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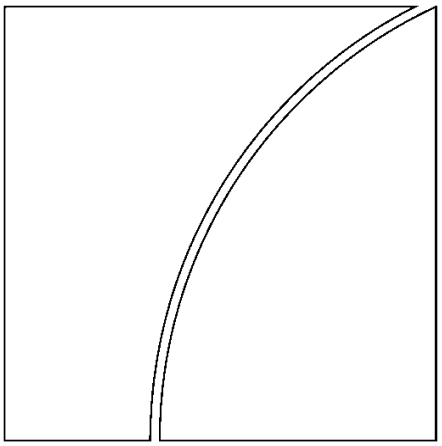

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Central banking post-crisis: What compass for uncharted waters?

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Central banking post-crisis: What compass for uncharted waters?

Claudio Borio[1]

Abstract

The global financial crisis has shaken the foundations of the deceptively comfortable pre-crisis central banking world. Central banks face a threefold challenge: economic, intellectual and institutional. This essay puts forward a compass to help central banks sail in the largely uncharted waters ahead. The compass is based on tighter integration of the monetary and financial stability functions, keener awareness of the global dimensions of those tasks, and stronger safeguards for an increasingly vulnerable central bank operational independence.

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[1] Bank for International Settlements.

Contents

Introduction[2]

Central banking will never be quite the same again after the global financial crisis. The crisis will no doubt prove to be one of those rare defining moments in the history of this institution – an institution that, from its faltering first steps in the XVII century, has grown to become widely regarded as indispensable.

At first glance, central banks have emerged as the great winners among policy institutions. They have been rightly hailed as saviours of the global financial system: their swift and internationally coordinated action, through liquidity support and interest rate cuts, prevented the system's implosion. And they have gained much broader powers: no one questions any longer their crucial role in financial stability, which is being hard-wired in legislation, while some are regaining the regulatory and supervisory functions lost in previous decades.

And yet, beneath this glittering surface, the picture is less reassuring. The crisis has shaken the foundations of the deceptively comfortable central banking world. Pre-crisis, the quintessential task of central banks was seen as quite straightforward: keep inflation within a tight range through control of a short-term interest rate, and everything else will take care of itself. Everything was simple, tidy and cosy. Post-crisis, many certainties have gone. Price stability has proven no guarantee against major financial and macroeconomic instability. Central banks have found themselves reaching well beyond interest-rate policy, aggressively deploying their balance sheet in a variety of "unconventional" monetary policies. As a result, the line between monetary and fiscal policy has become blurred precisely at a time when public sector debts are ballooning and sovereign risk is rising again. And many increasingly question the very ability of central banks to maintain inflation within acceptable ranges, notably to avoid deflation. Nor is the boom underway in the price of gold precisely a vote of confidence in the international monetary system.

The years ahead will be a period of experimentation in central banking (Goodhart (2010)). Central banks face a threefold challenge: economic, intellectual and institutional. First, they will operate in a hostile economic environment. The Great Moderation has ushered in the Great Recession. Mature economies will carry the long-lasting scars of the crisis, while emerging economies may well continue to boom and face problems not dissimilar to those that heralded the crisis elsewhere. Second, central banks will take decisions in full knowledge that their benchmark macroeconomic paradigms have failed them. These paradigms, and the macroeconomic models that underpin them, provided no guidance to anticipate, ward off or fight the crisis. The crisis has exposed a chasm between the theory and practice of policy. Third, central banks will have to adjust their policy frameworks while preserving their reputation and independence in an environment in which that independence is likely to come under increasing threat. As central banks cope with the legacy of the crisis and take on broader tasks, governance arrangements will face considerable strains. And the threat of rising public debts and sovereign risk will loom large, raising the spectre of fiscal dominance. In other words, they will need a new compass to sail in largely uncharted waters.

What follows explores these challenges in search of a compass. It argues that the compass should have three characteristics. First, the tight interdependence between monetary and financial stability will need to be much more fully recognised and policy frameworks adjusted accordingly. This, in turn, will require bolder steps to develop analytical frameworks in which monetary factors play a core role, not a peripheral one as hitherto – an intellectual

[2] This paper, with minor changes, is being published in C Jones and R Pringle (eds) "The Future of Central Banking", Central Banking Publications. It is a slightly revised and updated version of a keynote address given at the SUERF-National Bank of Poland Conference "Monetary policy after the crisis", Warsaw, 4 March 2011. I would like to thank Piti Disyatat, Leonardo Gambacorta, Otmar Issing, Robert McCauley, Robert Pringle, Paul Tucker and Ignazio Visco for helpful comments. The views expressed are my own and do not necessarily reflect those of the Bank for International Settlements.

rediscovery of the roots of monetary economics. Second, there should be a keener awareness of the global, as opposed to purely domestic, dimensions of those tasks. The common view that keeping one's house in order is sufficient for global stability should be reconsidered (Padoa-Schioppa (2008)). This calls for an intellectual shift that is analogous to the one that has already occurred in financial regulation and supervision, from a microprudential to a macroprudential perspective. Finally, the autonomy of central banks will need to be protected and strengthened. An overarching challenge will be to manage expectations, recognising the limitations of policy as a tool to manage the economy. Central banks were never as powerful as generally believed. To pretend otherwise risks undermining their credibility and public support.

