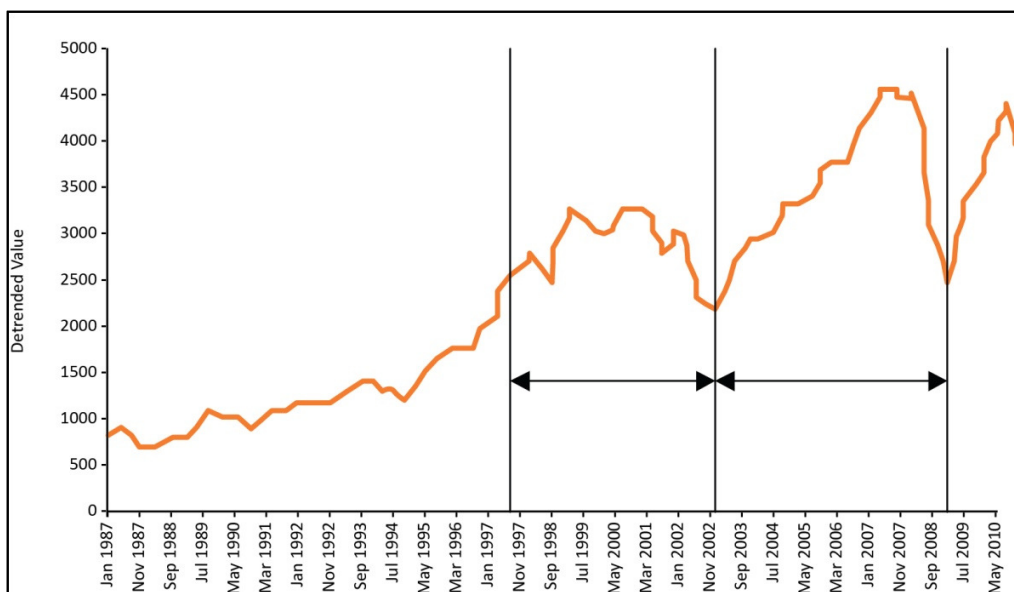
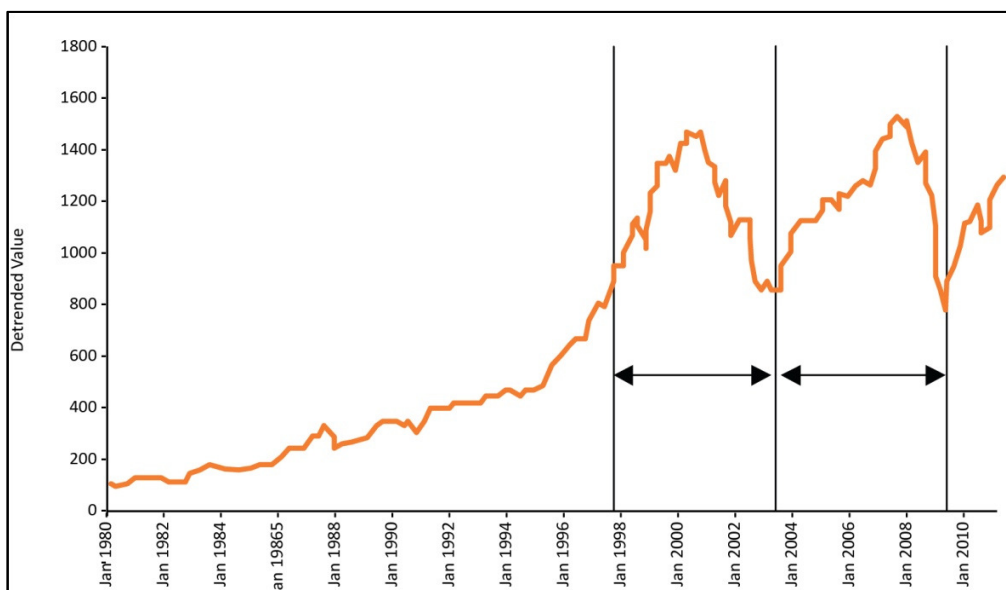


Figure 8. S&P 500 bubble



### Credit Cycles

Whilst asset bubbles are inherently undesirable, given the externalities of capital misallocation and last mover disadvantage (where the last buyer of an asset at peak prices loses), they become very damaging and potentially catastrophic when they are combined with or driven by systematic leverage.

The period from 1997 to 2007 saw just such systematic debt accumulation with the leveraging up of individual balance sheets, corporate ownership structures and bank balance sheets against a whole range of underlying collateral including corporate cashflow, residential and commercial property. In 1988 household debt to GDP ratios were 80% and 100% in the US and UK respectively. By 2008 the same household debt ratios were 135% and 170% for the US and UK. In the UK in the period 1998-2008 credit grew at three times the rate of money spending. Property values reached 140% of disposable personal income. Bank balance sheet leverage in the UK reached over 400% of GDP.

When asset price inflation is linked with extreme credit creation there is a significant problem that as the bubble bursts and prices fall, the destruction of real capital within the banking system can be dramatic. As banks take possession of the assets against which their loans have been secured, this will drive an increase in asset disposals as they seek to recover part of the value of the loan, which further drives declines in asset prices.

The creditworthiness of other loans across the banking system secured on assets is undermined and bank solvency levels decline further. A negative downwards feedback loop can take hold where the highly

leveraged equity within the financial system is progressively destroyed as asset prices decline and banks withdraw credit provision in an attempt to save themselves.

Following exactly this model US house prices declined through 2006 and 2007 causing a consequent series of losses within the US banking system. Initially these were focused in the sub-prime property and loan market which had seen some of the most dramatic declines in loan underwriting standards. But as prices declined across markets and the level of bank exposure to mortgages through the securitised loan markets became apparent, banks began to hoard liquidity. While the initial fears were about bad loan write downs this quickly escalated into a question of bank solvency. Concerns over bank solvency resulted in a decline in the willingness of the wholesale money markets to roll over funding and created a liquidity shortage.

However it was the collapse in trust between financial institutions in the interbank market and the near halt in trading on many wholesale money markets that started to threaten significant numbers of financial institutions. Coincident with the collapse of Lehman Brothers, wholesale markets saw a dramatic rise in risk premia across all asset classes and an unprecedented rise in liquidity preference. Markets globally ceased in many senses to operate. Basic letters of credit to finance cargo ships became unavailable. This was a crisis initially of solvency that dramatically evolved into one of liquidity.

