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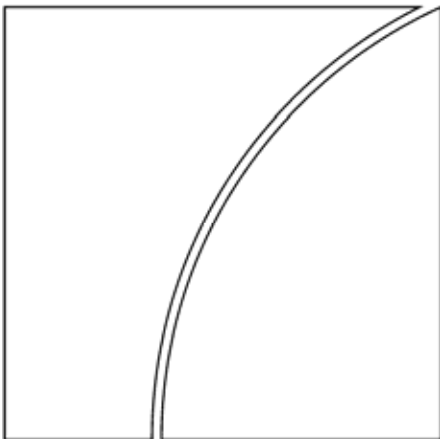
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Monetary and prudential policies at a crossroads? New challenges in the new century

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Abstract

It is hard to find a period in the post-war era in which inflation-adjusted interest rates have been so low for so long and monetary and credit aggregates have expanded so much without igniting inflation (the “Great Liquidity Expansion puzzle”). What lies behind these developments? How benign are they? This paper argues that financial liberalisation, the establishment of credible anti-inflation monetary policies and (real-side) globalisation have resulted in subtle but profound changes in the dynamics of the economy and in the challenges faced by policymakers. In the new environment which has gradually been taking shape, the main “structural” risk may not be so much run away inflation. Rather, it may be the damage caused by the unwinding of financial imbalances that occasionally build up over the longer expansion phases of the economy, typically spanning more than one higher-frequency business cycle. Depending on its intensity, the unwinding can lead to economic weakness, unwelcome disinflation and possibly financial strains. The analysis has implications for monetary and prudential policies. It calls for a firmer long-term focus, for greater symmetry in policy responses between upswings and downswings, with more attention being paid to actions during upswings, and for closer cooperation between monetary and prudential authorities. In recent years, the intellectual climate and policy frameworks have gradually evolved in a direction more consistent with this perspective. At the same time, obstacles to further progress remain. They are of an analytical, institutional and, above all, political economy nature. Removing them calls for further analytical and educational efforts.

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“The greater our knowledge increases the more our ignorance unfolds”

John F Kennedy

Introduction¹

In recent years, when judged against traditional macroeconomic yardsticks, developments in global interest rates and measures of “liquidity” have been remarkable. It is hard to find a period in the post-war era in which inflation-adjusted interest rates have been so low for so long and monetary and credit aggregates have expanded so much *without* igniting inflation (Graph 1). And by and large this has occurred against the backdrop of strong global growth, with historically record rates of late. One might even call this the Great Liquidity Expansion puzzle.²

From one perspective, this seemingly benign constellation of observations could be taken as a further confirmation of the so-called Great Moderation. The economic performance of much of the industrialised world since at least the 1990s, if measured in terms of short-term output volatility, has improved significantly compared with the past, not least with the Great Inflation era.³ Have we finally reached the promised land of sustainable, non-inflationary growth? Have we finally mastered the secrets of the inner workings of the economy?

On the surface at least, there are good grounds to believe that we have learnt from past mistakes. No one could dispute that the drawn-out but successful battle against inflation has been fundamentally shaped by the lessons learnt in the 1970s. Likewise, it would be foolhardy to deny that the length of the current economic expansion, like that of the previous one in the 1990s, has a lot to do with inflation quiescence. Compared with the past, there has been less need for central banks to tighten aggressively in order to fight strong inflationary pressures. No doubt, greater anti-inflation credibility has better anchored inflation expectations. The remarkably benign effects of the latest oil price shock, at least so far, are testimony to this newfound stability.

And yet, past experience should counsel caution. Some of the most serious risks in the past have not arisen from the mechanical repetition of errors in identical circumstances. They have stemmed from the interaction between policy and changes in the economic environment (eg BIS (2005a) and Knight (2006)). And they have arguably reflected overconfidence in our ability to understand economic processes, a sense that policy was finally on the right track. It was so in the 1960s when, having “digested” the lessons of the Great Depression, policymakers thought that they had understood how to achieve full employment at the cost of moderate inflation. It was so in the lead-up to the Asian crisis, when fiscal probity and low inflation were seen as guaranteeing the sustainability of the Asian boom. And it was so even in the lead-up to the Great Depression, when the roaring twenties held out the promise of permanent prosperity.

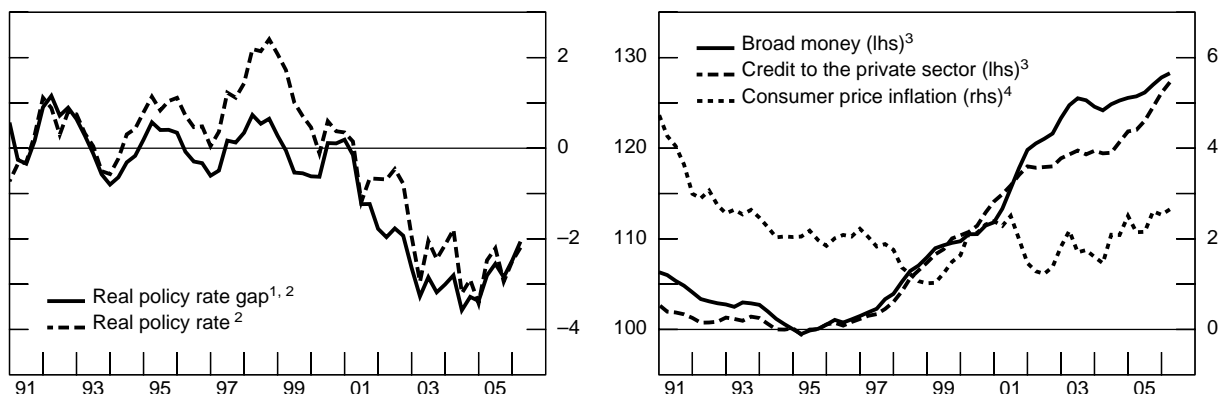
Might we not be overestimating our understanding of the economy yet again?

¹ This keynote lecture was prepared for the workshop on “The architecture of financial system stability: from market micro structure to monetary policy” organised by the European University Viadrina, Germany and Wilfrid Laurier University, Canada in Capri on 24-26 May 2006. I would like to thank Andy Filardo, Dubravko Mihaljek, Madhu Mohanty, William White and Feng Zhu for their comments and suggestions. The views expressed are my own and do not necessarily reflect those of the Bank for International Settlements.

² The vaguer term “liquidity” is used instead of “monetary” to encompass a broader range of measures, including, in particular, credit aggregates.

³ On these issues, see eg Blanchard and Simon (2001), Dalsgaard et al (2002), Stock and Watson (2003) and Galati and Melick (2006).

Graph 1
The Great Liquidity Expansion puzzle



Note: Data for the G3 (the United States, euro area and Japan) are weighted averages, based on 2000 GDP and PPP exchange rates. Prior to 1999, euro area data are calculated from member countries' statistics.

¹ Defined as the real policy rate less the natural rate. The real rate is the nominal rate adjusted for four-quarter consumer price inflation. The natural rate is defined as the average real rate (1985–2005; for Japan, 1985–95) plus the four-quarter growth in potential output less its long-term average. ² Quarterly averages, in percentage points. ³ Relative to nominal GDP, 1995 = 100. ⁴ In per cent.

Sources: IMF; OECD; national data.

In some research work carried out at the BIS we have been exploring this possibility. Our main motivation has been to avoid the risk of one-sidedness in the interpretation of economic trends. Our focus has been on changes in what one might call the “tectonic plates” of the world economy, on those deep forces that, slowly but cumulatively, can fundamentally alter the configuration of economic phenomena on the surface. Our goal has been to identify how the challenges faced by central banks may have been changing and to suggest possible solutions, conditional on that diagnosis.

In our analysis, we have been focusing on a triad of deep-seated forces: financial liberalisation, the establishment of credible anti-inflation monetary policies and, more recently, (real-side) globalisation.⁴ Each of them, taken in isolation, is undoubtedly beneficial. All of them, in isolation *and* as a package, are precious and worth safeguarding. Taken together, though, they may have been changing the workings of the global economy in subtle ways that may not have been fully grasped, springing up new challenges from unsuspected quarters. Safeguarding the benefits of these remarkable forces may thus call for adjustments to current policy frameworks.

The overarching hypothesis we have been exploring is that in the new environment which has gradually been taking shape, the key “structural” risk may not be so much run away inflation. Rather, it may be the damage caused by the unwinding of financial imbalances that can build up over the longer expansion phases of the economy, typically spanning more than one higher-frequency business cycle. The unwinding can lead to economic weakness, unwelcome disinflation and possibly severe financial strains.

We have used the term “elasticity” to refer to the property of the economy which makes it more vulnerable to the cumulative, if occasional, build-up of imbalances (Borio and Lowe (2002a), Borio and White (2004)). The analogy is with an elastic band, which can be extended further, but which at some point could snap.⁵

⁴ The stress here is on real-side globalisation, as the implications of financial globalisation are already largely subsumed under financial liberalisation. For a discussion centred on these two dimensions of globalisation, see BIS (2006).

⁵ Another term used is “excessive procyclicality”, especially when dealing with the prudential policy implications; see Borio et al (2001).

The analysis has implications for monetary and prudential policies. In a nutshell, it calls for a firmer long-term focus, for greater symmetry in policy responses between upswings and downswings, with more attention being paid to actions during upswings, and for closer cooperation between monetary and prudential authorities. These refinements to current policy frameworks reinforce the more durable lessons learnt from the past. They highlight the importance of long-term horizons, of heightened prudence in good times and of avoiding the shoals of time-inconsistent responses. But they do so from a fundamentally different perspective from the one to which we are accustomed.

Since these arguments were first articulated a few years ago, they have contributed to a broad-ranging debate. On balance, it is fair to say that they have found a more receptive audience among policymakers than among academics. They may have helped to better rationalise policy changes already in train. And they may even have indirectly contributed to some of those changes, by adding yet another perspective to discussions of monetary and prudential questions.

In this lecture, I would like to revisit these issues and extend the analysis a bit further. The revisiting part involves a summary of the main elements of the hypothesis and of some of the supporting empirical evidence. The extension part involves elaborating on the role of (real) globalisation, on what might be termed the Great Liquidity Expansion puzzle and on the degree to which policy initiatives have been consistent with the analysis put forward.