Section I discusses the evolution of the intellectual backdrop, comparing the pre-crisis prevailing consensus with the post-crisis more heterogeneous picture. Section II puts forward a number of working hypotheses to guide the search for a new compass. Section III draws their implications for the adjustments to policy frameworks and explores the remaining challenges and open questions.

I. The evolving intellectual backdrop

Historically, albeit with important differences over time and across countries, monetary and financial stability have been core central bank objectives (De Kock (1974)). At the cost of some oversimplification, the prevailing pre-crisis consensus had gravitated towards a "narrow" view of central banking, heavily focused on price stability and supported by a belief in the self-equilibrating properties of the economy. Post-crisis, a shift back towards a broader view, more in line with the historical origins of the institution, has been gaining ground.

Pre-crisis

In intentionally *highly* stylised terms, glossing over differences across central banks in order better to highlight the nature of the shift underway, the prevailing pre-crisis view of central banking can be summarised in four propositions.[3]

Price stability is sufficient for macroeconomic stability. If central banks succeed in stabilising inflation in the short term (say, over a 2-year horizon), and absent major exogenous "shocks", such as from fiscal policy, the economy will broadly take care of itself. This is the strong version of the view that price stability is the best contribution monetary policy can make to macroeconomic stability. It is the belief that underpinned inflation targeting and that drew strength from the "Great Moderation" – the long period of low output volatility and low and stable inflation that most industrial countries enjoyed before the crisis. Analytically, this strong version found comfort in the canonical macroeconomic models of the day, in which the only departure from a *fully equilibrating and well functioning* economy took the form of price rigidities (Woodford (2003) and Walsh (2010)).[4]

Almost as a corollary, *there is a neat separation between monetary and financial stability functions*. True, as ultimate providers of liquidity, central banks have always been seen as indispensable in crisis management – the lender-of-last-resort role that Bagehot popularised. But the previous view permitted the decoupling of the two functions in crisis prevention: monetary policy would take care of price stability while regulation and supervision would take

[3] See Borio (2007) for a more complete and nuanced picture.

[4] To be sure, the models also allowed for other frictions, such as real wage rigidities (eg Blanchard and Gali (2010)) and, in some cases, financial ones (eg Bernanke et al (1999)). But as a broad justification for policy, these frictions played a secondary role.

care of financial stability. Moreover, regulation and supervision did not need to be a central bank task. After all, the prevailing "microprudential" orientation of regulation and supervision – mainly focused on the soundness of *individual* institutions – was regarded as sufficient to ensure the stability of the system as a whole (eg Borio (2010)). This did not call for a close understanding of the nexus between the financial system and the macroeconomy or of market dynamics – areas in which central banks had a natural comparative advantage. Analytically, it was essentially a partial equilibrium approach.

A short-term interest rate is sufficient to capture the impact of monetary policy on the economy. Specifically, policy was seen as operating exclusively through the control of a short-term (often overnight) interest rate that, together with expectations about its future path, fully determined the term structure of interest rates (eg Svensson (2003)). Supporting the practical relevance of this view, it was believed that the probability that central banks would have to drive policy rates to zero in nominal terms was remote (Orphanides and Wieland (1998)): the Japanese experience was dismissed as an aberration and as the result of policy mismanagement (Ahearne et al (2002)). Analytically, this view was based on the assumption that, as a first approximation, government securities at different maturities are perfect substitutes. If so, changes in their relative supply would have little effect on yields.

If each central bank looks after its own economy, the global monetary stance will also be appropriate. This specific version of the "keep-your-house-in-order" doctrine is, in effect, analogous to the reasoning behind the microprudential approach to financial stability: make sure that each institution on a stand-alone basis (read "country") is sound and the whole financial system (read "world") will be sound. All central banks had to do was to ensure price stability in their own economy and let the exchange rate float (eg Rose (2007)). A possible exception involved very small and highly open economies, which could achieve the same result by pegging to the currency of a credible low-inflation, larger economy. Analytically, in its strongest form, the proposition drew strength from models that assume that goods produced in different countries, and assets denominated in different currencies, are perfect substitutes while market participants do not make systematic expectational errors (the "law of one price" and "uncovered interest parity", respectively).

Post-crisis

The post-crisis intellectual backdrop is more heterogeneous and in flux. It may be summarised by three areas of agreement and two of disagreement.

