

The Future of Central Banking

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1. Introduction

A central bank will usually be primarily concerned about three aspects of stability.

These are the maintenance of:-

- (1) domestic price stability,
- (2) external stability of the value of the currency, and
- (3) overall systemic stability in the financial system.

These three objectives are not, of course, independent. For example, failure to achieve (1) or (3) will adversely affect the other two objectives. Again domestic price stability (1) may, under certain regimes, be a desired by-product of pegging, linking, or fixing the currency to another currency, or basket of currencies. With only one main instrument, the short-term interest rate, a central bank can focus primarily either on the domestic, or the external, stability of the currency, but not on both simultaneously. We shall discuss later whether there may be other, secondary, instruments that a central bank can also deploy.

Nevertheless we shall consider these three functions of central banks in turn and separately. We shall report the remarkable degree of consensus about the way in which a central bank can and should pursue domestic price stability; the greater degree of uncertainty about whether, and how, external stability of exchange rates can also be attained; and finally the many differences of view about the appropriate ambit for a central bank to achieve systemic financial stability.

2. The Achievement of Domestic Price Stability

2(A). A Consensus Model

After decades in which there were fierce disputes between various categories of macro-economists, notably Keynesians (of various hues) and Monetarists (of various hues), there is currently an, historically unusual, degree of agreement about the basic mechanism whereby monetary policy has an effect on the economy more widely.

Because of frictions preventing full, immediate and perfect adjustment of wages and prices to changing economic conditions, wages and prices are sticky. These frictions remain imperfectly understood, but probably result from various forms of transactions and information costs. Anyhow, their existence means that (unexpected) changes in real interest rates have an effect, after some delay, (whose length depends on planning, ordering, executing and payment lags), on real expenditures and real output. Thus, the first of the equations in the small consensus model is an IS curve relating current real expenditures to real monetary and other shocks. In practice, in forecasting

models used by central banks this single equation usually becomes disaggregated into multiple equations by type of expenditure.

The second main equation in the consensus model is a supply-side, or modified Phillips curve, equation. This relates deviations in inflation, from its previously expected path, to deviations in output from its natural, or equilibrium level. Thus if output rises above (falls below) its natural level, inflation accelerates (declines). Unlike the IS curve, whose empirical properties have generally proven relatively successful, the supply side curve has been empirically troublesome. There are severe measurement difficulties in estimating real output; revisions are sizeable and continue for years; whether the final figure is 'correct' is uncertain. Much more serious, the time path of 'natural', or 'equilibrium', or 'sustainable', output seems to vary in several countries quite considerably over time. The decline in trend growth rates in the early 1970s was not foreseen. Often one can only make sense of the time path of inflation, as in Japan between 1980 and 2000, by assuming that the equilibrium growth path of output adjusted to its actual time path, rather than vice versa. Again, it is hard to understand why productivity, and the equilibrium growth of output, rose so much more in the USA in the late 1990s than in Europe, (including the UK). The US surge is put down to IT, interacting with a flexible labour market, but why then did it not have similar effects in the UK at least? Be that as it may, the tendency for the estimated 'equilibrium' path of output to track its medium-term actual path has given opponents of the consensus a loop-hole for arguing, on grounds of hysteresis, etc., for more expansionary monetary policies, than might appear consistent with the inflation target, in those areas, such as the euro-zone, where both growth, and assessed equilibrium growth have been weak.

A general feature of current macro-theory is to emphasize the importance of forward-looking (so called rational) expectations. As McCallum (2005) reports, a shift from backwards-looking to forwards-looking expectations has been a hallmark of theoretical revision in the last couple of decades. This, however, has been despite empirical work which consistently suggests that backwards-looking expectations fit the empirical data better. The forward-looking rational expectations theories do not, on this view, adequately take into account the difficulties and costs of forming expectations, and hence the likelihood that most people will tend to extrapolate past experience into future forecasts – after all, is that not exactly what time-series regressions actually do?

That said, it is becoming widely accepted that a second, key role for central banks, besides varying the short-term official policy rate is to influence expectations, notably of future price inflation and also of the future path of official policy rates. A key indication whether a central bank is succeeding in delivering price stability is whether inflation expectations remain low and stable, and in line with the inflation target (if such exists), especially in the face of various nominal, and real, disturbances, e.g. in oil prices. If future inflation expectations are thereby ‘anchored’, a change in nominal interest rates will have a more predictable, and perhaps generally larger, effect on real interest rates than otherwise.