My remarks are divided into three sections. The first sets out the basic hypothesis, developing the implications of the changes in the financial, monetary and real economy regimes for the elasticity of the economy and hence for the nature of business fluctuations and for the nexus between monetary and financial stability. Special attention is paid to the role of globalisation, less discussed in previous work. The second section reviews the empirical evidence for the hypothesis. Here again, particular attention is paid to the more novel aspects of the work. The final section takes stock of policy changes in the monetary and financial arenas, highlighting what has been done and the challenges ahead.

I. The hypothesis

The basic hypothesis is that changes in the financial, monetary and real economy regimes worldwide may have been subtly altering the dynamics of the economy and hence the challenges that monetary and prudential authorities face (Borio and Lowe (2002a), Borio and White (2004) and Borio (2005)).

Financial liberalisation may have made it more likely that financial factors in general, and booms and busts in credit and asset prices in particular, act as drivers of economic fluctuations. The establishment of a regime yielding low and stable inflation, underpinned by central bank credibility, may have made it less likely that signs of unsustainable economic expansion show up first in rising inflation and more likely that they emerge first as excessive increases in credit and asset prices (the “paradox of credibility”). And the globalisation of the real economy may have represented a sequence of pervasive supply side “shocks”, raising world growth potential and helping to keep inflation down while at the same time encouraging the asset price booms on the back of liquidity expansion.

As a result, the current environment may be more vulnerable to the *occasional* build-up of financial imbalances, ie overextensions in (private sector) balance sheets. These imbalances herald economic weakness and unwelcome disinflation down the road, as they unwind. The unwinding may occur either because inflation eventually *does emerge* and the central bank is forced to tighten or because the boom falters *under its own weight*.

The role of the financial regime

The financial liberalisation wave that the world has witnessed since the 1980s has been spectacular. Over the last couple of decades of the past century, heavily controlled and segmented domestic financial systems gave way to a lightly regulated, open and competitive global financial environment. To use a famous phrase coined by Padoa-Schioppa and Saccomanni (1994), by the early 1990s the transformation from a government-led to a market-led financial system was essentially complete.

Financial liberalisation is undoubtedly critical for a better allocation of resources and long-term growth. The serious costs of financial repression around the world have been well documented. But financial liberalisation has also greatly facilitated the access to credit. It has therefore also increased the scope for perceptions of wealth and risk to drive the economy, more easily supported by external funding. More than just metaphorically, we have shifted from a cash flow-constrained to an *asset-backed global economy*.⁶

During booms, self-reinforcing processes can develop. These are characterised by rising asset prices, falling perceptions of risk, loosening external financing constraints and rising output. Financial imbalances arise when, less constrained by this looser anchor, the processes go too far. Under the surface, distortions in the real economy develop, notably in the form of capital misallocations, masked by the shiny financial gloss. As a result, the financial system does not build up sufficient cushions and loses resilience, thereby sowing the seeds for a subsequent bust. And the real-side distortions result in a more protracted and costly adjustment.

The deep reasons why the physiological and benign inherent “procyclicality” in the financial system can give rise to such occasional “pathological” episodes of “excessive procyclicality” are not well understood. We have argued elsewhere, however, that the pathological manifestations can arise from two “gaps” (Borio (2003) and Knight (2003)). They relate, respectively, to risk perceptions and incentives.

The *risk perceptions gap* refers to the observation that economic agents seem to be better at measuring the cross-sectional than the time dimension of risk, especially that of system-wide risk (Borio et al (2001) and Lowe (2002)). Market indicators of risk, such as price-earnings ratios and credit spreads, tend to be comparatively low close to the peak of the financial cycle. And this is precisely when, at least in hindsight, risk is highest.⁷ Markets behave as if risk fell in booms and rose in recessions. But it may be better to think of risk as rising in booms, if and when financial imbalances build up, and as materialising in recessions, as they unwind. The length of the horizon over which risk is assessed is key here, as short horizons can lull economic agents into a false sense of security.

The *incentives gap* refers to the possibility that actions that may be rational, or indeed compelling, at the level of individual agents or institutions need not result in desirable aggregate outcomes. Familiar notions here include prisoner’s dilemmas, coordination failures and herding. For instance, it may not be reasonable to expect a bank or asset manager to trade off a sure loss of market share in a boom against the distant hope of regaining it in a future potential slump. Here again, short horizons are key. And they may, in turn, result from the contractual mechanisms designed to overcome “asymmetric information” obstacles, which may thus have unintended consequences. The routine monitoring of performance based on short-term benchmarks is one such example.⁸

⁶ To my knowledge, the term “asset-backed economy” was first used by Calverley (2004).

⁷ As we shall see later, crisis indicators exploit this relationship.

⁸ On these issues, see also Rajan (2005).

The role of the monetary regime

The story of the great battle against inflation is well known. Since the 1990s, we have entered a phase of low and stable inflation across most of the world. This has gone hand-in-hand with institutional changes designed to hard-wire this success. They have taken the form of the establishment of monetary policy regimes focused on inflation control and underpinned by a greater degree of central bank independence.

It is equally well appreciated now that high and variable inflation can distort the allocation of resources and generate financial instability. Both a priori reasoning and past experience attest to this.

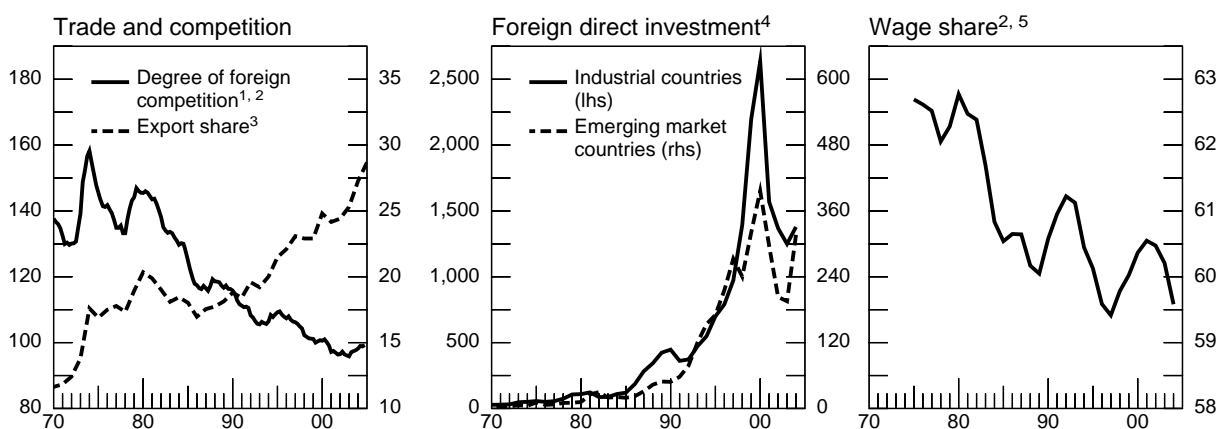
But financial imbalances can and do also develop in a low inflation environment. Favourable supply side developments can easily trigger and support the overly optimistic expectations that tend to fuel unsustainable booms. These, in turn, naturally put downward pressure on prices. More subtly, the credibility of policymakers' commitment to price stability, by anchoring expectations and hence inducing greater stickiness in prices and wages, can attenuate and significantly delay the inflationary pressures normally associated with the unsustainable expansion of aggregate demand. This can be regarded as a "paradox of credibility" (Borio and Lowe (2002a)). And low inflation, by obviating the need to tighten monetary policy, can also remove a key constraint on the development of the imbalances. There is a risk of unwittingly accommodating their build-up.

The role of the real economy regime

To my mind, the changes in the financial and monetary regimes just described are sufficient to increase the elasticity of the economic system. They provide the tinder to fuel the occasional wildfire. And the transitions from a repressed financial system to a liberalised one or from high to low inflation can themselves supply the necessary spark to ignite it.

In our more recent work, however, we have been paying closer attention to the additional role of the globalisation of the real economy (BIS (2005a), (2006) and Borio and Filardo (2006)). True, the deeper integration of goods and services markets has been a gradual process throughout the post-war period. But it has no doubt accelerated since the early 1990s, with the integration into the market system of previous command economies such as China and the former Soviet Union and with a greater acceptance of market principles across many developing countries, not least India (Graph 2). The atomisation of production

Graph 2
Indicators of globalisation



¹ Export prices/GDP deflator for G10 countries. ² Weighted average based on 2000 GDP and PPP exchange rates; in per cent. ³ World exports/GDP, in per cent. ⁴ Sum of gross foreign direct investment inflows and outflows; in billions of US dollars. ⁵ Total economy in the G10 countries; as a percentage of value added.

Sources: IMF; OECD; United Nations; national data.

processes across borders (the so-called “supply chains”) and the increasing tradability of services through outsourcing are among the most concrete manifestations of this process.

The potential impact of globalisation is multifaceted. It can be either direct or, more importantly perhaps, indirect, through interactions with monetary policy. What these various mechanisms have in common is that, under some conditions, they can all increase the “elasticity” of the economic system.

First, globalisation may have provided a spark or, more precisely, a sequence of sparks to ignite financial imbalances. The globalisation wave has freed previously untapped resources, representing a significant outward shift in the production frontier of the world economy.⁹ In particular, the effective increase in the labour force directly and indirectly “plugged into” the global economic system has been enormous (Freeman (2005)). Especially in China, the concrete possibility of shifting the corresponding underemployed resources to more productive uses at little additional cost can result in rather “soft” constraints on potential output, at least over the medium run. Moreover, globalisation has surely improved the efficiency with which resources are employed across the world. It has thereby leveraged comparative advantages and promoted a better dissemination of technological know-how, not least through foreign direct investment flows. Other things equal, by simultaneously putting downward pressure on prices and underpinning output growth, globalisation may also have given a pervasive boost to asset valuations across the globe.

Second, globalisation may have helped to underpin central bank credibility. The tailwinds of globalisation have arguably supported the disinflation process and made it easier, at least so far, to keep underlying inflation low in the face of increases in the prices of oil and other commodities.¹⁰ By the same token, they may have contributed to strengthening central bank credibility, anchoring expectations more firmly. Thus, surprisingly perhaps, the “paradox of credibility” and globalisation may be related and mutually reinforcing.