It is now generally agreed that *low and stable inflation does not guarantee financial and macroeconomic stability*. After all, the seeds of the global financial crisis were sown during the Great Moderation. Hardly anyone disputes that the crisis is best seen as the bust of a major financial cycle whose upswing lasted at least a whole decade. In the economies at the origin of the turmoil, the upswing saw a major expansion in credit and asset prices, especially those of real estate. Leverage grew in both overt and hidden forms on the back of aggressive risk-taking. Balance sheets became overstretched. The boom did not just precede, but caused the subsequent bust, as the financial imbalances unwound.

It is also agreed that *"cleaning" the debris through monetary policy is costly and that interest-rate policy is not enough*. Contrary to what was commonly believed, aggressive reductions in interest rates have not been sufficient to avert the enormous costs of the crisis and to reignite a solid recovery. And central banks have scrambled to deploy their balance sheets to influence longer-term interest rates and broader financial conditions, such as credit terms and credit spreads (so-called "unconventional" monetary policies or, more precisely, "balance-sheet" policies; Borio and Disyatat (2010)). Hence the large-scale purchases of government and private sector assets, such as mortgage-backed securities, or the unprecedented extension of large-scale long-term liquidity support to the banking sector.

Finally, there is a consensus that the *regulation and supervision of financial institutions need to go beyond a microprudential perspective and adopt a macroprudential orientation, with central banks playing a key role*.[5] This means that regulation and supervision should focus squarely on the financial system as a whole, not on individual institutions. And they should take fully into account the potentially amplifying feedback between the financial system and the macroeconomy that lies at the heart of financial instability ("procyclicality"). By virtue of their specific know-how, central banks are naturally seen as key players in macroprudential frameworks. Major efforts are underway nationally and internationally to put such frameworks in place.

This, however, is where the consensus stops. The areas of disagreement are equally important.

There is no agreement on *whether or how far monetary policy regimes should be adjusted to lean against the build-up of financial imbalances*. One view is that monetary policy regimes should continue to focus on price stability, much as they did before the crisis. To be sure, macroeconomic models should be augmented to better capture the interplay between financial factors and the real economy. But financial stability is best ensured through the newly established macroprudential frameworks (eg Bean (2009), Bernanke (2009)). To do otherwise would risk overburdening monetary policy and compromising its credibility. An alternative view, which is gaining ground, is that implementing a macroprudential framework can help but is not sufficient. The role of monetary policy is simply too important (eg Trichet (2009), Shirakawa (2010), Bloxham et al (2010), Issing (2011)).[6]

Nor is there agreement on the *proper role of monetary policy, be it interest-rate or balance-sheet policy, in the aftermath of a financial crisis*. One view is that policy should be as accommodative as possible, driving policy rates to zero and committing to keep them there for as long as it takes while deploying the central bank's balance sheet aggressively. Another view highlights the collateral damage of such an accommodative stance if kept beyond the crisis management phase (eg BIS (2010), Hannoun (2010) and Borio and Disyatat (2010)). After all, if the origin of the problem was too much debt, how can a policy that encourages the private and public sectors to accumulate more debt be part of the solution (see below)?

II. A way forward? Working hypotheses

The areas of disagreement reflect genuine difficulties in adjudicating between competing hypotheses. The debate has just started. To choose a compass for the way forward, however, it is necessary to take a stand, based on a specific reading of the available evidence, limited as this may be. What follows, therefore, highlights three observations best regarded as working hypotheses.

First, *monetary policy contributed significantly to the financial crisis*. It stands to reason that if monetary policy responds only to near-term inflation pressures and these remain subdued or even decline during an unsustainable financial boom, then policy will pose no resistance, and could even encourage, the build-up of imbalances (eg Borio and White (2003), Borio (2009)).[7] After all, monetary policy sets the universal price of leverage in a given currency area.

[5] See, for instance, G20 (2009), CGFS (2010), Brunnermeier et al (2009) and Borio (2010).

[6] On the former view, see also, for instance, Bernanke and Gertler (1999) and Blanchard et al (2010); on the latter, see eg Cecchetti et al (2000), BIS (2010) and Borio (2010). Borio and Lowe (2004), Borio (2007) and Papademos and Stark (2010), Chapter 6, contain references to the large literature on this topic.

[7] On this point, and for an historical perspective on the role of central banks in financial stability, see also Giannini (2011).

There is considerable, albeit by no means undisputed, evidence supporting this view. The years that preceded the crisis saw unusually and persistently low policy rates, even negative in real terms – the lowest since the 1970s. For the United States, for instance, according to some estimates these rates were also lower than the typical reaction function consistent with maintaining stable inflation (eg Taylor (2008))[8] – let alone, therefore, with leaning against the build-up of imbalances (Borio and Lowe (2004)). In addition, there is growing empirical evidence that low interest rates may encourage risk-taking – the so-called "risk-taking channel" of monetary policy.[9] The effect is strongest when rates are unusually low by historical standards for long periods or agents anticipate that monetary policy will be eased to counteract the unwinding of the imbalances, providing a form of (fuzzy) insurance.