#### The Role of Bank Regulation in Financial Crises

Solvency is an issue of banks' ability to finance their balance sheets. Banks hold such a systematically important place in our economic system because they perform the vital task of duration arbitrage. In the traditional historic model banks would take long-term deposits from savers and would then lend those savings to borrowers in the form of loans. The key insight here is the mismatch in the timing of the liability versus the asset. The saver has the right to receive his money back at any time or in any case within a reasonably short period of time and this is then a short-term liability to the bank. Conversely loans (assets) are by their nature generally spread over a number of years and the bank can only realise the value inherent in the loan over a long period of time.

The banks role in maturity transformation makes them uniquely vulnerable to bank runs. While advanced economies have graduated from serial sovereign debt defaults or very high inflationary episodes, they have found it peculiarly difficult to elude banking crises. Banking crises are of preeminent importance, primarily due to the very negative effect of bank failures in destroying lending capacity in the economy. Secondly, the very dramatic fiscal consequences of the sharp decline in tax revenues, countercyclical fiscal policy and automatic fiscal stabilisers (unemployment benefits for example) can last for many years. On average, real government debt rises by 86% over the three years following banking crises.

In *This Time Is Different* Reinhart and Rogoff used the most comprehensive quantitative database of

financial crises ever constructed to understand the circumstances leading up to the financial crisis. The banking database, which analyses banking crises going back to 1800, demonstrates that the characteristics of economies preceding financial crises are highly similar across time and geography. Emerging market banking crises are very similar in gestation to those in developed economies and notably very similar to the United States in the years preceding 2007.

They isolate four common features:

- Financial liberalisation and capital mobility
- Capital flow bonanzas
- Asset price appreciation
- New economic era thinking (the *This Time is Different* phenomena).

There seems to be a striking correlation between freer capital mobility and incidents of banking crises. There is also some evidence of financial liberalisation preceding a period of increasing leverage. This is borne out in the increased incidence of financial crises in the world's financial centres (France, UK, USA), which are historically at the forefront of these trends.

One of the strongest leading features in the build up to a banking crisis is a sustained surge in capital inflows or a capital flow bonanza. In the latest episode the countries with the most severe banking crises were also those countries running the largest current account deficits: Iceland, Ireland, Spain, the UK and USA. This inflow of very cheap external capital frequently fuels credit booms. While not all credit booms end in financial crises, nonetheless almost all emerging market crises have been preceded by credit booms.

The surges in capital flows and expanding credit booms almost always coincide with a substantial appreciation in asset prices. Price rises can be seen in residential and commercial property, equities, bonds and fixed interest securities. They can be in individual asset classes or in a number of them simultaneously. House prices though have proven to be the most important of these categories and have long been known to play a central role in financial crises.

In the current episode the deflating of the real estate bubble has been a central culprit in the unfolding banking crises. This is to be expected and the evidence can be seen in the historical data set with the clear pattern of booms in real housing prices in the run up to crises followed by declines in subsequent years. The data also, perhaps surprisingly, shows no major or appreciable difference between emerging and advanced economies in this respect.

[Table 1. Cycles of real housing prices and banking crises](#)

Country	Year of crisis	Peak	Trough	Duration of downturn	Magnitude of decline (percent)
<i>Advanced economies: The Big Five</i>					
Finland	1991	1989:Q2	1995:Q4	Six years	-50.4
Japan	1992	1991:Q1	Ongoing	Ongoing	-40.2
Norway	1987	1987:Q2	1993:Q1	Five years	-41.5
Spain	1977	1978	1982	Four years	-33.3
Sweden	1991	1990:Q2	1994:Q4	Four years	-31.7
<i>Asian economies: The Big Six</i>					
Hong Kong	1997	1997:Q2	2003:Q2	Six years	-58.9
Indonesia	1997	1994:Q1	1999:Q1	Five years	-49.9
Malaysia	1997	1996	1999	Three years	-19.0
Philippines	1997	1997:Q1	2004:Q3	Seven years	-53.0
South Korea <sup>17</sup>	1997		2001:Q2	Four years	-20.4
Thailand	1997	1995:Q3	1999:Q4	Four years	-19.9
<i>Other emerging economies</i>					
Argentina	2001	1999	2003	Four years	-25.5
Colombia	1998	1997:Q1	2003:Q2	Six years	-51.2
<i>Historic episodes</i>					
Norway	1898	1899	1905	Six years	-25.5
United States	1929	1925	1932	Seven years	-12.6

<sup>17</sup> Data series too short to mark peak.



<i>Current cases</i>					
Hungary	2008	2006	Ongoing	Ongoing	-11.3
Iceland	2007	November 2007	Ongoing	Ongoing	-9.2
Ireland	2007	October 2006	Ongoing	Ongoing	-18.9
Spain	2007	2007:Q1	Ongoing	Ongoing	-3.1
United Kingdom	2007	October 2007	Ongoing	Ongoing	-12.1
United States	2007	December 2005	Ongoing	Ongoing	-16.6

#### Monetary Policy, Prudential regulation and Financial Stability

##### Has monetary and financial policy failed?

Until April 2007 the Bank's MPC, in its independent role, had ensured a decade of price stability unparalleled in living memory. The inflation measure had remained within 1% either side of the target throughout, as per the MPC's brief, yet this point marked the first of a series of open letters that would be written by Mervyn King to the Chancellor, explaining that the inflation target had been missed by more than 1%. Question marks remain whether the success of the MPC was entirely down to their foresight and focus on inflation, or instead occurred due to a period of strong economic growth counterbalanced by the disinflationary impact of positive supply shocks from trade with emerging market economies.

Nevertheless, the price stability that was achieved still failed to prevent a catastrophic collapse in the UK's banking sector. Whilst it would be wrong to assume that the ongoing relative price stability in the UK (many of the recent target misses were driven by one-off shocks such as the changes to the rate of VAT for example) has not been beneficial to the continued operation of the real economy, it doesn't detract from the importance of considering the economic imbalances that failed to be addressed by inflation targeting.

The MPC frequently commented in its monthly meeting minutes on the risk of bubbles in asset prices (and particularly the housing market) and increasing levels of consumer and corporate indebtedness, driven by a prolonged period of low inflation, low real interest rates, assumed declining levels of risk, large current account imbalances and a profusion of liquidity. Yet the bubbles were allowed to emerge because central banks did not believe it was their either their remit or economically optimal to address them.