Third, if the nature of its *medium-term* disinflationary forces is not properly understood, globalisation could contribute to excessive monetary policy accommodation. Starting from a low level of inflation, favourable supply side developments could easily threaten to tip inflation below comfortable levels and into negative territory. In contrast to demand-driven deflations, however, such supply side-driven ones have historically been quite benign (eg Borio and Filardo (2004), Bordo et al (2004) and Bordo and Filardo (2005)). Not least, they have tended to go hand-in-hand with rising asset prices, liquidity expansion and strong output performance. One recent example is the strong expansion of China despite falling prices for goods and services in the late 1990s and, intermittently, some of the early years of the new century. Another is the even more recent experience of Sweden. The risk here is that by resisting these tailwinds too much through an easing of policy, the monetary authorities may further accommodate the build-up of financial imbalances (see below).

⁹ More generally, any major improvements in the production possibilities of the economy would have a similar effect; a faster rate of technological advances is one other such example. Higher productivity growth driven by technological change has played a prominent role in some countries over the last decade or so, not least in the United States. The focus on globalisation derives from the broader geographical extension of the phenomenon.

¹⁰ There is no denying that, in the long run, inflation is a monetary phenomenon; however, *over any reasonable horizon relevant for policy*, real factors can have a significant effect. First of all, there is a direct effect, which includes the impact on prices and wage dynamics, *given monetary conditions*. There is also an indirect effect, reflecting the interaction between globalisation and *monetary policy decisions*. Central banks may choose to accommodate unexpected positive supply developments (“shocks”) so as to gradually guide inflation lower, as noted in the so-called “opportunistic approach” to disinflation. While most central banks have adopted firmer inflation objectives since the 1990s, they all recognise that the pace at which inflation should be brought back towards the objective depends on the nature of the shocks to the economy and their resulting implications for the output costs of the adjustment. In addition, and more importantly, the authorities may have less than full control over the inflation rate over the short- and even medium-term horizons. For example, systematic underestimation of the influence of increases in global capacity on domestic prices could lead to systematic overestimation of inflation and a downward trend in policy rates to counteract it. They may not use the appropriate “model” of the economy, be unable to identify accurately the forces affecting it or have limited leverage over its evolution. Under these conditions, the influence of real developments such as increases in productivity growth or potential output could exhibit themselves as lower inflation. For a discussion of these and other channels, see Borio and Filardo (2006) and BIS (2005a), (2006)).

Paradoxically, excessive resistance to “good deflations” can, over time, lead to “bad deflations”, if the imbalances eventually unwind in a disruptive manner (Borio and Filardo (2004), White (2006a)).

Finally, under some conditions, globalisation could actually cloud the emergence of *short-term* inflation pressures, thereby further delaying the necessary monetary tightening. Globalisation has arguably implied that country-specific measures of slack in goods and labour markets have become less reliable as a guide to inflation pressures. In a world characterised by greater substitutability in goods and factor inputs, we would expect measures of global excess demand pressure to have gained significance at the expense of purely domestic ones. There is a sense in which the inflation process may have become less country-centric and more globe-centric (Borio and Filardo (2006)). If so, the risk is that, by focusing excessively on more traditional and purely *domestic* indicators of slack, the authorities might underestimate the build-up of near-term inflation pressures, if in fact *global* conditions turned out to be tighter.

Two stylised paradigms: the orthodox and the unorthodox

It is worth bringing these arguments together by highlighting the analytical differences between the paradigm just developed and the one prevailing in much of the current academic work. For want of a better term, we call them the “unorthodox” and “orthodox” paradigm, respectively (Borio and White (2004)). Table 1 summarises the differences in an intentionally highly stylised way.

The “orthodox” paradigm stresses a number of points. In the simplest benchmark models, inflation is a sufficient statistic for distortions in the economy: stabilising prices stabilises output around its “natural” or flexible price equilibrium (eg Woodford (2003)).¹¹ By and large, financial factors play a peripheral role. In some mainstream versions of the models, they act as amplifying mechanisms for business fluctuations, through such channels as the financial accelerator mechanism (eg Bernanke et al (1999)). But, in our terminology, these are benign physiological procyclical forces; there is no role for financial imbalances as such. In particular, business fluctuations are seen as largely driven by sequences of exogenous economic shocks, with the economy quickly converging towards equilibrium. In effect, non-linearities are assumed away or to be of second order. Procyclical, time-varying risk

Table 1

Two stylised paradigms for economic fluctuations

	Orthodox	Unorthodox
Price stability for economic stability?	sufficient	not sufficient
Role of financial factors	peripheral	core
Financial imbalances/instability	little importance	critical
Business cycle	exogenous shocks – rapid convergence to equilibrium	endogenous – self-perpetuating cycles
Non-linearities	unimportant	critical
Changing risk tolerance	unimportant	critical
Rational expectations	standard	too constraining

¹¹ Woodford himself, of course, recognises that other “rigidities” or frictions could play a role, violating this “divine coincidence”, as termed by Blanchard (2005). Wage rigidities are one such example, which would imply seeking to stabilise wages too (eg Blanchard and Gali (2005)). Dupor (2002) argues that financial rigidities could provide a rationale for stabilising asset prices.

tolerance of economic agents is unimportant. And rational expectations are standard, so that agents and policymakers are assumed to know the model of the economy and to use this information optimally.

The “unorthodox” paradigm is quite different. While strongly contributing to macroeconomic stability, price stability is not per se sufficient to ensure it. Financial mechanisms are at the core of business fluctuations, and the occasional build-up of financial imbalances is critical for output and inflation dynamics, as emphasised to varying degrees in the work of Kindleberger (1995) and Minsky (1982). Harking back to an even earlier intellectual tradition, the paradigm stresses the endogenous, self-perpetuating nature of business fluctuations.¹² Non-linearities and discontinuities are critical. Changing risk tolerance and risk premia play an important role in initiating and amplifying output dynamics. And the assumption of rational expectations is too constraining, unable to capture the endemic uncertainty in economic life.

II. The evidence

There are various pieces of evidence that are broadly consistent with the basic hypothesis outlined here. None of them, of course, is decisive. Some are at best suggestive. But, taken together, they do indicate that the implications of the hypothesis are worthy of further exploration and consideration in policymaking.

Five such pieces of evidence deserve highlighting: the pattern of financial booms and busts since financial liberalisation; the predictive content of financial imbalances; the coexistence of financial imbalances and low inflation; the implications of globalisation for inflation; and the signs of policy accommodation. Given previous work, in what follows I will recall briefly the first three and elaborate a bit more on the last two.

Credit and asset price booms and financial liberalisation

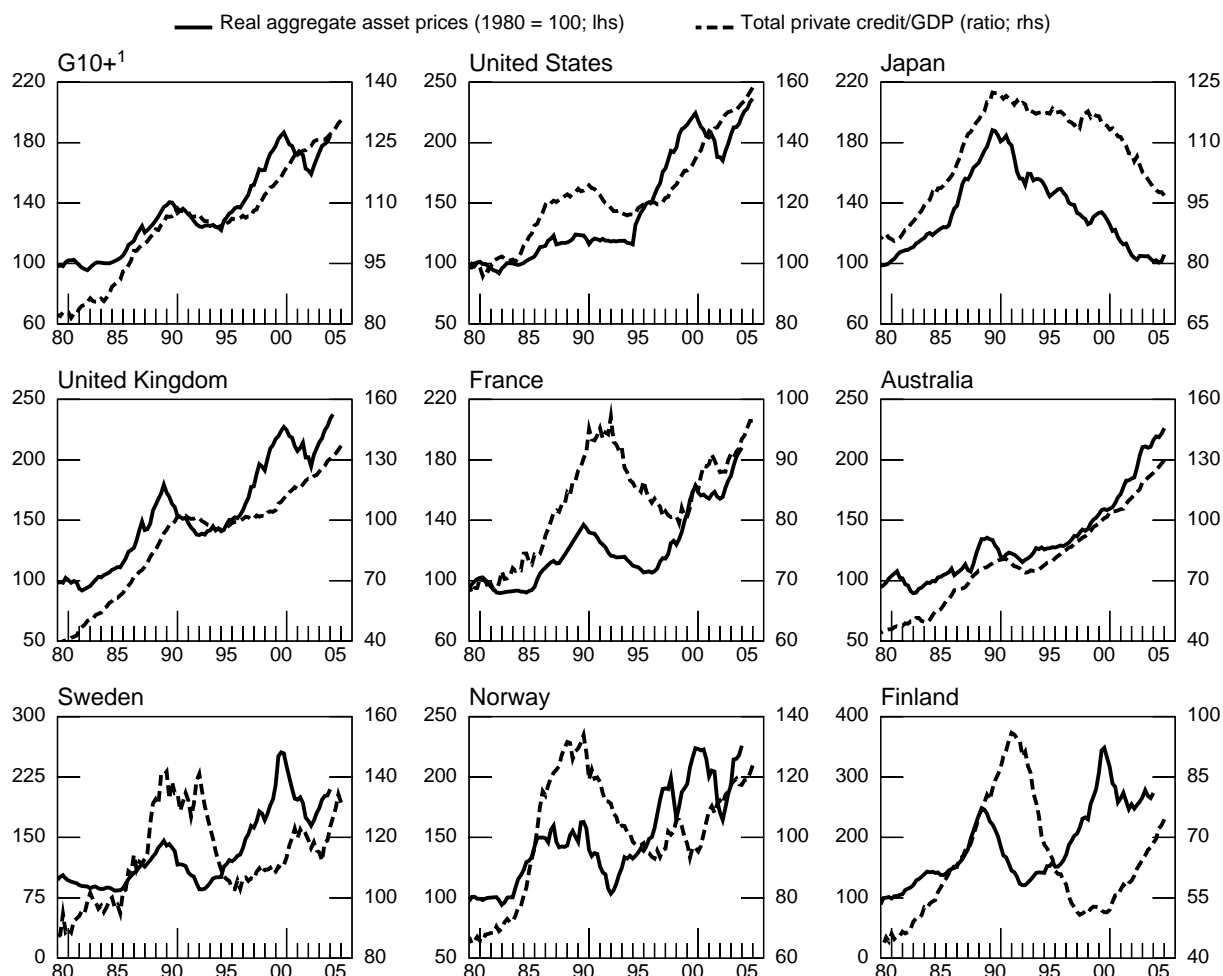
Especially since financial liberalisation in the early 1980s, we have seen larger booms and busts in credit and asset prices. These have often been followed by outright financial crises or at least serious financial strains with material consequences for the real economy.