Second, *an aggressive and prolonged easing of monetary policy, through interest-rate and balance-sheet measures, to respond to the bust of a major financial boom has serious limitations*. These limitations reflect the nature of the economic contraction and its impact on the transmission mechanism of policy.

Not all recessions are born equal. The typical recession during the first decades following World War II in advanced economies was triggered by a monetary tightening to fight inflation or balance-of-payments crises. The upswing was relatively short and, with financial systems heavily regulated, the recession did not trigger a major financial crisis or involve large debt and capital overhangs. Even when debt burdens were large and financial strains emerged, higher inflation and rising nominal asset values reduced them over time.

The current recession is quite different. The preceding boom was much more prolonged, the subsequent debt and asset price overhang much larger, the financial sector much more seriously affected, and inflation much lower before and after. The Japanese experience of the early 1990s is the closest parallel. There is considerable cross-country evidence that banking crises tend to be preceded by unusually strong credit and asset price booms (see below), that those crises go hand-in-hand with permanent output losses (BCBS (2010))[10], and that subsequent recoveries tend to be slow and protracted (eg Reinhart and Rogoff (2009), Reinhart and Reinhart (2010)). In all probability this reflects a mixture of an overestimation of potential output and growth during the boom, the corresponding misallocation of resources, notably capital, the headwinds of the subsequent debt and real capital stock overhangs, and disruptions to financial intermediation. Fiscal expansions in the wake of the crises can add to these problems, by piling government debt on top of private debt and sometimes threatening a sovereign crisis.[11]

All this reduces the effectiveness of monetary policy in dealing with the bust and exacerbates its unwelcome side-effects. These become apparent once the easing is taken too far after averting the implosion of the financial system. The economy needs balance-sheet repair, but very low interest rates together with ample central bank funding and asset purchases delay

[8] That said, inflation did not turn out to be a problem and, if forecast-based rules are used, the picture is less clear (Bernanke (2009)). Arguably, the apparent deviations from the specific version of the rule reflect more unusual economic circumstances than a break in the central bank's behaviour. For an intermediate position, see Catte et al (2010).

[9] For an elaboration on the nature of the risk-taking channel, see Borio and Zhu (2008), Rajan (2005), Adrian and Shin (2010) and Farhi and Tirole (2009); for the empirical evidence, see Gambacorta (2009) for a recent summary.

[10] "Permanent" here means that while *growth* may return to its long-term pre-crisis trend, *output* does not return to its pre-crisis trajectory. In other words, the trajectory remains below the original one.

[11] Importantly, credit and asset price booms tend to flatter the fiscal accounts. They lead to an overestimation of potential output and potential growth and temporarily boost the sensitivity of tax revenues to GDP growth. As a result, the authorities can easily mistake cyclical improvements in the fiscal accounts for structural ones. Recall, for instance, that the fiscal accounts of Spain and Ireland looked quite strong during the boom. See Eschenbach and Schuknecht (2004) and BIS (2011a).

the recognition of losses and the repayment of debt.[12] Too much capital has been accumulated in the wrong sectors, but the easing tends to favour investment in the very long-lived assets in excess supply (eg construction). The bloated financial sector needs to shrink, but the easing numbs the incentives to do so and may even encourage punting. The financial sector needs to generate healthy earnings, but as short-term interest rates approach zero and the yield curve flattens, they compress banks' interest margins[13] unless banks take on more interest-rate and, possibly, sovereign risk; and as long-term rates decline, they can generate strains in the insurance and pension fund sectors. Thus, as the easing continues, it raises the risk of perpetuating the very conditions that make eventual exit harder. A vicious circle can develop.

Put differently, when dealing with major financial busts monetary policy addresses the symptoms rather than the underlying causes of the slow recovery. It alleviates the pain, but masks the illness. It gains time, but makes it easier for policymakers to waste it.

This analysis suggests that, when considering the boom and bust phases together, financial cycles may be giving rise to a new form of time inconsistency (eg Borio and White (2003)). We are all familiar with time inconsistency in the context of inflation. In this case, taking wages and prices as given, policymakers may be tempted to produce inflation in an ultimately unsuccessful effort to raise output and employment, as prices and wages catch up (Kydland and Prescott (1977)). Over time, inflation trends higher without lasting gains in output or employment. In the case of financial cycles, the end-result can be a downward trend in policy rates across cycles and increasing resort to balance-sheet policies without any gains in terms of financial and macroeconomic stability. Moreover, this form of time inconsistency is even more insidious. During the boom phase, the lag between the build-up of risks and the materialisation of financial distress is considerably longer than that between excess demand and inflation (eg Borio (2010)). And while there *are* constituencies against inflation, none exists against the inebriating feeling of getting richer. During the bust, failure to repair balance sheets can leave central banks with little choice but to seek to gain time. In both cases, the costs are incurred immediately and are quite visible; the benefits accrue much later and may even be hard to establish *ex post*.