Besides that, the transmission effect of a change in the short-term official interest rate will be greater if that change is regarded as being long-lasting, rather than transitory – and even more so if it is expected to be followed by several further changes in the

short-term policy rate, (on all this, see Woodford, 2003). Central banks have several means for indicating their own views about the future path of their own rates, for example via forecasts, Minutes, speeches, etc. While there is evidence that such expectation massaging can be effective, (Gurkaynak, et al, 2005), the question of how best to do so, if at all, remains a ‘black art’ and quite contentious.

Be that as it may, the consensus three equation model, taken from McCallum (2005), is as reported below. We have already briefly discussed the first two equations, the IS and supply side equations. The third equation is a Taylor-type reaction function, whereby the central bank adjusts interest rates in response to deviations of inflation from target and of output from its equilibrium rate.

$$\begin{aligned}
 (1) \quad y_t &= b_0 + b_1(R_t - E_t)p_{t+1} + E_t y_{t+1} + v_t & b_1 < 0 \\
 (2) \quad p_t &= \alpha E_t p_{t+1} + \alpha_1(y_t - \bar{y}_t) + u_t & \alpha_1 > 0 \\
 (3) \quad R_t &= (1 - \alpha_3)[r + \alpha_2 p_t + \alpha_1(y_t - \bar{y}_t)] + \alpha_3 R_{t-1} + e_t & \mu_1 > 0, \mu_2 > 0
 \end{aligned}$$

The symbols are as follows: y = log of output, \bar{y} = log of natural rate output, p = log of price level, R = policy determined short-term interest rate, B^* = inflation target, v , u and e = stochastic shocks and E is the expectations operator.

2(B). Central Bank Objectives

When the Reserve Bank of New Zealand Act was passed in 1989, giving the RBNZ an inflation target, (to be agreed with the Minister), this was not initially done for reasons emerging from monetary theory, but rather as an extension of Roger Douglas’ aim to give each public sector enterprise a clear, quantified and simple target, to which it could be held accountable. Nevertheless, making price stability the target was

in line with the theory that, in the medium and longer term, monetary policy was neutral; that is, at such low periodicities, monetary policy could only affect nominal variables, and not real variables, which latter would be affected by non-monetary real factors. Indeed, central bankers often argue that their main contribution to growth is simply to provide a context of price and financial stability. This latter claim is frequently challenged, mostly by various groups of Post-Keynesians, on the grounds that more expansionary monetary policy can, at least under certain circumstances, lead to a longer-run improvement in growth.

Given the central bank claim that, in the medium and longer run, their influence is solely on nominal variables, e.g. inflation, and not at all on real variables, such as output and unemployment, it is somewhat difficult and sensitive to explain that, at much higher frequencies, up to two, or so, years out, their influence on inflation is via the transmission mechanism of bringing about changes to exactly such real variables, i.e. output and unemployment. Moreover, given the long lags involved before inflation responds to monetary policy – lags of a length hard to explain in forwards-looking models – an attempt to drive a deviation of inflation from target rapidly back to that target could only be done by enforcing an (undesirably) large change in output, especially if that deviation emanated from an initial supply shock.

There are various ways of trying to reconcile the low frequency primacy given to price stabilisation with the higher frequency concern for limiting the variance of output, as well as the variance of inflation, (in both cases around their desired mean levels). The concern here is primarily political and presentational rather than analytical. Much of the blame for the worsening path of inflation into the 1970s was

attributed to the short-termism and time-inconsistency of politicians – bringing inflation down is initially painful. Therefore, delegating to the central bank the overriding responsibility for controlling inflation and also the instrument, operational independence to vary interest rates, to do so, was seen as the appropriate reform. But, in so far as there is a short-term trade-off between the limitation of the variances of output and inflation, should not such a trade-off be a legitimate matter for political determination, rather than delegating it to a non-elected, technical body? So long as overall growth has remained reasonably strong, and (supply-side) shocks muted, the pursuit of inflation targetry by operationally independent central banks has proven popular and, surprisingly, successful. As will be noted later, this need not always remain the case.