The experience of the financial crises in emerging market countries is well known. Graph 3, however, illustrates that a similar, if more muted, phenomenon has also been taking place in the advanced industrial world. The pattern is highlighted through the use of an aggregate asset price index, which combines equity and property prices, for both residential and commercial properties. The evidence indicates that since the early 1980s medium-term cycles, lasting around a decade, are clearly pervasive. The close link between (private sector) credit and asset prices stands out, both in the aggregate and for the residential property segment (Graph 4). The existence of this link has also been supported by more rigorous empirical evidence.¹³ The ex post output costs associated with the booms and busts have also received considerable attention (IMF (2003), Detken and Smets (2004), Cecchetti (2006)).

¹² This refers to the pre-Keynesian business cycle tradition, encompassing such widely different views as those of Hayek (1933), Schumpeter (1939), Pigou (1929) and Fisher (1932), as well as the post-war school that stresses endogenous business cycles, including Burns and Mitchell (1946) and Zarnowitz (1999).

¹³ For some examples, see Borio et al (1994), Gerlach and Peng (2002), Hofmann (2001), Davis and Zhu (2004) and Goodhart et al (2005).

Graph 3
Large medium-term swings in asset prices and credit



¹ GDP-weighted average of the Group of Ten countries, plus Australia, Denmark, Finland, Norway and Spain; weights based on 2000 GDP and PPP exchange rates.

Sources: Private real estate associations; national data; BIS calculations.

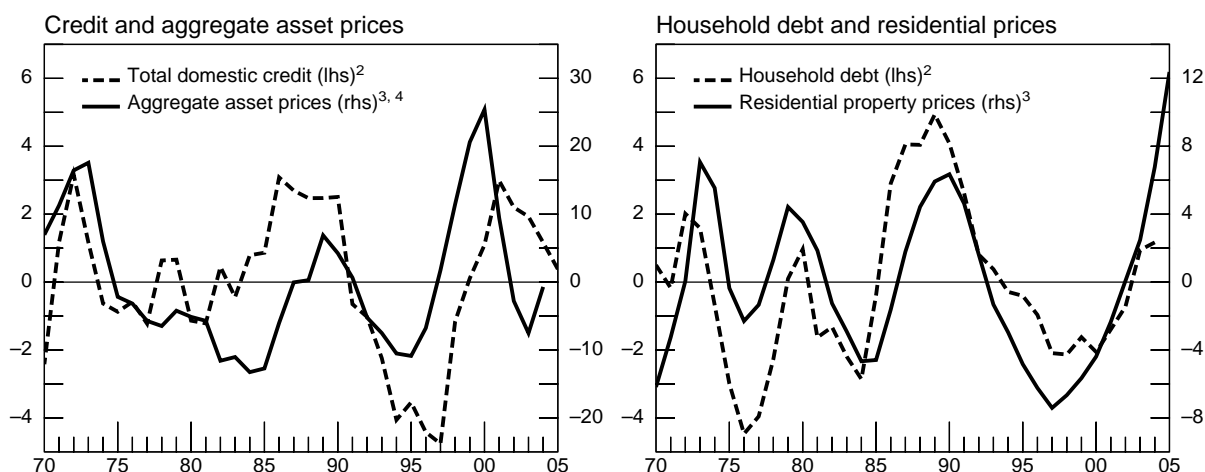
The predictive content of financial imbalances

More formal empirical evidence suggests that simple indicators of financial imbalances can help to *predict* banking distress, economic weakness and *disinflation* over a 3–5 year horizon *as the boom develops* (Borio and Lowe (2002a, 2002b, 2004) and Table 2).

Crucially, the indicators are based on *real-time* measures of *joint* excessive asset price increases and credit growth. The proxies are intended to measure the coexistence of asset price misalignments with a limited capacity of the system to absorb the asset price reversal. Misalignments are simply captured by deviations of equity¹⁴ and possibly exchange rates from trend, and the absorption capacity of the system by the ratio of private sector debt to GDP. Importantly, these indicators are based only on *ex ante* information, ie on information

¹⁴ Equity, as opposed to real estate, prices were used simply because of restrictions on data availability. Conceptually, real estate prices should be expected to perform better. If anything, it is surprising how much mileage one can get by simply relying on equity prices. In part, this may result from the historically close correlation between the two asset classes, with booms and busts being temporally close and with peaks in equity prices tending to lead those in real estate prices by about a couple of years (Borio and McGuire (2004)). This tight correlation has been less in evidence in the cycle under way.

Graph 4
Credit, asset prices and household debt¹



¹ Weighted average for G10 countries, based on 2000 GDP and PPP exchange rates; 1970 and 2004 figures are partly estimated. Data are deviations from trend calculated using a two-sided Hodrick-Prescott filter. ² As a percentage of GDP. ³ Nominal prices, deflated by the personal consumption deflator. ⁴ Weighted geometric mean, based on net wealth data, of three asset classes (equity, residential property and commercial property).

Sources: OECD; national data; BIS calculations and estimates.

Table 2

Financial imbalances¹ as predictors of banking distress, output weakness and disinflation

Horizon (years) ⁴	Banking distress ²					Industrialised countries ³				
	Industrialised countries		Emerging market countries			Credit gap (4) and equity gap (60)		Credit gap (4), equity gap (60) and output gap (2)		
	Credit (4) and asset price (40)		Credit (4) and (asset price (40) or exchange rate (13))		Horizon (years) ⁴	Banking distress		Horizon (years)	Output weakness	Disinflation
	Noise/signal	% crises predicted	Noise/signal	% crises predicted		Noise/signal	% crises predicted		Conditional probabilities ⁵	
1	0.09	50	0.16	67	3	0.06	47	2	55 (1.06)	36 (-1.07)
1, 2	0.06	56	0.12	71	3, 4	0.02	47	3	99** (2.91)	55 (0.31)
1, 2, 3	0.04	63	0.09	75	3, 4, 5	0.02	73	4	1.00 ⁶ —	92* (2.38)

¹ The proxies for financial imbalances are calculated based on deviations of the corresponding variables from ex ante (one-sided) recursive Hodrick-Prescott filter trends ("gaps", with percentage points in brackets). The value of lambda is 1,600 (for annual data) and 400,000 (for quarterly data). Depending on the exercise, the variables used include the ratio of private sector credit to GDP, inflation-adjusted equity prices, the real effective exchange rate and the output gap (conventionally measured, with lambda equal to 1,600 in quarterly estimation). ² Annual data. ³ Quarterly data. ⁴ A signal is correct if a banking crisis takes place in any of the corresponding years ahead included in the horizon. ⁵ Conditional probabilities of output weakness (ex ante output gap smaller than minus 1%) and of a decline in inflation (average for the year) in the given year ahead. The corresponding unconditional probabilities are 39% (output weakness) and 50% (decline in inflation). Z statistics for the probit regressions in brackets. Two and one asterisks correspond to statistical significance at the 1% and 5% level, respectively. ⁶ Conditional probability calculated by counting the frequency of events; the econometric routine does not converge. If the output gap is excluded from the indicator, the corresponding figures for the combined credit and equity gap are 41 (0.50), 66** (5.54) and 75** (7.00) for the horizon in year 2, 3 and 4 ahead respectively.

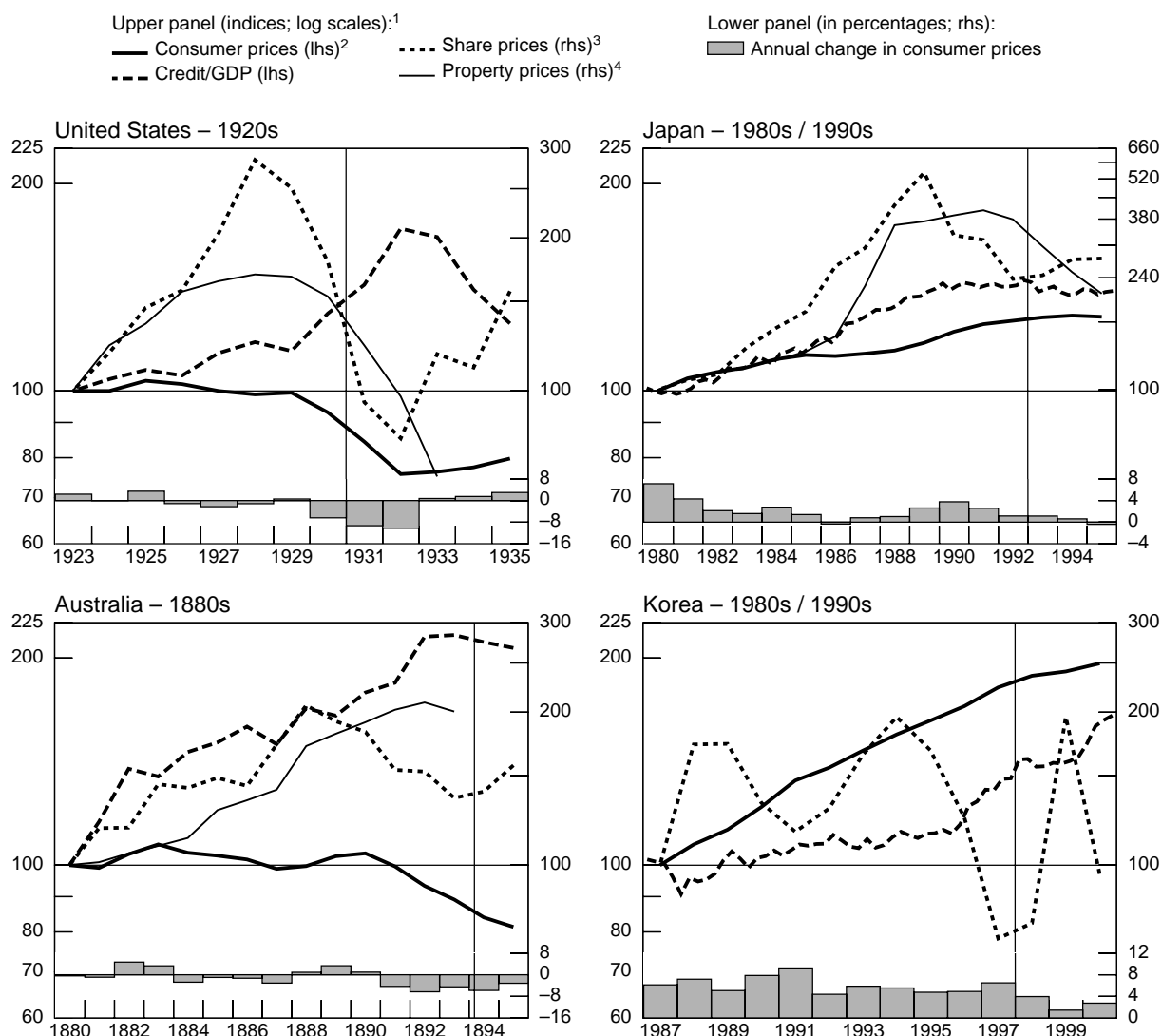
Sources: Borio and Lowe (2002b, 2004).

that is available at the time the assessments of vulnerabilities are made; in particular, the trends are calculated only up to that point. And the information content is *additional* to that contained in output gap measures and the past history of inflation.