## Failure of the Banks

Parallels have been most frequently drawn with the Great Depression of the 1930s, comparing the scale of the preceding rise in asset prices, the quantum of leverage placed against those assets, the dramatic and global collapse of confidence in the financial system and the subsequent scale of the required government intervention. However it is possible to see that the wider historic data shows that the same patterns of current account deficits, pronounced capital flows, significant asset price appreciation and consensus new paradigm thinking are highly correlated with banking crises. In particular the evidence emphasises the importance of residential property price appreciation as a precursor.

In 2007 the UK economy was exhibiting most of the signs of vulnerability to a banking collapse. The UK ran the second highest current account deficit in the OECD, had a highly leveraged banking system, was heavily reliant on wholesale and overseas funding and experienced one of the largest residential housing booms. Yet analysis of the formation of bubbles in asset prices has not formed a key part of the current macroprudential policy debate. Understanding the psychological and societal bases of booms and bubbles should be a key priority as otherwise regulators and politicians will remain just as vulnerable to their illusory gains as the financial institutions, businesses or individuals caught up in them.

## Asset Prices and Monetary Policy

In an inflation-targeting regime, how should monetary policy respond to movements in asset prices? There is no clear consensus as to the appropriate answer. Some argue that the price index targeted by the central bank should include the prices of assets as well as the prices of goods and services. Others argue that asset prices are relevant to monetary policy only in so far as they affect forecasts of future goods and services price inflation. Finally, others see changes in asset prices as having implications for the stability of the financial sector, and thus perhaps indirectly for monetary policy.

## Inclusion of asset prices in price level index

Charles Goodhart, among others, has argued that, in principle, the central bank should target a price index that not only includes the prices of goods and services, but also the prices of future goods and services. Since these prices cannot be measured directly, Goodhart claims that a reasonable alternative is to include the prices of a broad range of assets in the price index targeted by the central bank. He suggests that this is appropriate since asset prices capture the value of claims on a basket of future goods and services.

In addition to the formidable practical problem associated with obtaining accurate and broadly based indices of asset prices, Goodhart's proposal has two conceptual difficulties. The first is a result of the way inflation targets are actually implemented. Central banks with inflation targets do not target the current rate

of inflation but rather the future expected rate of inflation, or more precisely, the future expected path of inflation. Goodhart's concern was that by focusing on the current rate of inflation, central banks would ignore future inflationary pressures which were reflected in current asset prices, but not current goods prices. By including asset prices in the targeted index, this might be overcome. In practice, however, the fact that inflation targets are forward looking means that central banks are already directly concerned with future inflationary pressures.

The second difficulty is that asset prices change for a variety of reasons that are not associated with future inflationary pressures. In some cases, rising asset prices might mean reduced inflationary pressures, while in other cases the reverse might be true. Understanding the source of asset price movements and the implications for future inflation is important in determining the appropriate monetary policy response. If asset prices are included in the targeted price index, then the ability of monetary policy to respond differently according to the nature of asset price change is severely restricted.

Consider the case of a rise in the exchange rate as a result of an improvement in the terms of trade. This appreciation helps reduce any inflationary impact that would otherwise be associated with the increase in the terms of trade; thus the case for an easing of monetary policy in response to an appreciation of the currency is less than clear. In contrast, if the exchange rate appreciation is not based on underlying fundamentals, there is a stronger case for a change in monetary policy, especially if the appreciation is likely to reduce expected inflation.

Another example is the stock market. If a rise in equity prices has little fundamental justification, expected inflation is likely to rise, particularly if aggregate demand responds to the perceptions of higher wealth. In this case there is an argument for tighter monetary policy. In contrast, suppose the rise in equity prices reflects an improved outlook for corporate profits as a result of faster underlying productivity growth. In this case, the central bank's forecast of future inflation might actually fall. Tightening monetary policy in response to this change in asset prices would clearly be inappropriate.

To summarise, including asset prices in an index of prices which the central bank targets is not necessary in order for the central bank to focus on future inflation. Nor is this sensible since the appropriate monetary policy response to a change in asset prices will depend on the source of that change.

#### Effect of asset prices on future inflation

Some authors argue that in certain cases, central banks should respond to changes in asset prices, but in a more flexible fashion than would be the case if asset prices were included in the targeted price index. The guideline they propose is for the central bank to calculate the effect of the change in asset prices on expected inflation and then adjust the interest rate to bring expected inflation back to target.

An increase in asset prices can increase expected future goods and services price inflation. This can occur through a number of channels. The most frequently discussed is the wealth effect of higher asset prices; by increasing perceptions of wealth, higher asset prices can lead to increased consumption. Consumption might also be stimulated through an improvement in consumer sentiment resulting from higher asset prices. If the resulting increase in aggregate demand outstrips the increase in supply, inflation pressures are likely to rise. This process can be compounded if rapidly increasing asset prices generate higher expected goods and services price inflation on the part of the private sector, which then feeds through into higher actual inflation. Finally, in certain cases an increase in asset prices can signal to the central bank that the private sector is expecting higher general inflation. In turn, this information might affect the central bank's expectation of future inflation.

#### Asset prices and financial stability

While increases in asset prices tend to have small direct effects on goods and services prices, they can have much larger indirect effects through their impact on the financial system. If increases in asset prices are not based on fundamentals, a correction in prices is inevitable. When the correction occurs it can be very costly if, during the period of increasing prices, financial institutions have extended credit for the purchase of assets, or accepted assets as collateral for loans. In such cases, falling asset prices can lead to large losses amongst financial institutions and can impair the stability of the financial system. This may result in a protracted period of growth below potential, and low, or even negative, goods and services price inflation.

The connection between asset prices and the stability of the financial system introduces an important asymmetry into the effect of asset prices on inflation. The discussion above suggested that while rising asset prices might contribute to higher goods and services price inflation, the effect is in general, relatively small. In contrast, the unwinding of asset-price bubbles can cause problems for the financial system, and have a significant deflationary effect.

Changes in the price of real estate not only have potential effects on aggregate demand, but can also affect the health of the financial system. If nominal property prices fall, and financial institutions have made loans with relatively high loan-to-valuation ratios, the underlying collateral may be insufficient to match the face value of the loan. This can impose substantial losses on the financial system and have adverse effects on the future availability and cost of intermediated finance. In a similar vein, changes in property prices can affect the balance sheets of corporations. A fall in property prices reduces the net value of firms and, due to imperfections in credit markets, makes it more difficult to attract intermediated finance for a given investment project. As a result, a financial accelerator acts to amplify any downturn in economic activity.