All this raises serious political economy challenges for central banks. One institutional answer to the problem of time inconsistency is to ensure that central banks are sufficiently insulated from the political cycle. This is a key, though not the only, justification for central bank operational independence. Unfortunately, financial busts and an aggressive and prolonged monetary response to them can undermine such independence. If governments allow public debt to grow beyond sustainable levels, pressures to compromise the central bank's independence will grow at some point in order to avoid default. If central banks engage in extensive balance-sheet policy, that independence will come under threat even earlier. Purchases of private sector claims open central banks to the criticism of favouring some sectors at the expense of others, and those of public sector claims to that of having become subservient to the government. Either way, balance-sheet policy can put central banks' budgetary independence and reputation at risk, as they take on financial risks. And while assets may not be perfect substitutes, their substitutability is quite high. As a result, operations have to be very big, or expected to be big, in order to have significant and long-

[12] For example, given the low cost of forbearance, very low interest rates may disguise underlying credit weakness encouraging banks to "extend and pretend" that loans of low-quality borrowers will become good ("evergreening"). See Caballero et al (2008) for the Japanese experience in the 1990s and Albertazzi and Marchetti (2010) for the Italian case during the latest credit crisis.

[13] This reflects two factors. First, there is the well known "endowment effect": retail deposit rates tend to be lower (sometimes zero) and stickier than wholesale rates, so that reducing policy rates compresses interest margins. Second, the flattening of the term structure, especially if it reflects a compression of term premia, reduces the net income associated with maturity transformation.

lasting effects on risk premia and relative yields. This heightens the vulnerability to financial risks and political economy pressures (Borio and Disyatat (2010), Stella (2010)).

The specific drawbacks of balance-sheet policy reflect a simple fact. The central bank has a monopoly over interest-rate policy, *not* over balance-sheet policy. Almost *any* balance-sheet policy can, or could, be replicated by the government; conversely, *any* balance-sheet policy the central bank implements has an impact on the consolidated government sector balance sheet. Balance-sheet policy needs to be viewed as part of this larger balance sheet. For example, the central bank may purchase long-term bonds, but its efforts could be frustrated if government debt managers lengthen maturity in order to lock in unusually low yields (eg McCauley and Ueda (2009)). In this context, the very meaning of operational independence becomes somewhat unclear. The line between monetary and fiscal policy becomes blurred.

Third, *to keep one's house in order is not enough*.[14] This follows from two considerations.

For one, flexible exchange rates provide only limited insulation from policies pursued in large economies. For many economies, especially small, highly open ones with large manufacturing bases, the exchange rate is too important a price to be allowed to fluctuate freely – hence the so-called "fear of floating" (Calvo and Reinhart (2002)).[15] And the exchange rate is subject to those very forces that can lead to *domestic* financial instability: destabilising cross-currency flows are the mirror image of the destabilising financial imbalances that build up and unwind within individual currency areas (eg Borio and Disyatat (2011)). The outcome is currency overshooting.

In addition, and more generally, there is a sense in which the whole is more than the sum of its parts. In a highly globalised world, in which markets for goods and services, for factors of production and for financial instruments are tightly integrated, purely country-centric approaches to understanding the workings of the economy and formulating policies are bound to be inadequate. A more globe-centric approach is called for. Quite apart from being influenced by the interlinkages between countries and currency areas, aggregate outcomes will be different depending on whether several countries are experiencing similar conditions or not. In other words, correlations of conditions across countries, or exposures to common, "global" factors matter a lot.[16] And those global factors, while appearing as independent of each country's actions ("exogenous"), are inevitably influenced by their collective behaviour ("endogenous").

This has significant policy implications. Prospects for output strength or weakness, inflation or disinflation,[17] financial stability or instability cannot be evaluated purely as the bottom-up sum of each country's conditions assessed on a stand-alone basis; this, *by construction*, underplays the role of common factors and interlinkages. A more top-down approach is needed. And the risk of fallacies of composition should not be underestimated: actions that may appear reasonable from an individual country's perspective need not result in desirable aggregate outcomes. Analytically, this calls for a shift equivalent to that which has already occurred in regulation and supervision, from a micro- to a macroprudential perspective:

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[14] For a critique of this view from a broader perspective, see Padoa-Schioppa (2008).

[15] That said, apparent "fear of floating" may simply reflect the operation of domestic inflation targeting regimes in which the exchange rate plays a large role in the inflation process, as documented by Ho and McCauley (2003).

[16] This argument holds regardless of whether asymmetries exist because, for some international currencies, notably the US dollar, the *direct* area of influence goes well beyond national borders. For a more in-depth discussion of these issues, see eg Borio and Disyatat (2011)).

[17] On the growing role of global forces in influencing inflation, see Borio and Filardo (2007)). For a contrasting view, see eg Ball (2006)).