Financial imbalances and low inflation

The above evidence does not differentiate between periods of high and low inflation, or between those of rising and falling inflationary pressures. Experience indicates, however, that while present during high inflation periods, financial imbalances have also occurred during periods of low and stable inflation (Graph 5) (Borio and Lowe (2002a)). In the distant past, well known examples include the financial crises during the classical and exchange gold standards (Bordo et al (2001), Goodhart and De Lary (1999) and Eichengreen and Mitchener (2003)). More recently, cases in point include the experience in Japan and several countries in East Asia and, without a full-blown crisis following, in the United States. Arguably, at present, developments in China as well as in housing markets in many countries

Graph 5
Low and stable inflation and financial instability: selected episodes



¹ Base year: for the United States, 1923; for Japan, 1980; for Australia, 1880; for Korea, 1987. ² For Australia, GDP deflator. ³ For the United States, S&P 500; for Japan, Nikkei 225; for Australia, All Ordinaries. ⁴ For the United States, Chicago land value; for Japan, Tokyo commercial land prices; for Australia, Melbourne capital value of rateable property.

Sources: For property prices: Tokyo National Land Agency and local governments; Chicago, Hoyt (1933); Melbourne, Kent and D'Arcy (2001); otherwise, Taylor "Global Financial Data" (database) and national data; Borio and White (2004).

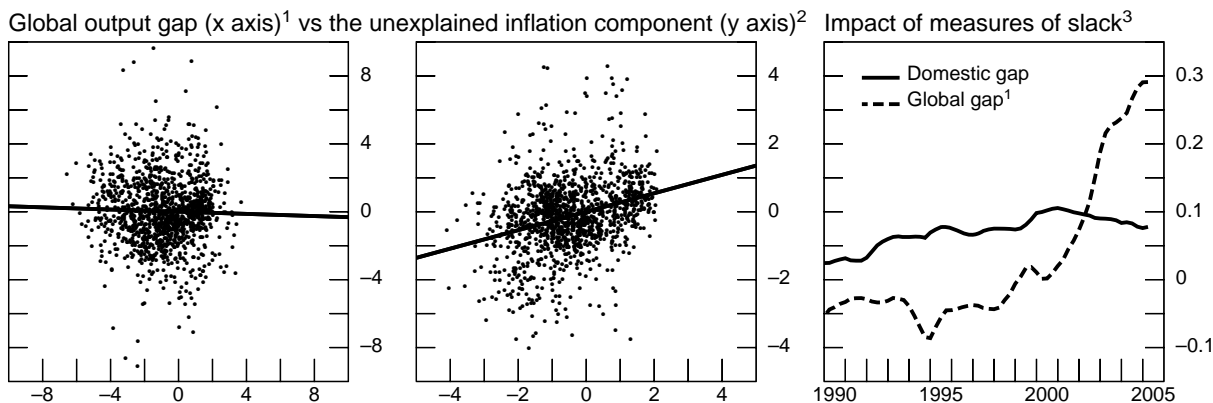
around the world exhibit similar characteristics (Borio and McGuire (2004), BIS (2005a)). I will return to this point later. Moreover, the same evidence also suggests that, if anything, *on average* inflation declines as financial imbalances build up ((Borio and Lowe (2002a)).

Globalisation and disinflation

Within the business world and policymaking circles, the notion that globalisation may have been helping to reduce and then keep inflation under control has become common currency. In academia, however, this proposition has not received much attention.¹⁵ The evidence so far has indeed been suggestive of an effect of globalisation on inflation, at least based on the more recent experience (Tootell (1998), Morimoto et al (2003) and Ciccarelli and Mojon (2005)).¹⁶

Exploratory work that we have done at the BIS has also been supportive of this effect (Borio and Filardo (2006)). We have focused on one specific implication of globalisation, namely the expectation of a stronger impact of global measures of slack in addition to, and possibly at the expense of, purely domestic ones. Graph 6 illustrates this point. The scatter plot shows that over a large set of industrial countries there is an economically and statistically significant impact of global slack measures on inflation. This influence is discernible over and above any effect that might result from domestic measures of slack. And it has grown over time, as indicated by the rising coefficient from a panel regression calculated over 20-year intervals. While not shown, these results are also confirmed in single-country regressions and survive the inclusion of various controls, such as import and oil prices.

Graph 6
Global measures of slack and domestic inflation



Note: The first two panels cover the periods 1972–92 and 1985–2005 respectively.

¹ Measured as a weighted average of the output gaps of the top 10 importers per country, with weights corresponding to their import shares. The results also hold for other measures of global slack. ² Residual from a regression of the deviation of actual CPI inflation from underlying inflation on the domestic output gap for 16 industrial economies (including the euro area where possible). The output gap is measured using a Hodrick-Prescott filter. Underlying inflation is measured with a Hodrick-Prescott filter on core inflation.

³ Coefficient of a 20-year rolling regression ending in the corresponding year.

Source: Borio and Filardo (2006).

¹⁵ Rogoff (2003) has been a major exception. Drawing on the framework developed by Barro and Gordon (1983), he has focused on the impact of competitive pressures on central bank incentives to generate surprise inflation. Whether this is a useful descriptive hypothesis, however, is somewhat doubtful. The anti-inflation frameworks established in the 1990s were specifically designed to insulate central banks from pressures to deliberately inflate the economy to reduce unemployment below its perceived equilibrium level.

¹⁶ There is also a related literature looking at the link between openness and inflation; see eg Romer (2003).

Monetary policy accommodation

The evidence of monetary policy accommodation of financial imbalances is not straightforward to establish. The main difficulty is setting appropriate benchmarks with respect to which to measure it. With this caveat firmly in mind, however, several observations are broadly consistent with the hypothesis.

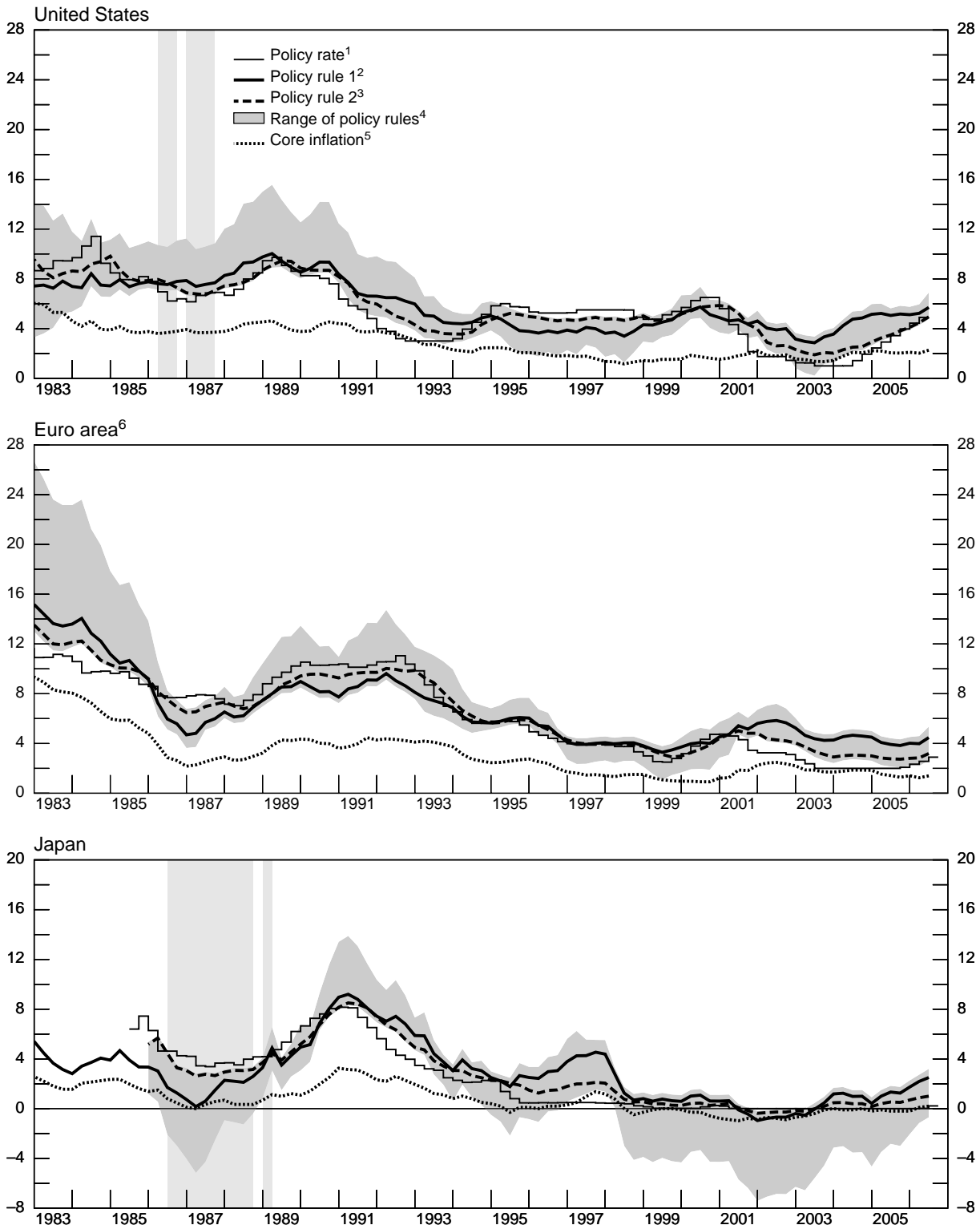
This is the message that emerges from some econometric work we have done for a sample of industrial countries, based on *estimated* Taylor rules augmented with proxies for financial imbalances (Borio and Lowe (2004)). That work suggests that since the early 1980s central banks generally either have not responded systematically to financial imbalances or, to the extent that they have, have responded asymmetrically. Specifically, they may have loosened policy further than normal in the face of economic weakness associated with the unwinding of financial imbalances (“headwinds”) but do not appear to have leaned against them in a similar fashion as they built up. This should not be surprising, since it confirms the view put forward by policymakers that uncertainties are simply too large to warrant a different approach.¹⁷

A similar message emerges from a look at “reasonable” Taylor rules, based on a range of typical parameter values from model *calibrations* found in the literature (Borio and Lowe (2004), BIS (2002)). The point is illustrated in Graph 7, which relates to the United States, the euro area and Japan. In particular, interest rates were below the bottom part of the range following the stock market crash of 1987 and again in the more recent period, following the equity market collapse in 2000 and the onset of the recession, exacerbated by the uncertainties associated with the 9/11 attacks. The exception recently was Japan, where nominal rates were constrained by the zero lower bound. Both then and more recently, the accommodative monetary policy arguably contributed to booms in property markets. In the late 1980s to early 1990s, these booms unwound with serious macroeconomic costs and generated financial strains.