Movements in equity prices can also affect the stability of the financial system. As the 1987 stock market crash in the United States shows, a major fall in equity prices can create problems in the payments system, with potentially large adverse consequences. Further, if a share market crash leads to a severe contraction in aggregate demand, borrowers may find themselves unable to repay their loans. As share ownership becomes more widespread, the aggregate demand effects of changes in equity prices may become more pronounced. Continued financial innovation may also see the growth of lending secured against equities, adding to the exposure of financial institutions to changes in equity prices. Such a change in the pattern of financial intermediation would increase the relevance of stock prices for monetary policy.

#### Can monetary policy restrain asset and credit bubbles?

There was some understanding that low levels of inflation had implications for asset values – “Clearly, sustained low inflation implies less uncertainty about the future, and lower risk premiums imply higher prices of stocks and other earning assets. We can see that in the inverse relationship exhibited by price/earnings ratios and the rate of inflation in the past. But how do we know when irrational exuberance has unduly escalated asset values, which then become subject to unexpected and prolonged contractions as they have in Japan over the past decade?”<sup>18</sup>

The strong consensus amongst central banks, pre-crisis, was that monetary policy should not be used to target or constrain asset price movements. One of the objections was on the basis of cost-benefit analysis: “it is far from obvious that bubbles, even if identified early, can be pre-empted at lower cost than a substantial economic contraction and possible financial destabilization – the very outcomes we would be seeking to avoid”.<sup>19</sup> There was always a fear that in the process of trying to reduce the probability of a dangerous bust, central banks might raise a succession of costly false alarms. Even after the crisis the assertion has still been made that it would require unjustified and extremely aggressive monetary policy to counteract boom dynamics without any guarantee of success. Central bankers are extremely uncomfortable about the use of monetary policy to explicitly target asset prices on the basis that it simply does not work.

Another criticism of the use of monetary policy to address bubbles is the difficulty involved in identifying them given that there are no clearly recognised criteria of what constitutes fundamental value across a range of asset classes. There was also a belief that central banks should not be involved in selecting winners and losers in a market economy: “The Federal Reserve does not attempt to adjust the relative prices of any class of goods, services, or assets ... monetary policy cannot appropriately be targeted to benefit one

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<sup>18</sup> Alan Greenspan, the Annual Dinner and Francis Boyer Lecture of The American Enterprise Institute for Public Policy Research, Washington, D.C.; December 5, 1996.

<sup>19</sup> Alan Greenspan, January 2004, <http://www.washingtontimes.com/news/2004/jan/6/20040106-093958-8642r/print/>

industry, region, or economic group".<sup>20</sup>

The Fed and others argued that it was more effective to use monetary policy to 'clean up' in the contractionary phase of a credit cycle. The historic experience of the 1980s and 1990s seemed to bear out the efficacy of reducing interest rates in the face of declining aggregate demand. In the US interest rate cuts were used to stimulate the economy in 1987 (stock market crash), 1990/1 (property crash and savings and loan crisis), 1997/8 (Asian and Long Term Capital Management crisis) and 2001-2004 (tech bubble). The recessions during the period were very mild and the variance of output growth very low.

The arguments criticising the monetary and financial authorities fall into three different areas. The first analysis criticises the repeated process of 'cleaning up' after busts through lowering interest rates. By pre-emptively easing, the Fed replaced one bubble successively by another, feeding ever increasing amounts of liquidity into the system. Empirically in each cleaning episode the size of interest rate cut for each unit of economic expansion has risen. The second analysis argues that the entire monetary policy orthodoxy was based on a fundamentally flawed efficient market school of economic and financial market analysis.

The third analysis advocates the use of monetary policy to lean against the expansionary phase of the cycle and an expansion of the role of central bank advocacy in moulding public expectations. This position does not specify targeting of asset prices but advocates interest rate rises combined with public debate and analysis of macro-financial risks to restrain imbalances arising from excessive increases in money and credit aggregates.

The evidence is clear that high levels of residential investment as a percentage of GDP, large current account deficits and large expansions of credit relative to output substantially increase the probability of busts occurring in the near term. The higher these measures are the larger the consequent bust. In this context monetary policy makers reacted too narrowly and too weakly to indications of financial vulnerability. While low interest rates were not the main cause of the crisis, by accommodating loose credit conditions and rising debt the monetary authorities increased the risk of a bust.

#### Transition Mechanisms for Monetary Policy

Theoretically the role that asset prices can play in the transmission mechanism of monetary policy is well known although this is quite difficult to characterise empirically. Monetary policy mainly controls the overnight interbank rate, which is not directly relevant for any material economic decision. The way in which

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<sup>20</sup> 'Central Banks and Markets', Roger W. Ferguson, speech to the Bond Market Association 2002 Awards Dinner, New York, October 9, 2002, <http://www.federalreserve.gov/boarddocs/speeches/2002/20021009/default.htm>

monetary policy affects the real economy is when its impacts on relevant financial prices, i.e. when it moves the whole yield curve or when it affects the exchange rate and other asset prices.

There may be several channels through which the policy rate can affect asset prices or asset valuations. First, changes in interest rate modify people's expectations about future economic growth, and thus, their profit valuations. Second, monetary policy decisions may change the set of discount factors economic agents apply to their profit expectations or the future stream of services and revenues from the asset they hold (housing, for example). Finally, interest rate changes may induce portfolio shifts amongst assets that may, in turn, affect their relative prices.

Besides this, and for the sake of simplicity we will call it the "interest rate channel", changes in asset prices also generate wealth effects that may have a significant impact on several components of aggregate demand, namely consumption and investment. The wealth effects feed through to the economy via various channels, such as a direct increase in the value of collaterals, which may reduce agents' external financing constraints and enhance final spending, in accordance with the broad credit channel.

#### How should central banks react?

Does this mean that monetary policy should react directly to asset prices? Or more precisely, should asset prices be directly taken into account by the central bank's reaction function? The issue is still debated amongst researchers and academics. One reason to be cautious is that assessing price valuations is a very challenging exercise. It is not only the price level per se that matters, or the place of change, but also its deviation from the fundamental value, which is very difficult to measure or determine.

Although from time to time, it may seem that asset prices dynamics are not really correlated to overall economic development, it is generally hard to assess whether asset prices evolve according to some "pathological path". The recent "tech-stock bubble" provides us with an illustration of such a difficulty: while one was witnessing the "irrational exuberance" in 1996, the surge in capital spending associated with the development of new technologies resulted in a faster productivity growth, which in turn boosted equity prices. At that time, uncertainties about fundamentals (was there an American miracle?) made difficult a proper assessment of asset valuations, although the large movements in asset prices were a concern for central banks.