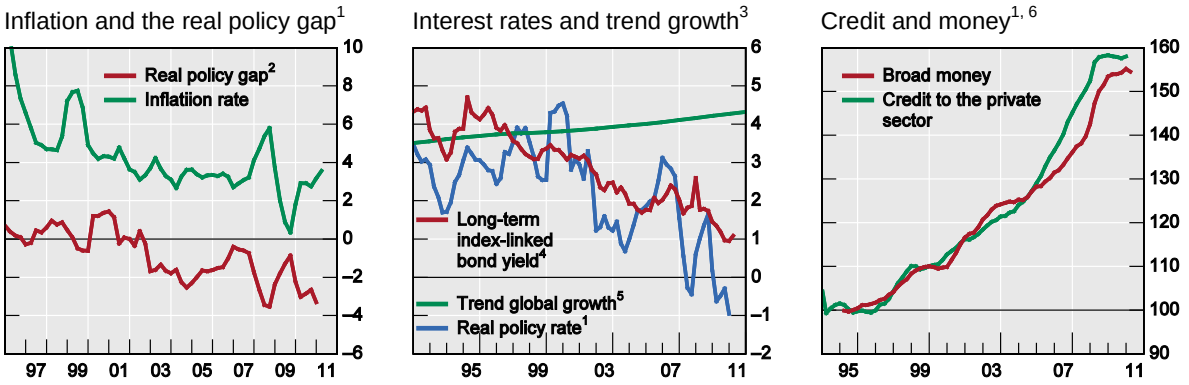
individual countries cannot be "safe" unless the global economy is safe and their safety can only be assessed in a global context.

One way of illustrating this point is by reference to inflation. It is quite common for countries to treat commodity price increases as "imported", and hence exogenous, sometimes even formally excluding them from the price index used as a guide for monetary policy (eg a measure of "core inflation"). This is reasonable from a partial equilibrium perspective. But the commodity price increase itself may also be the result of the aggregate monetary policy stance for the world, in which all countries participate. And being determined in auction markets, commodity prices are more flexible than prices of goods and services. They are thus more likely to be the first to adjust, acting as a signal of aggregate demand pressures, and hence of limited economic slack, for the world economy – a possible harbinger of further inflationary pressures down the road. This is the experience of the early 1970s (OECD (1977)) and may also help to read what is happening at the time of writing (early 2011).[18]

As a second illustration, consider the run-up to the recent crisis and its aftermath, which highlights the role of exchange rates in particular (eg Borio (2009), Borio and Disyatat (2011)). Unusually low policy rates in the core industrial countries in the years preceding the crisis were transmitted to the rest of the world through resistance to exchange rate appreciation, either in the form of foreign exchange intervention or a reluctance to increase policy rates. This either put further downward pressure on long-term rates in industrial economies, via reinvestment of the intervention proceeds, or loosened conditions in those economies that kept policy rates low. The end-result was to reinforce and generalise the unusually accommodative *global* monetary policy stance at a time of record *global* growth (Graph 1). This arguably amplified the global credit and asset price boom, magnifying and extending the damage of the subsequent bust. And post-crisis, the extraordinarily loose policy stance in mature economies is again inducing potentially destabilising cross-currency and capital inflows into booming emerging markets, while the gap between world growth and interest rates has widened again (same graph). In other words, *ceteris paribus* and as a first

Graph 1

Very accommodative global monetary conditions



[1] G20 countries; weighted averages based on 2005 GDP and PPP exchange rates. [2] Real policy rate minus 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; for Brazil, China, India, Indonesia, Korea, Mexico, Russia, Saudi Arabia and South Africa, 2000–05; for Argentina and Turkey, 2003–05) plus the four-quarter growth in potential output less its long-term average. [3] In per cent. [4] From 1998; simple average of Australia, France, the United Kingdom and the United States; otherwise only Australia and the United Kingdom. [5] Trend world real GDP growth as estimated by the IMF in WEO 2009 April. [6] Relative to nominal GDP; 1995 = 100.

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

[18] Very low interest rates may also have an impact on at least some commodity prices by inducing portfolio shifts, including by encouraging a search for yield.

approximation, exchange rate changes *per se* simply redistribute global demand; but they can have a first-order effect on it through the monetary (or fiscal) policy response that they induce.

III. A way forward? Implications for central banking

The previous analysis helps identify the broad contours of a new compass to guide central banks in the years ahead. At the same time, it leaves open some troubling questions.

Proposed adjustments to policy regimes

First, edging closer to lasting monetary and financial stability requires adjustments to current policy frameworks to constrain the build-up of financial imbalances even in the context of low and stable inflation. Part of the answer is establishing fully-fledged macroprudential frameworks, with central banks playing a leading role.[19] But beyond this, it is necessary to adopt monetary policy strategies that allow central banks to tighten so as to lean against the build-up of financial imbalances even if near-term inflation remains subdued (eg BIS (2010) and Caruana (2010)).[20] Neither of the two policies, on its own, is up to the task. In particular, expectations about what a macroprudential framework can achieve on its own are unrealistically high (Borio (2010)). As a result, a "narrow" conception of central banking and monetary policy is not a valid blueprint for the future.