Less formally, it is quite striking that the period since the 1990s has witnessed a major cumulative expansion in credit and monetary aggregates while inflation-adjusted policy rates have been almost as low as during the initial stages of the Great Inflation era (Graph 8). If the growth potential of the world economy has indeed increased as a result of supply side developments, not least globalisation, one would expect equilibrium steady-state policy real interest rates to have risen. This indicates a certain tension between the path that actual interest rates have followed, in response to the *short-run* behaviour of inflation, output and financial strains, and the *end-point* towards which they would be expected to move over time. Hence, one possible reason behind the recurrent talk about “normalisation” of interest rates in policymaking circles. Only recently has the gap begun to narrow, partly in response to uneasiness with this configuration of factors. There is a question of whether the asymmetric response to the imbalances may not have contributed to this situation. This is the time-inconsistency issue in a different guise (Borio and White (2004), White (2006a)): responding in a compelling fashion to a sequence of short-run untoward developments may, over the longer term, not necessarily result in an optimal trajectory of responses.

¹⁷ See, for instance, Ferguson (2003) and Kohn (2006). Note that these asymmetries may in part reflect non-linearities in economic relationships, such as in the transmission mechanism of policy (eg the well known pushing-on-a-string argument, particularly relevant at times of financial strains).

Graph 7
Calibrated Taylor rules: sensitivity analysis

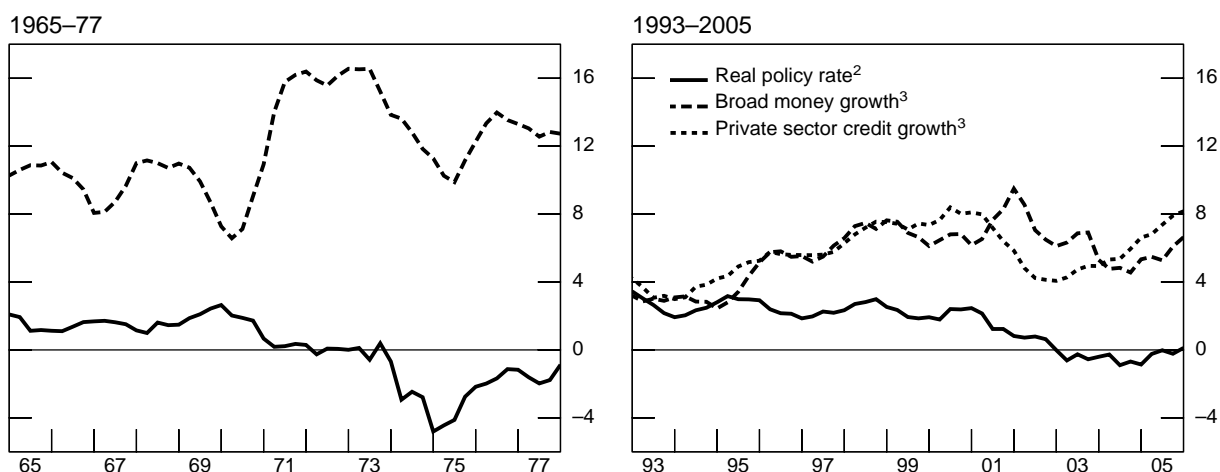


Note: The areas of vertical shading represent periods in which the composite credit (4%) and equity (60%) gap indicator signals financial imbalance.

¹ For the United States, federal funds rate; for Japan, uncollateralised overnight money market rate; for the euro area, main refinancing rate. ² Rule 1 = $r + \pi_t + \alpha (\pi_t - \pi^*) + \beta (y_t - y^*_t)$, where r is the natural rate of interest (assumed to equal 3%), π_t is core inflation, $(y_t - y^*_t)$ is the output gap, π^* is the baseline inflation (assumed to equal 2%), $\alpha = 0.5$ and $\beta = 0.5$. ³ Rule 2 = $0.4 (\text{rule 1}) + 0.6 i_{t-1}$, where i_{t-1} is the policy rate lagged one quarter. ⁴ Range of policy rules with r set to 2.5% or 3.5%, α set to 0.5 or 2 and β set 0.5 or 1. ⁵ Percentage change over four quarters in core consumer goods and services. For Japan, excluding the effect of the introduction (1989) and increase (1997) of the consumption tax. ⁶ Prior to 1999, calculations based on euro area economies' data.

Source: Borio and Lowe (2004), updated.

Graph 8
Two great liquidity expansions compared¹



¹ Weighted averages for G10 countries based on GDP and PPP exchange rates, in per cent. ² Nominal policy rate adjusted for four-quarter consumer price inflation. ³ Four-quarter changes. Includes non-G10 euro area countries.

Sources: OECD; national data; BIS calculations and estimates.

The current situation through the unorthodox lens

Bringing all this together, looking back at the experience over the last two decades, it is possible to detect patterns in global developments in output, inflation and financial variables that are consistent with the hypothesis outlined here. They suggest that the dynamics of the world economy may indeed have changed in ways that have significantly altered the policy environment.

Consider first the developments leading up to the slowdown in the early years of the century. The experiences in Japan, some countries in East Asia and, in several respects, in the United States shared a common characteristic: investment-led booms that were reinforced by financial developments and that did not usher in rapidly rising inflation.¹⁸ These tended to coincide with periods during which sustainable growth prospects were considerably overestimated.¹⁹ In those cases where financial imbalances grew sufficiently large and unwound in a disruptive way, financial strains emerged, helping to put further downward pressure on prices. And in contrast to much of the post-war experience, the global slowdown that began in the autumn of 2000 was *not* fundamentally triggered by a tightening of monetary policy to restrain inflation pressures. Rather, it was mainly the result of the spontaneous reversal of the previous investment boom and of the collapse of equity prices, which had reached unsustainable heights. Although the subsequent recession in the United States was comparatively mild, the global slowdown was rather strong by past standards. If output is measured in PPP terms, the slowdown among the G7 ranks close to those associated with the oil price shocks of the 1970s (Borio and White (2004)).

¹⁸ There is, of course, considerable debate over the reasons for the observed tendency to overpredict inflation in the second half of the 1990s, as several factors may have been at play (eg BIS (2001a, 2001b) and, more recently, BIS (2003)).

¹⁹ Long-term growth prospects have typically been adjusted markedly downwards in the wake of the disruptive unwinding of imbalances. For example, between April 1997 and April 2001, the consensus long-term (10-year) growth forecast for four East Asian countries experiencing financial crises in 1997 (Indonesia, Korea, Malaysia and Thailand) was reduced from just over 7% to 5.5%, reflecting a slowdown in productivity growth. See also Borio et al (2003) for a discussion of these issues and corresponding references.

The subsequent developments up to the present are equally telling. With inflation remaining quiescent and even threatening to fall further, monetary policy became very accommodative globally, compounding in some cases a sizeable fiscal stimulus. Indeed, this strong response was an important reason why the slowdown was not greater. In some cases the easing reflected purely domestic developments. In others, especially in emerging market countries, it was in part the result of resistance to undesired upward pressure on the exchange rate. The result, not unlike what had occurred following the stock market crash of 1987, was that the global recovery was critically supported by a real estate boom, in this case limited to the residential sector on the back of the build-up in household debt. By contrast, against the background of previous excessive capital accumulation, business fixed investment has remained unusually subdued. The exception has been China, which is experiencing a strong investment-led expansion supported by rapid credit expansion and buoyant asset prices, not unlike the ones that preceded it elsewhere. In the meantime, inflation-adjusted interest rates have remained unusually low by historical standards, even as global growth, while very uneven geographically, has regained vigour, recording some of the strongest rates ever in the last few years. Only more recently have questions been raised about whether *near-term* inflationary pressures may not finally be emerging and be underestimated, as global short-term capacity constraints may be approached in several large countries *simultaneously*.

How is this consistent with the Great Moderation? The basic hypothesis outlined here pays more attention to potential longer-term “misalignments” in the real economy than to shorter-term fluctuations, the metric used to measure the lower volatility associated with the Great Moderation. An analogy with financial markets is helpful here. It is well known that short-term volatility is low in bull markets, including when misalignments develop, and high in bear markets, when they unwind. Taking a long-term perspective, the same could be said of the performance of the real economy. Moreover, measured by the usual metric, not all countries have experienced the same Great Moderation. In particular, a number of those experiencing major financial strains after the boom phase did experience higher short-term volatility, including Japan and East Asia (Borio and White (2004)).

III. The policy implications

The hypothesis, if accepted, has a number of significant implications for prudential and monetary policies and for their coordination (Borio and White (2004), Borio (2005) and White (2006b)). Next, I outline these implications and then, against their backdrop, I assess how policy has evolved in recent years.

The desiderata

Prudential policy

As regards prudential policy, the main implication is the need to strengthen the macroprudential orientation of the existing frameworks (Crockett (2000), Borio (2003)). This means taking further the current shift away from a focus on individual institutions towards one on the system as a whole. And it means addressing more explicitly the endogeneity of risk with respect to the collective behaviour of institutions. This is the endogeneity of risk that arises largely from the incentives gap identified above, whereby extension can result in over-extension and retrenchment in over-retrenchment.

What does this mean more concretely?