However, when expectations reverse, for example due to the reassessment of expected profitability in the economy, and consequently asset prices decrease, the point is to determine whether the attitude of the central bank ought to be different in order to preserve monetary and financial stability. That is, some could argue that the central bank's response should be asymmetric. In the booming phase, as long as price stability is not endangered, central banks do not react to the rise in asset prices. Conversely, in the recession

phase or when a bubble bursts, central banks could consider reacting if they deem that monetary and financial stability is endangered. What could then restrain them from doing it? Such an asymmetric reaction, all the more if it seems to be systematic, actually has a cost – pointed out in the literature – since it may generate some moral hazard: as long as economic agents believe the central bank will ultimately make use of its “safety net”, there is an incentive to invest on riskier projects in order to magnify expected returns, keeping in mind that potential losses are likely to be limited.

### Price level targeting

Some commentators have argued that adopting a price level targeting regime is a better monetary tool to address asset price misallocations as opposed to inflation-targeting regime. Inflation targeting as practised implies that past deviations of inflation from target are not undone. An alternative monetary-policy regime would be “price-level targeting”, where the objective is to stabilize the price level around a price-level target. That price-level target need not be constant but could follow a deterministic path corresponding to a steady inflation of two percent, for instance. Put more simply, under price-level targeting the target is a trend change in the price level. So, instead of there being a target of 2% inflation, if the Consumer Prices Index were 100 at the start of 2008 the target would actually be 102 at the end of 2008.

Consider now that inflation was actually only 1% in 2008, so that at the end of the year the price-level was 101. Then under inflation targeting a 2% inflation target for 2009 would imply that the price-level targeted at the end of the year would be 103.02, whilst under price-level targeting the target would remain at a 2% rise on the 102 end-2008 target – so, 104.04. Under inflation targeting, the price-level is ‘reset’ in the event of target misses – whilst under price-level targeting there is an attempt to remedy past failures.

This means that the long-term price level (and hence the long-term inflation rate) is more certain under price-level targeting than under inflation targeting (all other things being equal). Because of ‘base slippage’ caused by the effective price-level target being updated each year, under inflation targeting the price level wanders about randomly, and after a few years the difference can become quite significant. This is a crucial point to grasp: under inflation targeting the price-level implied by the target for more than a few years ahead is subject to wide uncertainty, whilst for price-level targeting it is completely certain.

One benefit of this compared with inflation targeting is that long-run uncertainty about the price level is smaller. Another benefit is that, if the price level falls below a credible price-level target, inflation expectations would rise and reduce the real interest rate even if the nominal interest rate is unchanged. The reduced real interest rate would stimulate the economy and bring the price level back to the target. Thus, price-level targeting may imply some automatic stabilisation.



Other merits of price level targeting include higher economic growth. As inflation uncertainty adds a risk premium to interest rates, higher inflation rates mean that some investment projects become unprofitable at the margin, even though they would have been expected to be profitable if the inflation rate was certain. Under a price-level targeting regime, as there is greater certainty about the price level (and hence inflation rate), we would expect those investment projects to be undertaken, thus raising economic growth.<sup>21</sup> Price level targeting, also deals in a smoother way with real cost effects such as the internet, the deflationary ‘China effect’ and supply-driven oil spikes.

#### Macroprudential Policy for Financial Regulation

The origin of the term ‘macroprudential’ can be traced back to unpublished documents prepared in the late 1970s – minutes of a meeting of the Cooke Committee (the precursor to the current Basel Committee on Banking Supervision) and a document prepared by the Bank of England. During this period, the term generally denoted a systemic orientation of regulation and supervision linked to the macroeconomy. Public references to macroprudential policy surfaced only in the mid-1980s.

The recent financial crisis has highlighted the lack of analytical frameworks to help predict and cope with the global build-up of financial imbalances whose sudden unwinding turned out to have severe macroeconomic consequences. With the benefit of hindsight, there has been a fundamental lack of understanding of system-wide risk. In particular, there has been a failure to appreciate how aggressive risk-taking by different types of financial institutions – against the background of robust macroeconomic performance and low interest rates – supported a massive growth in liabilities on balance sheets across the financial system. Overconfidence in the self-adjusting ability of the financial system led to underestimation of the consequence of the accumulation of growing debt and higher leverage ratios, which resulted from booming credit and asset prices – most notably in the housing sector – and were reflected in historically low levels of asset price volatility and risk premiums. There was also insufficient recognition of the role of financial innovation and financial deregulation in magnifying both the boom and the unwinding of financial imbalances and their consequences on the real economy.

In terms of policy, as we argued in Section 1, the financial crisis highlighted the need to go beyond a purely micro-based approach to financial regulation and supervision. Since then, the number of policy speeches, research papers and conferences that discuss a macro perspective on financial regulation has grown considerably. There is a growing consensus among some policymakers that a macroprudential approach to regulation and supervision should be adopted – as we have seen, in the UK via the Financial Policy Committee. However, so far, development of the policy tools and framework with which this should be achieved remains limited.

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<sup>21</sup> Lilico, A, *On the merits of price-level targeting* in ‘Beyond Inflation Targeting’, Policy Exchange 2009.

## Objectives of Macroprudential Policy

Over the past two decades and until the crisis erupted, the literature on monetary policy has seen a broad convergence of views on the policy objective. Monetary policy should be geared towards price stability – defined over a horizon of no longer than two years – and, if there is a dual mandate as for example in the case of the Federal Reserve, maximum sustainable employment. Operative objectives were typically defined in terms of CPI inflation or some type of core inflation.

The literature on macroprudential policy is still far from such a consensus on its objectives. Broadly speaking, macroprudential policy is seen as aiming at financial stability. There is however, no commonly shared definition of financial stability. Differing views can be broadly assigned to two groups. The first defines financial stability in terms of robustness of the financial system to external shocks, whilst the second emphasises the endogenous nature of financial distress and describes financial stability in terms of resilience to shocks originating within the financial system.

In terms of specific goals of macroprudential policy, the general view is that it is all about limiting the risks and costs of systemic crises. Brunnermeier has argued that one key purpose of macro-regulation is to act as a countervailing force to the natural decline in measured risks in a boom and the subsequent rise in measured risks in the subsequent bust.