Second, there is a need to reconsider monetary policy responses to the financial busts that follow the unwinding of imbalances. The prevailing view, which envisages very aggressive and prolonged monetary easing, underestimates the resulting collateral damage, in both economic and political economy terms. Monetary policy should pull out all the stops to prevent the implosion of the system as the crisis erupts. But thereafter, as the focus shifts from crisis management to crisis resolution, the priority should be policies to repair balance sheets and facilitate the necessary adjustments in the real economy (eg BIS (2009), Borio et al (2010)). Only then can the effectiveness of monetary policy be fully restored. The end-result would be a more symmetric evolution of policy rates than that seen over the past decade, during which policy rates have gradually trended to zero: a greater increase during the boom and a smaller reduction during the bust.

Third, the operational independence of central banks should be strengthened. Otherwise, it is not possible to address effectively the consequences of financial cycles. Operational independence is critical for both their monetary and macroprudential policy functions: it protects central banks from the political economy pressures that undermine their ability to take the punchbowl away as the party gets going. To be sure, this also calls for drawing a clear distinction between crisis prevention and crisis management, something which is often

[19] See Tucker (2011) for how the relationship between macroprudential and monetary policy has been addressed in the new institutional structure in the United Kingdom, in which the central bank plays a leading role.

[20] Operationally, this calls for extending policy horizons beyond the roughly 2-year ones typical of inflation targeting regimes and for giving greater prominence to the balance of risks in the outlook (Borio and Lowe (2002)). The reason is that the lag between the build-up of systemic risks and the emergence of financial distress is considerably longer than the lag associated with keeping inflation under control. And as the timing of the unwinding of financial imbalances is highly uncertain, extending the horizon should not be interpreted as extending point forecasts mechanically. Rather, it is a device to help assess the balance of risks faced by the economy and the costs of policy action and inaction in a more meaningful and structured way.

overlooked. In crisis management, the role of the government is inevitable; in crisis prevention, the autonomy of those in charge of macroprudential decisions is essential.[21]

Finally, ways need to be found to internalise the externalities associated with monetary policy spillovers across currency areas and with individual central bank contributions to global monetary conditions. A precondition is to recognise fully the importance of these effects – the shift to a more top-down, global analytical approach discussed above that resembles the one from a micro- to a macro-prudential orientation in regulatory and supervisory frameworks. One's house cannot be in order unless the global village also is.

Challenges and open questions

The challenges ahead are huge. It is one thing to identify the broad outline for the direction of policy. It is quite another to generate the necessary intellectual consensus and to implement the corresponding adjustments. Consider each in turn.

At a minimum, to promote a new intellectual consensus we need better analytical frameworks and better technical tools.

The mainstream analytical frameworks at policymakers' disposal are unable to incorporate the necessary elements systematically. The role of monetary and financial factors is too peripheral in today's macroeconomic models. In particular, the paradigms do not capture the essence of what Wicksell (1898) called "pure credit" economies. This is the true essence of current fiat money arrangements, in which the creation of credit, and hence of purchasing power, is only constrained by the central bank's control over short-term rates (Borio and Disyatat (2011)). The models are, in effect, "real" models disguised as "monetary" ones.[22] In addition, the critical influence of risk perceptions and attitudes towards risk in fuelling expansions and driving contractions is largely absent. Default,[23] debt overhangs and the misallocation of physical capital are not meaningfully included. And the role of global factors is badly underestimated.

Even short of developing better macroeconomic models, there is scope to improve further the technical tools that can help implement policies. Real-time indicators of the build-up of financial imbalances play a critical role. These can guide decisions concerning when to tighten monetary and macroprudential policies in order to constrain unsustainable booms even if inflation remains subdued. In recent years, considerable progress has been made (eg Borio and Drehmann (2009), Alessi and Detken (2009)). That said, further work would increase policymakers' degree of comfort with the feasibility of these strategies. A deeper empirical understanding of the relationship between the financial and business cycles could usefully complement this line of work. And as the authorities deploy more actively macroprudential tools, such as adjustments to capital buffers, loan-to-value ratios and margin standards, they will learn more about their efficacy relative to monetary levers (eg MAG (2010), BCBS (2010) and CGFS (2010)).

[21] Many central banks already combine monetary policy functions with responsibility for regulation and supervision of individual institutions; as a result, they face risks to their reputation and independence. In principle, responsibility for the system as a whole should involve *less* reputational risk, as the authorities would be insulated from individual failures caused by idiosyncratic factors. Moreover, relying on well designed macroprudential overlays, in the form of explicit adjustments to the calibration to prudential instruments, could help to retain some distance (BIS (2009), Borio (2010)). For an in-depth discussion of the governance implications of central bank responsibilities for financial stability, see BIS (2011b).

[22] See Schumpeter (1954) and Kohn (1986) for useful discussions of the distinction between "monetary" and "real" models.

[23] An observer who has been stressing the importance of including default in a meaningful way is Goodhart (2004).