First, it means encouraging the build-up of cushions in good times so that they can be run down, up to a point, in bad times. Unless they are run down, they cannot act as cushions in the first place, so they need to be sufficiently high to start with. This policy would strengthen individual institutions and the system as a whole. Moreover, by leaning against the

procyclical forces of the economy, it could limit the size of financial imbalances and hence the risk of subsequent financial instability.

Second, it means improving the measurement of system-wide risks. This would help calibrate prudential instruments and improve firms' own risk management (Tarashev (2005)).²⁰ Better measurement could be based on a broader assessment of vulnerabilities. It would be guided by the type of considerations behind the indicators developed above and complemented by macro-stress testing and a large dose of judgement. Fitch Ratings, for instance, has implemented a combination of micro- and macroprudential indicators to rate banking systems and countries, with the macroprudential component based on the indicators presented here (Fitch Ratings (2005)).

Monetary policy

As regards monetary policy, it is essential for the framework to allow enough room for policy to lean against the build-up of imbalances *even if near-term inflation pressures remain subdued*.²¹ This would limit the risk of bigger dislocations later on, with serious consequences for the real economy and also for inflation. Importantly, with inflation low to start with, one should not underestimate the twin risks of unwelcome deflation and of hitting the zero lower bound for policy interest rates.

The additional flexibility calls for two policy refinements. The first is *lengthening the policy horizon* beyond the one to two years typical of some inflation targeting regimes.²² The corresponding cumulative processes through which imbalances build up and unfold take considerable time. The second is *paying more attention to the balance of risks* to the outlook. The timing of the unwinding of the imbalances is highly uncertain. And given the obvious forecasting difficulties, the longer horizon should primarily be seen as a device to assess the balance of risks facing the economy in a more meaningful and structured way.

The room for manoeuvre allowed by this framework is especially important in the presence of benign deflations. In the future, as recent experience suggests, one may expect a greater likelihood of periods characterised by supply-driven very low inflation – if not outright mild deflations – below central bank objectives, against the backdrop of a buoyant economy, rising asset prices and liquidity expansion. Leaning against such “good deflation” pressures by easing policy could unwittingly accommodate the further build-up of imbalances, with the paradoxical risk of setting the stage for a “bad deflation” further down the road, if the imbalances unwound in a particularly disruptive manner.

Cooperation and policy coordination

It is clear that the hypothesis also puts a premium on cooperation and coordination between prudential and monetary authorities. This is so at various levels.

The first level relates to the intellectual framework. A precondition for effective policy coordination is developing a common understanding of the issues. This in turn calls for an intense dialogue between the two sets of authorities. Monetary authorities can bring to the table their long-standing expertise in assessing the links between the macroeconomy, the

²⁰ In particular, Tarashev (2005) finds that measures of imbalances based on Borio and Lowe (2002a) can help to improve the predictive performance of well known and widely used micro-based models of default.

²¹ Much of the technical and academic debate on this has been couched in terms of the response to asset price “bubbles”; see eg Bernanke and Gertler (1999, 2001) and Gruen et al (2003) (interpreted as being against the use of pre-emptive monetary policy) and Kent and Lowe (1998), Cecchetti et al (2000, 2003), Blanchard (2000) and Dupor (2002) (seen as being in favour). Bordo and Jeanne (2002) is probably the closest in spirit to Borio and Lowe (2002a), as they focus on the interaction between debt and asset prices. For a further discussion of these issues, see Filardo (2004). For a focus on credit, see eg Lorenzoni (2005).

²² For a detailed discussion of the horizon questions, see also Disyatat (2005).

financial system and market behaviour; prudential authorities can offer their intimate knowledge of the banking business and risk management practices, key to understanding the evolution of risk assessments, risk attitudes and pricing (BIS (2005b)).

The second level relates to the development of the necessary tools. Developing them should leverage the expertise of each type of authority. For example, diagnostic tools such as macro-stress tests require a good understanding of the nexus between the evolution of the macroeconomy and the financial system, on the one hand, and the response of banks to deterioration in the quality of their assets, on the other (eg Sorge (2004) and IMF (2005)).

The third level relates to the deployment of the tools. Action is most effective if the authorities speak with one voice and coordinate their responses. It is possible to envisage a graduated sequence of policy actions. Once a problem is identified, and the diagnosis shared, the initial response could be coordinated warnings about the sign of overextension. The next step would depend on the precise nature of the problem. Targeted tools would be preferable if the problem was largely limited to a particular segment, such as commercial real estate. Examples include, for instance, requiring specific stress tests, tightening lending and underwriting standards, lowering loan-to-value ratios or raising minimum capital through the supervisory review process. However, if the problem was more generalised or was building through market, as opposed to bank, finance, the interest rate tool might be more effective. And joint action could add bite to the policy response.

The state of play

It is fair to say that, over the last few years, the intellectual climate among policymakers has become more receptive to aspects of the hypothesis put forward here. On the prudential front, the watershed was the Asian financial crisis, which highlighted the strong linkages between system-wide financial sector vulnerabilities and macroeconomic performance. In addition, the development of more risk-sensitive approaches to capital standards (Basel II) put the spotlight on the implications of time-varying risk assessments for minimum capital, bank lending and the macroeconomy.²³ As a consequence, the terms “macroprudential” and “procyclicality” have risen from virtual obscurity to become very familiar to policymakers, practitioners and academics alike. On the monetary front, the coexistence of recurrent asset price booms, rapid monetary and credit expansion in the absence of obvious inflationary pressures, and sometimes even alongside mild deflation, have inevitably posed difficult choices for central banks. Policymakers have tried to incorporate these new phenomena within their frameworks. In fact, the speed of the change could hardly have been anticipated a few years back.

Progress has been somewhat slower in translating this more favourable intellectual backdrop into concrete policy actions. Concrete implementation has faced serious obstacles of an analytical, institutional and political economy nature. Cultural factors loom large (White (2004), BIS (2005a), Borio et al (2001), Borio and Lowe (2002a)).

Prudential policy²⁴

Macroprudential monitoring has become more prominent within the prudential community, supplementing in a more systematic way the more traditional peer-group analysis. It has

²³ The literature on this has been growing exponentially; see eg Borio and Crockett (2000), Borio et al (2001), Danielsson et al (2001), ECB (2001), Gordy and Howells (2004), Catarineu-Rebell et al (2003), Segoviano and Lowe (2002), Kashyap and Stein (2004), Ayuso et al (2004) and Taylor and Goodhart (2005).

²⁴ A macroprudential approach to financial supervision has implications for the design of the framework with respect to both the time dimension (procyclicality) and the cross-sectional dimension (addressing common exposures across financial institutions). This section deals only with the time dimension, closer to the main thesis of the lecture. For an analysis of the cross-sectional dimension, see Borio (2003).

tended to combine the use of quantitative tools, such as macro-stress tests, leading indicators of financial distress of the type reported in this lecture, and less formal indices of vulnerabilities, with an inevitable and healthy large dose of judgement. The IMF and World Bank have played an important role in encouraging these practices through their Financial Sector Assessment Programs (FSAPs). At an international level, several fora now exist where this type of analysis has become routine. The Financial Stability Forum, for instance, brings together senior representatives of national and international prudential authorities, central banks, ministries of finance and international financial institutions.²⁵

A stronger macroprudential orientation has also begun to filter through to the calibration of prudential instruments. First, following a wide-ranging debate, the Basel Committee made adjustments to Basel II, partly with a view to reducing its potential procyclicality (Borio (2003) and Caruana (2004)). Moreover, the supervisory review pillar can in principle be used to adjust capital in the light of the build-up of financial imbalances, if these are identified in good time. Second, some supervisory authorities have designed certain prudential tools so as to act as built-in stabilisers through the cycle. The best such example is the introduction of statistical loan provisioning by the Bank of Spain, calibrated to average historical experience in loan losses in order to avoid excessive declines in provisioning levels in good times (eg Fernández de Lis et al (2001)). Finally, several authorities have discretionarily adjusted prudential tools so as to limit procyclicality. In most cases, this has entailed tightening standards in good times. Examples include, for instance, loan-to-value ratios (eg Hong Kong, Korea and Thailand), capital requirements against real estate lending (eg India, Norway and Portugal), provisioning rules (Korea) and overall exposures to the property sector (eg Hong Kong, Malaysia). In at least one other case, it has involved relaxing standards, at least temporarily, to avoid vicious circles of falling asset prices and additional sales. In particular, in 2002 the UK FSA adjusted the stress test requirements for insurance companies to avoid destabilising sales of equities (FSA (2002)).

Several obstacles have stood in the way of a further strengthening of the macroprudential orientation.

Analytically, a number of outstanding issues remain. They concern the identification of vulnerabilities in good time and the calibration of the tools. In identifying vulnerabilities, despite the progress made, the technology and practice are still in their infancy. Both macro-stress tests and leading indicators of distress still fall short of providing a degree of comfort generally regarded as sufficient to underpin discretionary policy responses. In calibrating the tools, there are questions concerning their effectiveness, which can vary with the characteristics of the financial system, eg the degree of openness, the relative importance of banks and open capital markets, etc. Clearly, there is a catch 22 here: some of these questions cannot be resolved until the approach is actually put into practice, but questions about its effectiveness may inhibit its implementation.

Institutionally, the alignment between objectives, control over instruments and expertise to use them is often imperfect. The objectives of prudential authorities may not be easily reconcilable with a macroprudential orientation. In particular, many prudential authorities have strong depositor/investor protection elements in their mandates, which can make the use of the tools from a macroprudential perspective rather difficult. In addition, control over instruments may be dispersed across various types of authorities with different objectives. For instance, statistical provisioning can be seen as inconsistent with interpretations of current international accounting standards. It clearly helps if, as in Spain, the prudential authority is also in charge of interpreting and implementing those standards for the banking

²⁵ Another such forum is the BIS-based Committee on the Global Financial System, which includes exclusively central bank representatives.

sector. But this is more the exception than the rule.²⁶ And, finally, the prudential authorities may lack the necessary expertise. The natural predominance of legal and accounting backgrounds in the regulatory and supervisory profession does not provide a very receptive soil for macroprudential seeds.

Finally, from a political economy perspective, the actions may face strong resistance on the part of the regulated firms, the body politic and the public at large. The nature of the prudential mandates can be one reason for resistance. But, beyond this, there are broader cultural elements at work. Not least, there is as yet only limited recognition of the importance of a macroprudential perspective beyond narrow policy circles, hindering acceptance for its day-to-day implementation. Securing acceptance is especially hard as one of the hallmark implications of the perspective is the need to take tough measures *in good times* to prevent the emergence of problems. As we know from experience with monetary and fiscal policy, taking away the punch bowl when the party gets going is not a particularly popular task. The proper incentives are not hard-wired institutionally (White (2006a)).