The Bank of England has noted that in general terms it should aim at the stable provision of financial intermediation services – payment services, credit intermediation and insurance against risk – to the economy, trying to avoid the type of boom-bust cycles in the supply of credit and liquidity that were manifested during the recent financial crisis. Langdau (2009) has argued that avoiding bubbles is a possible mandate for macroprudential supervision that would both be pragmatic and legitimate.

An alternative view defined the goal of macroprudential policy as limiting the risk of episodes of a system-wide distress that have significant macroeconomic costs. A useful starting point in understanding the nature of macroprudential policy according to this view is the distinction between the macroprudential and the microprudential perspectives to regulation.

The Bank of International Settlements (BIS) has suggested the following stylised characterisation of the different nature of the two perspectives:<sup>22</sup>

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<sup>22</sup> Borio, Claudio (2003), “Towards a macroprudential framework for financial supervisions and regulation?” BIS Working Paper No. 128, February.

Table 2. Macro vs. Microprudential perspectives

	<b>Macroprudential</b>	<b>Microprudential</b>
Proximate objective	Limit financial system-wide distress	Limit distress of individual institutions
Ultimate objective	Avoid macroeconomic costs linked to financial stability	Consumer (investor/depositor) protection
Characterisation of Risk	“endogenous” (dependent on collective behaviour)	“exogenous” (independent of individual agents’ behaviour)
Correlations and common exposures across institutions	Important	Irrelevant
Calibration of prudential controls	In terms of system-wide risk; top-down	In terms of risks of individual institutions; bottom-up

Source: Borio, Claudio (2003).

Recently, the general manager of the Bank of International Settlements, provided a more specific characterisation of this view, which refers to the issues in the time and cross-sectional dimensions more explicitly, describing the objective of macroprudential policy as “to reduce systemic risks by explicitly addressing the inter-linkages between, and common exposures of, all financial institutions, and the procyclicality of the financial system”.<sup>23</sup> Others view macroprudential policy as aiming to discourage individual bank strategies that cause systemic risk, a negative externality on the financial system.

Hanson, Kashyap and Stein have argued that microprudential regulation aims at forcing banks to internalise losses on their assets in an attempt to protect deposit insurance funds and mitigating moral hazard. They discuss how capital regulation and the principle of prompt corrective action (PCA) do not distinguish whether troubled banks react to shocks by raising new capital or shrinking their assets. In their view, macroprudential policy instead aims at controlling the social costs of a generalised reduction of assets in the financial system. Hanson et al (2010) distinguish credit crunches and fire-sales of assets as primary costs of such a balance sheet shrinkage and emphasise that the perimeter of macroprudential regulation should go beyond deposit taking.

<sup>23</sup> Jaime Caruana, ‘Macroprudential Policy: working towards a new consensus’, 2010, <http://www.bis.org/speeches/sp100426.pdf>

## Macroprudential Tools

In the literature on monetary policy, there is a clear-cut consensus on the role of different instruments. The policy rate is seen as the primary instrument, with communication generally playing a supporting role. The use of non-conventional tools, which have recently attracted much attention in the policy debate and the research literature are confined to extreme situations where policy rates are close to or at the zero bound.

While the crisis has sparked an extensive policy debate, as well as a number of research initiatives in academia and research, a comparable consensus is still missing in the literature on macroprudential policy.

One important distinction in the debate is between macroprudential tools – defined as prudential tools set up with a macro-perspective – and other macroeconomic tools that can support financial stability. Table 3 gives an overview of alternative sets of tools geared towards financial stability.<sup>24</sup>

Table 3. Alternative sets of tools to foster financial stability

Tool set	Goal	Instruments
Prudential policy: Microprudential	Limit distress of individual institutions	e.g. quality/quantity of capital, leverage ratio
Prudential policy: Macroprudential	Limit financial system-wide distress	e.g. countercyclical capital charges
Monetary Policy	Price stability	e.g. policy rate; repos
	Liquidity management	e.g. collateral policies; interest on reserves; asset purchase facility
	Lean against financial imbalances	e.g. policy rate; reserve requirements; FX reserve buffers
Fiscal Policy	Manage aggregate demand	e.g. taxes; automatic stabilisers; discretionary countercyclical measures
	Build fiscal buffers in good times	e.g. fiscal consolidations

<sup>24</sup> Galati, G and Moessner, R. (2011), “Macroprudential policy – a literature review”, BIS Working Paper No 337, February.

Capital controls	Limit system-wide currency mismatches	e.g. limits on open foreign exchange positions; constraints on the type of foreign currency assets
Infrastructure policies	Strengthen the resilience of the infrastructure of the financial system	e.g. special resolution regime; derivate trading in exchanges

Source: Adapted from Galati and Moessner (2011)

In emerging markets in particular, the macroprudential toolkit could also include measures to limit system-wide currency mismatches, which aim at stemming the domestic financial consequences of capital inflows. Examples are limits on open foreign exchange and constraints on the type of foreign currency assets. Others have documented how the build-up of financial imbalances was often accompanied by a growing share of net foreign-currency financing.

By contrast, market-based regulations designed to reduce the incentives for capital inflows and other tools aimed at controlling large capital inflows that may fuel domestic credit booms are not seen as macroprudential tools per se but rather as measures that can buttress prudential regulations.<sup>25</sup>

Broadly speaking, there are two categories of macroprudential tools: (1) tools that target the time series dimension of financial stability and (2) tools that target the cross-sectional dimension of financial stability. Time series tools are geared towards addressing the pro-cyclicality of risk in the financial system, i.e. the evolution of risk over time. Cross-sectional tools target the distribution of risk at a point in time within the financial system, i.e. the contributions to systemic risk of individual institutions.

The contributions to the literature on specific macroprudential instruments can be categorised in various (partly overlapping) ways. Table 4 provides a summary of macroprudential tools available to policymakers.