But the main challenges ahead are not analytical or technical; they are of a *political economy* nature.

First, in the years ahead, the independence of central banks is likely to come under growing pressure. The importance of operational independence for macroprudential authorities has so far not been fully appreciated. In addition, in some jurisdictions, the aggressive monetary policy response, seen as consistent with current mandates, may, over time, paradoxically sap that independence. As already noted, balance-sheet policies inevitably blur the line between monetary and fiscal policy. A legitimate question is how far such policies could be transferred to government agencies (eg Stella (2010)). Moreover, persistently ultra-low interest rates could undermine the fiction that interest-rate policy, in contrast to balance-sheet policy, is neutral and does not have significant distributional effects.[24] Not least, the very low returns on savings can generate serious intergenerational tensions, as they thwart savers' efforts to accumulate assets for their retirement. And all of this is occurring as public sector debts in many economies threaten to continue rising along an unsustainable path (eg Cecchetti et al (2010), IMF (2010)), raising the spectre of "fiscal dominance". The problem is not new, but the challenge no less daunting because of that.

Second, the prospects for deeper international policy cooperation are not bright. International policy cooperation has had a chequered history. Countries have profoundly different analytical approaches to the issues at stake, even when the political colours of the day may not be all that dissimilar. And even if the approaches are consistent, the notion of "enlightened self-interest" remains a hard political sell domestically. As history teaches us, only in very special circumstances can cooperation arise. Nor is there any guarantee that it will be rooted in the right analytical view of the world.

If we are to make progress towards a more successful model of central banking, it is critical to be realistic about what central banks can and cannot achieve. No monetary and financial regime in history has proved up to the task of delivering lasting monetary and financial stability – neither the gold standard nor the fiat standard that followed. Despite the restless search for reliable anchors in the financial and monetary spheres, the goal has remained elusive (Borio and Crockett (2000)). Valiant attempts to put the system on "autopilot", through strict rules that limit the authorities' discretion, have failed. And the exercise of discretion has also not yielded the hoped-for benefits.

At a minimum, therefore, there is a need to manage expectations. During the Great Moderation, central banks sometimes came to be seen as all-powerful by the markets and the public at large. Nor, in all honesty, did they do much to dispel that belief. Now that the crisis has struck, they are facing enormous pressures to prove that they can manage the economy, restore full employment, ensure strong growth and preserve price stability. This, in fact, is a taller order than many believe, and one that central banks alone cannot deliver. To pretend otherwise risks undermining their credibility and public support in the longer run.

Conclusion

Back in 1990 Paul Volcker entitled his Per Jacobsson lecture "The triumph of central banking?". He was taking his cue from Arthur Burns' own go at the subject a decade earlier, in which he had reflected on the "anguish" of the central banking community as it struggled

[24] It is hard to see how central banks could resist pressures to keep interest rates ultra-low and use the balance sheet aggressively unless inflation increases from its current very low levels. And in a world in which the globalisation of the real economy and rise of the new emerging market giants has dealt a big blow to the bargaining power of labour, inflation may well remain subdued *even if* the true underlying resource slack measured in terms of potential output is not large.

unsuccessfully to bring inflation down (Burns (1979)). It was extraordinary, Volcker noted, how much the world had changed and the reputation of central bankers improved. But the question mark in the title was important. He remained, at heart, sceptical about how long-lasting that success would be. In the years that followed, the triumph appeared to become ever more solid and the question mark to dissolve in the Great Moderation. And yet, in many respects, what he called "unfinished business" at the time is still unfinished business today. It has proved to be the Achilles heel of central banks' success: financial stability – which he always mentioned in the same breath as price stability – and exchange rates. The speech was remarkably prescient for those who wanted to hear.

If one had to choose a fitting title for a corresponding lecture today, it would probably be: "The doubts of central banking". The certainties of the Great Moderation have gone. And there is much soul-searching, although the temptation to hark back to the deceptive simplicity of the pre-crisis world is strong. Some core propositions command agreement. Alongside price stability, central banks cannot relinquish responsibilities for financial stability and should play a key role in the macroprudential frameworks being put in place. And their operational autonomy in pursuing price stability should be safeguarded. Beyond that, however, disagreement exists concerning how far monetary policy should incorporate financial stability considerations, both during the build-up of the risks and following the materialisation of financial distress. And there is a danger that the greater involvement in financial stability, their bloated balance sheets and ballooning public sector debts will threaten central banks' independence. How to meet these challenges in what is bound to be a more hostile environment remains an open question.

This essay has put forward a compass to help central banks sail in the largely uncharted waters ahead. That compass is based on a tighter integration of the monetary and financial stability functions, a keener awareness of the global dimensions of the tasks, and stronger safeguards against threats to central bank independence. Above all, there is a need to manage expectations, recognising the limitations of our ability to manage the economy and of what central banks can achieve. There will always be "unfinished business", and it will be far from marginal.

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