Monetary policy

The concrete possibility that financial imbalances may build up in periods of low and stable inflation and cause subsequent macroeconomic damage has by now been widely recognised within the central banking community. Likewise, the case for a preventive monetary response, *at least in the sense of not ruling it out a priori*, has gradually been gaining greater favour. So much is evident from public pronouncements in speeches and official documents.²⁷ At least from a rhetorical perspective, it has been helpful to shift the debate away from the emotional and almost metaphysical question of the response to asset price “bubbles” to the more concrete one of identifying the financial symptoms that might herald macroeconomic risks over a medium-term horizon (eg “financial imbalances”).²⁸ Above all, it has brought firmly into the picture the role of credit and monetary aggregates, historically much more familiar to central banks.

The way this new element has been accommodated, *at least in principle*, within the various monetary policy frameworks has depended on their characteristics. In inflation targeting regimes, it has been acknowledged that the policy horizon may sometimes need to extend beyond the one to two years typically used in practical policy implementation (Bean (2003)). From this perspective, the Norges Bank actually lists financial imbalances as one factor that may influence its interest rate decisions, requiring a lengthening of the traditional horizon (Qvigstad (2006), Haugland and Vikøren (2006)). In the case of the ECB, where the medium-term orientation has been more in evidence from the beginning, the “monetary analysis” pillar has been invoked also as a safeguard against the build-up of financial imbalances (eg Issing (2003, 2004) and ECB (2005)). Correspondingly, alongside monetary aggregates, credit aggregates have also become more prominent than in the past. In the framework recently announced by the Bank of Japan, the required flexibility is provided by the so-called second perspective, designed to address the risk of low probability but high cost events, which complements the more traditional analysis of the short-term outlook for inflation and economic activity found in the first perspective (Bank of Japan (2006)).

It is harder to say how far actual policy decisions have been coloured by such considerations. Even so, in a number of cases they seem to have been broadly consistent

²⁶ As an alternative, additional provisions could be replaced by higher capital requirements. On this, see Borio and Lowe (2001) and Borio and Tsatsaronis (2005).

²⁷ See Bean (2003), Issing (2003) and (2004), Bäckström (2002), Gjedrem (2004), Dodge (2003), Stevens (2003) and Bollard (2004). For a contrary view, see eg Ferguson (2003) and Kohn (2006).

²⁸ This is not to say, though, that for strictly analytical purposes the concept of a “bubble” is necessarily unhelpful. For a defence of this point, see Filardo (2004).

with a more preventive approach. In November 2003, for instance, the Reserve Bank of Australia was probably the first to cite rapid credit growth and house price increases as one reason for tightening policy, when this was said to coexist with the risk to inflation and economic stability beyond a two-year horizon (RBA (2003)).²⁹ Several references to such concerns can be found in the minutes of the Bank of England's Monetary Policy Committee in 2004 and 2005³⁰ as well as in the inflation reports of the Norges Bank.³¹ Most recently, in Sweden, the Riksbank has explicitly stated that it in early 2006 it had brought forward an increase in interest rates, despite inflation not clearly threatening to be above target within the usual policy horizon, owing to concerns with rising housing prices and household debt (Ingves (2006)).³² For its part, the ECB has been routinely making references to rapid money and credit growth, alongside exceedingly buoyant asset price dynamics, when taking decisions.³³

The obstacles that have stood in the way of a further policy shift are in many ways analogous to those faced by prudential authorities.

The first set of obstacles relates to the analytical challenges faced in identifying financial imbalances and in calibrating a response. The identification problems are identical to those faced by prudential authorities. Despite the greater macroeconomic expertise of monetary authorities, the set of diagnostic tools is not part of the mainstream, as macroeconomic models are ill-suited to take fully into account phenomena of this kind. This, in turn,

²⁹ In the corresponding press release, we read: "...The housing market continues to be buoyant. The effect of the rise in house prices over the recent years is likely to be expansionary for the economy in the period ahead, as higher wealth is accessed to support household spending. In the short term, these developments are unlikely to make for significant problems for CPI inflation. Indeed, it *will most likely decline for a time*, as the effect of the appreciation of the exchange rate shows up in retail prices. Over the longer term, *inflation is currently expected to be consistent with the target*, but the risks to the forecast are beginning to tilt upwards. The prevailing stance of policy has been expansionary, as is clear not only from the current low level of nominal and real interest rates, but also from the behaviour of borrowers. Credit outstanding is rising at around 14 per cent per year, and at over 20 per cent to households. That is a much faster rate of growth than can be expected to be consistent with economic stability *over the longer run*. Short periods of rapid credit growth have not typically been a major concern for monetary policy, but this growth has been sustained for some time and at present shows no sign of abating. Given the above, the Board's view is that it is no longer prudent to continue with such an expansionary monetary stance. *The strength of the demand for credit* increases the danger associated with delaying a tightening of policy that is called for on general macroeconomic grounds" (RBA (2003), italics added). The Reserve Bank came under criticism for this decision by some commentators who argued that it was not consistent with the inflation targeting mandate.

³⁰ For instance, in the minutes for March 2004 we read: "...the pick up in house price inflation and the continued rapid accumulation of debt by households increased their [some Monetary Policy Committee members] concern that, without policy action, households' financial position could become unsustainable and so increase the probability of an eventual abrupt adjustment process, complicating the achievement of the inflation target". Or again, in May 2005: "A rise in the repo rate would also help to slow households' accumulation of unsecured debt, hence reducing the risk of a sharp fall in demand at a later date".

³¹ Thus, in March 2006, we read: "Wide fluctuations in asset prices and credit may constitute a source of instability in demand and output *in the somewhat longer run*. The low interest rate level in Norway has contributed to a sharp rise in house prices. The level of house prices may now appear high in relation to developments in income, interest rates, unemployment and housing starts. A gradual increase in the interest level will probably contribute to a slower rise in house prices ahead. This may reduce the risk of a substantial correction in house prices *further ahead*" (Norges Bank (2006), page 9, italics added).

³² Ingves notes, referring to a risk, which "may actually be beyond the forecast horizon": "One risk is that a sharp break in house prices could lead to households perceiving their debt burden to be too high, and that they would therefore quickly increase their saving. This could lead to a severe *decline* in demand in the economy and *in inflation*. In the considerations behind our decision on the interest rate at the beginning of the year, we considered these risks to be a reason for *not postponing an increase* by a few months – which I otherwise believe would have been entirely possible given the forecasts that we otherwise make and the precision of these forecasts... As I said, the world will not come to an end *in two years' time*" (Ingves (2006), italics added). Likewise, in the Inflation Report for October 2005 we find: "Over the past year, for instance, a credit boom and house price trends have had some significance for the monetary policy stance" (Sveriges Riksbank (2005), page 45).

³³ In the Monthly Bulletin for April 2006, for instance, one finds: "In an environment of ample liquidity, improved economic sentiment and an ongoing recovery of the real economy, the strong growth of money and credit points to *upside risks to price stability over the medium and longer term*. Moreover, these developments imply a need to monitor asset price dynamics carefully, given the potential for price misalignments to emerge", ECB (2006), page 11, italics added. Similar references can be found in other issues of the Bulletin, with the underlying logic being spelled out in detail in a special article in the Bulletin of April 2005; ECB (2005).

complicates the calibration of the response, in terms of both timing and intensity, raising questions about its effectiveness. As their prudential counterparts, monetary authorities face a catch 22: the effectiveness of the tools is unclear until the strategy is actually implemented. The jury is still out.

The second set is of a more institutional and political economy nature and is by far the more difficult to overcome. For an institution whose clear mandate is to control inflation, it is generally very hard to justify a tightening of monetary policy when the main objective, inflation, is well behaved, not least if asset prices are booming. And it is especially hard to justify tightening on the basis that it might actually help to avoid unwelcome *disinflationary* pressures in the future, as the imbalances unwind. The communication problem is particularly acute for inflation targeting regimes. In this case, for a long time the corresponding rhetoric has trained the public, markets and the body politic to judge success and failure *exclusively* on the basis of the attainment of inflation objectives over short horizons, as a means of enhancing the accountability of the central bank.

Conclusion

The history of policymaking is one of lessons learnt and unlearnt, of challenges old and new. The never-ending task of policymakers consists in exploring the economic landscape in search for clues of how the interaction between policies and the economic environment may alter the dynamics of the system. The objective is to understand the associated risks and to develop adequate policy responses. One of the greatest dangers is to think that we have finally come to master the secrets of the economy, for these are a moving target.

I have argued that we may well be living through one of those historical phases in which the underlying dynamics of the economy may have changed substantially, in this case compared with that of the Great Inflation period. If so, there are risks in mechanically applying the lessons learnt during that period without modifications. The main forces at work have been financial liberalisation, the establishment of central bank anti-inflation credibility and the globalisation of the real side of the economy. The basic hypothesis is that their joint effect has been to create an environment in which financial factors are more important drivers of economic activity and in which the main risk is not so much runaway inflation as the damage to the economy from the slow and cumulative build-up of financial imbalances that at some point unwind. If accepted, this hypothesis would call for refinements in policy frameworks, based on a firmer long-term focus, greater symmetry in policy responses between upswings and downswings, and closer coordination between monetary and prudential authorities.

In recent years, the intellectual climate and policy frameworks have gradually evolved in a direction more consistent with this perspective. There has been a growing awareness of the potential problem. The macroprudential orientation of regulatory and supervisory arrangements has been strengthened. Monetary authorities have sought to incorporate financial imbalances into their frameworks in a more meaningful way. And cooperation between monetary and prudential authorities has intensified.

This evolution is welcome. It has clearly reduced the risk that the problem could fall through the cracks. At the same time, obstacles to further progress remain. They are of an analytical, institutional and, above all, political economy nature. Removing them calls for further analytical and educational efforts. The former should provide a stronger conceptual and operational basis to articulate the technical aspects of policies. The latter should foster the necessary public support for their implementation. Just as in the fight against inflation, a key to success is to set up institutional arrangements that hard-wire the necessary incentives for successful action based on an agreed diagnosis. Doing so should help us edge closer to securing in a more lasting way the benefits of the momentous changes in monetary, financial and real economy regimes that have been so sought after for so long.

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