Table 4. List of macroprudential Instruments

<b>1. Risk measurement methodologies</b>	<b>Examples</b>
<i>By banks</i>	Risk measures calibrated through the cycle or to the cyclical trough;
<i>By supervisors</i>	Cyclical conditionality in supervisory ratings of firms; Develop measures of systemic vulnerability (e.g. commonality of exposures

<sup>25</sup> One example of such a tool is the Pigouvian taxation of international borrowing (Jeanne Korinek 2010).

	and risk profiles, intensity of inter-firm linkages) as basis for calibration of prudential tools; Communication of official assessments of systemic vulnerability and outcomes of macro stress tests;
<b>2. Financial reporting</b>	
Accounting standards	Use of less procyclical accounting standards; dynamic provisions
Prudential filters	Adjust accounting figures as a basis for calibration of prudential tools; Prudential provisions as add-on to capital; smoothing via moving averages of such measures; time-varying target for provisions or for maximum provision rate;
Disclosures	Disclosures of various types of risk (e.g. credit, liquidity), and of uncertainty about risk estimates and valuations in financial reports or disclosures;
<b>3. Regulatory capital</b>	
Pillar 1	Systemic capital surcharge; Reduce sensitivity of regulatory capital requirements to current point in the cycle and with respect to movements in measured risk; Introduce cycle-dependent multiplier to the point-in-time capital figure; Increased regulatory capital requirements for particular exposure types (higher risk weights than on the basis of Basel II, for macroprudential reasons);
Pillar 2	Link of supervisory review to state of the cycle;
<b>4. Funding liquidity standards</b>	Cyclically-dependent funding liquidity requirements; Concentration limits; FX lending restrictions; FX reserve requirements; currency mismatch limits; open FX position limits;
<b>5. Collateral arrangements</b>	Time-varying Loan-to-value (LTV) ratios; Conservative maximum loan-to-value ratios and valuation methodologies for collateral; Limit extension of credit based on increases in asset values; Through-the-cycle margining;
<b>6. Risk concentration limits</b>	Quantitative limits to growth of individual types of exposures; (Time-

	varying) interest rate surcharges to particular types of loans;
<b>7. Compensation schemes</b>	Guidelines linking performance-related pay to ex ante longer-horizon measures of risk; back-loading of pay-offs; Use of supervisory review process for enforcement;
<b>8. Profit distribution restrictions</b>	Limit dividend payments in good times to help build up capital buffers in bad times;
<b>9. Insurance mechanisms</b>	Contingent capital infusions; Pre-funded systemic risk insurance schemes financed by levy related to bank asset growth beyond certain allowance; Pre-funded deposit insurance with premia sensitive to macro (systemic risk) in addition to micro (institution specific) parameters;
<b>10. Managing failure and resolution</b>	Exit management policy conditional on systemic strength; Trigger points for supervisory intervention stricter in booms than in periods of systemic distress.

Source: Gabriele Galati and Richhild Moessner, 'Macroprudential policy – a literature review', BIS Working Paper 337, Monetary and Economic Department (Adapted from BIS (2008)), 2011, p. 10 <http://www.bis.org/publ/work337.pdf>

#### Time Series tools

The evidence suggests that counter cyclical capital requirements, together with forward-looking statistical provisioning schemes, might mitigate against the harmful effects of securitisation on risk concentration in the financial system. Some economists have also suggested that the optimal capital requirements in an economy where the main objective is to protect deposit insurance and main credit creation are time-varying.<sup>26</sup> Others have argued that one problem with this approach is that during times of distress, the regulatory constraint on bank capital might be insufficient to convince the markets to continue funding troubled banks and instead argue in favour of minimum capital ratios during good times which substantially exceed the standards that markets might impose in bad times.<sup>27</sup>

<sup>26</sup> Kashyap and Stein (2004)

<sup>27</sup> Hanson S, Kashyap A, Stein J, ; 'A Macroprudential Approach to Financial Regulation', 2010, <http://www.economics.harvard.edu/faculty/stein/files/JEP-macroprudential-July22-2010.pdf>

Another approach is to target other sources of procyclicality such as the interaction between practices concerning the valuation of collateral and loan-to-value ratios, which can be addressed through maximum loan-to-value (LTV) ratios.<sup>28</sup>

Another approach is loan loss provisions, an important channel through which a misassessment of risk can weaken banks' balance sheets and amplify the financial cycle. It has been argued that accounting practices, tax constraints and the methodologies used to measure risk cause provisions to increase during business cycle downturns. Forward looking provisioning could limit the observed strong procyclicality of loan provisions and could also take into account the credit risk profile of banks' loan portfolios along the business cycle.

The third is haircut-setting and managing practices in securities financing and over the counter derivatives transactions.

#### Cross-sectional tools

As stated earlier, the cross sectional dimension focuses on the distribution of risk in the financial system at a point in time and in particular the common exposures that arise owing to balance sheet interlinkages, similar exposures and associated behavioural responses. In the process macroeconomic dynamics are taken as exogenous. This includes systemic aspects of risk management or theories of systemic risk. Important elements within this perspective include market failures and propagation channels.

Most macroprudential tools discussed thus far pertain to the regulation of banks' capital. At the same time, the large share of short-term debt in banks' liabilities has been identified as a major source of banks' vulnerability. These vulnerabilities are often modelled as idiosyncratic shocks amplified through spillovers across the system, as in the studies that focus on credit chains and payments.

All these considerations have focused on researchers' attention on instruments that distinguish maturity structure of banks' balance sheets. The most prominent examples of such tools are the net stable funding ratio or a liquidity coverage ratio which have an element of procyclicality. One way to overcome this is to affect banks' incentives through liquidity risk charges that penalise short-term funding. Other proposals have argued for capital requirement surcharges that are proportional to the size of the maturity mismatch.

As in monetary policy, another distinction is between rules (built-in stabilisers) and discretion in calibrating the tools of macroprudential policy. Both the historical experience of monetary policymaking and the academic literature have shown that rules can be effective in promoting accountability, transparency and

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<sup>28</sup> Borio C 'Rediscovering the macroeconomic roots of financial stability policy: journey, challenges and a way forward', BIS Working Paper No 354, September 2011, <http://www.bis.org/publ/work354.pdf>



efficacy of monetary policy. As the literature on time-consistency shows, discretion based solutions, which would be first-best in terms of agents' utility, are time inconsistent, i.e. the policymaker decision-makers preferences change over time in such a way that what is preferred at one point in time is inconsistent with what is preferred at another point in time.<sup>29</sup> Thus, rules can ensure a second-best solution, although at the same time there is a common recognition that to be successful, monetary policy has to be flexible with discretion to be used in special circumstances.

By analogy, rule-based macroprudential tools such as automatic stabilisers are appealing. Loan loss provisions, capital requirements/capital surcharges, or loan-to-value ratios can for example be designed in a rules-based way. But discretion supervision which changes behaviours – particularly on compensation, will have a more significant impact.

Contingent instruments can be seen as a form of rule-based tools that are state-dependent. A number of papers have examined the design and usefulness of contingent capital instruments. Some distinguish two types of such instruments – “contingent reversibles” and “capital insurance”.<sup>30</sup> The former are debt securities that automatically convert into equity if the bank's regulatory capital fails below a fixed threshold. The latter is an insurance policy that a bank can purchase which pays off in a bad state of the world according to a pre-specified trigger.<sup>31</sup>

While rule-based tools are generally viewed as important, the policy debate has highlighted that discretionary tools like supervisory review of warnings are likely to play a key role, not least because the next crisis is likely to take a different form from the current one. One important discretionary tool is to issue warnings, through either speeches or the Financial Stability reports, about the build-up of risk in the system. A drawback of warnings is that it may have adverse effects if they turn into self-fulfilling prophecies.

One can also distinguish tools based on quantity restrictions and those based on price restrictions. Perotti and Suarez (2010) provide a theoretical treatment of price- vs quantity-based tools based on the model by Weitzman (1974). Weitzman shows that in the presence of these externalities the two types of policy instruments can have different welfare outcomes if there is uncertainty about compliance costs. Price-based tools (taxes) fix the marginal cost of compliance and lead to uncertain levels of compliance, while quantity-based tools fix the level of compliance but result in uncertain marginal costs. Perotti and Suarez (2010) compare the performance of Pigovian taxes aimed at equating private and social liquidity costs to that of quantity regulations such as net funding ratios. They show that when regulators cannot target individual

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<sup>29</sup> Kydland, F, and Prescott E, 'Rules Rather than Discretion: The Inconsistency of Optimal Plans', *Journal of Political Economy*, 85:3, pp. 473-501, 1977.

<sup>30</sup> Hanson S, Kashyap A, Stein J, ; 'A Macroprudential Approach to Financial Regulation', 2010, <http://www.economics.harvard.edu/faculty/stein/files/JEP-macroprudential-July22-2010.pdf>

<sup>31</sup> Ibid.

bank characteristics, the industry response to regulation is determined by the composition of bank characteristics. Hence, depending on the dominant source of heterogeneity, the optimum solution may be attained with Pigovian taxes, quantity regulations or a combination of both.

Among quantity restrictions, Hanson et al (2010) make the further distinction between ratios and absolute values in the context of their discussion of PCAs targeted at bank capital. They argue in favour of an approach that targets incremental amounts of new capital for troubled banks instead of increases in its capital ratio. The idea is that the former would avoid inducing banks to shrink their assets and hence induce procyclical behavior. As a possible application, Hanson et al (2010) propose to design capital ratio requirements in terms of the maximum of current and lagged assets.

Some studies also distinguish the context in industrial and emerging market countries. McCauley (2009) argued that emerging market central banks have been regular practitioners of macroprudential policy, without calling it by this name. As an example, he cited the Reserve Bank of India's decision to raise the Basel I weights on mortgages and other household credit in 2005 (RBI, 2005).

## Conclusion

In conclusion, there are several metrics, mechanisms and policy frameworks through which macroprudential oversight might be improved. However, as we have outlined, policymakers have yet to significantly improve on the regulatory architecture which existed prior to the financial crisis. Capital adequacy controls, 'firewalls' between different types of financial services and other changes, while significant in effect, risk repeating the regulatory approach before the financial crisis, characterised by regulatory arbitrage and 'get arounds'. Within this context (which we do not necessarily agree with), we have suggested some potential changes to the architecture of macroprudential oversight that are possible within the UK context.

Though significant progress has been made, it is not yet clear that this framework yet exists. This paper makes a number of suggestions:

### Macroprudential institutions

- *We should rebuild macroprudential supervision resources within the Bank of England.* These were hollowed out following the formation of the Financial Services Authority (FSA). It is important that policy continues to reflect the concept that macroprudential oversight is a central bank function.
- *There should be more external members with experience as market practitioners on the Financial Policy Committee, Prudential Regulation Authority and Financial Conduct Authority.* For example, only four out of 13 members of the FPC (including two non-voting members) are external, and all appointed by the Chancellor. We suggest that a majority of external members should be the norm.

- *The political independence of the FPC should be strengthened to ensure regulators are able to ‘take the punch bowl away’ regardless of political pressures.* This could include finding an alternative mechanism for the appointment of external members without the Chancellor's approval, as well as replacing a Treasury representative as a non-voting member. Giving the Treasury Select Committee veto power over appointments to the FPC and MPC, with a two-thirds majority necessary for approval would reinforce their procedural and political independence. This process is already in place in the United States.
- *We should maximise disclosure of these committees’ deliberations as far as possible to ensure clear communication with the market.* This will ensure the committees’ deliberations ‘have teeth’ without resorting to direct market interventions wherever possible.

#### Macprudential policy

- *Macprudential indicators need to be better developed and incorporated into macprudential governance.* Measures such as bank balance sheet liabilities (especially cross-exposures and non-core to core liabilities), credit to GDP ratios and monetary aggregates must be combined with consideration of the behavioural and empirical properties of these indicators which may not be evident from a legalistic or quantitative analysis. If the latter is the sole means of prudential oversight, regulatory failure may occur systemically.
- *Measures such as capital adequacy ratios and liquidity requirements are microprudential measures which do not address system risks to the financial system* such as the problem of excessive asset price growth during booms and sources of vulnerabilities in the financial system: in particular, reliance on short-term (particularly foreign currency denominated) funding bank balance sheet liabilities and resultant wholesale funding gaps.
- *Discretionary supervision is the best mechanism with which to address systemic risks.* The Basel III process (proposals for countercyclical capital buffers and capital surcharges for systemically important institutions for example), EU and to a large degree Vickers proposals all rely on ‘hard’ rules which proved inadequate in preventing the financial crisis and are unlikely to provide adequate protection or warning for future systemic crises. Probabilistic methods for the estimation of risks were instrumental in the banking system's collapse; such an approach also encourages the gaming of regulatory loopholes. Initiating behavioural change through discretionary means, particularly compensation, will be key. Policy Exchange will return to this subject in a later report.
- *We should explore alternatives to ‘one-size-fits-all’ capital requirements.* Capital buffers are there to be used in an emergency. The approach regulators have taken – of increasing capital requirements

when credit is scarce – is procyclical and counterintuitive. A discretionary approach, which allowed the Bank of England to mandate differing capital requirements (related to the riskiness of a firm's balance sheet as well as the economic cycle for example, as mooted through the FPC) would allow more flexibility.

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