Let us now touch on a few related issues. First, is not inflation a monetary matter, and what about Monetarism? In fact, the consensus model can be easily expanded to include a demand-for-money function. But, with central banks traditionally setting interest rates, not the quantity of a (any) monetary aggregate, that function is redundant, (the money supply is endogenously determined by the policy rate, income, prices, etc.), (see Bindseil, 2004). Policy need not be made that way in principle, but, were the authorities to target M rather than i , it would add yet another source of uncertainty into the system, as represented by unpredictable fluctuations in velocity. Such fluctuations (the error term in a demand function for money) have been large in recent years, and monetary policy control via setting interest rates directly quite successful, so monetarist attacks on the consensus have been in minor key. Questions remain about how far monetary trends are a useful information variable to predict the

future path of inflation; for example what is the value and role of the monetary pillar of the ESCB?

The Monetarists have a stronger case when arguing that the short-term policy rate – and measures to influence expectations of its future path – are not the only possible channel of monetary policy. Otherwise monetary policy would become impotent under deflationary circumstances whenever short-term rates hit the zero nominal-bound limit, a liquidity trap. If, however, short-term nominal interest rates are zero and expected to remain so for some time, other assets with built-in cash flows to savers must be being expected to be falling in price (or else arbitrage could occur), e.g. equities, long-term coupon bonds, housing. Determined monetary expansion, and appropriately designed market operations by central banks, should be able to stem such asset price declines, and relax the supposed liquidity trap.

Be that as it may, the experience of deflation in Japan has been persistent and hard to reverse. That has meant that there has been no enthusiasm for lowering current inflation targets, generally clustered around 2 or 2½%, to some lower level; if anything pressures have been in the other direction. Similarly there has been no enthusiasm for moving from an inflation to a price level target, though a price level target could as easily be for a rising level of prices as for price constancy. The difference between the two is that for an inflation target bygones are bygones, whereas for a price level target past deviations have to be clawed back. If the central bank is fully credible, and if expectations are forwards-looking and rational, then a price level target would have several theoretical advantages. But, as already noted,

expectations are often backwards-looking. Given that, an inflation target seems a safer bet. Again there is no momentum or enthusiasm for moving to a price level target.

Next, once monetary policy had been reformed in the early 1990s, and inflationary expectations anchored, monetary developments became, as under the gold standard, perhaps more closely reflected in asset price fluctuations, than in goods and services price inflation. This raises the question how the authorities might react to this new conjuncture, whereby economic shocks have become reflected more in asset price fluctuations, and less so in consumer price fluctuations. There are two main camps of thought. The first, represented by Bernanke and Gertler (1999), argues that monetary policy, in the form of interest rate changes, ought to react to the extent that such asset price fluctuations lead to predictable changes in future output and inflation, but no more than that. A major problem with such a prescription is that it is very hard to predict how an asset price bubble, or bust, may affect future output and inflation. There is always a danger that a burst bubble, interacting with a weakened banking system, could lead to a debt/deflation crisis.

Given the considerable uncertainty, but potential strong effects, of any major asset price bubble, or bust, there are therefore strong arguments for trying to lean against such developing asset price fluctuations, to head them off at the pass. That said, in so far as variations in asset prices, especially housing prices, already enter the target price index, that may occur quasi-automatically. That takes us back to a discussion about how far asset prices in general, and housing prices in particular, should enter into the target price index. Note that this differs in the UK between RPIX and CPI.

If such asset prices do not enter into the price index, or insufficiently so, there remains a question of how to respond to the separate movement of such asset prices. There are numerous problems. First, asset prices move in differing ways; how, if at all, does, or should, one aggregate over such classes of asset prices, e.g. exchange rates, property and equities.

Second, the simplicity, transparency and theoretical support resulting from defining the role of monetary policy as being to maintain medium-term price stability, with the latter defined in terms of a consumer price index, are of great value; it provides a heuristic, and easily understandable, rule for the authorities' behaviour, with one instrument to hit one target. Trying to balance an objective function containing (some index of) asset prices separately from consumer prices would lead to greater complexity, discretion and noise, and would be less likely to provide an anchor for expectations.

Third, the argument for responding to asset prices, over and above their (predictable) effect on future output (and inflation), usually involves some belief that such asset prices have moved away from their 'fundamental equilibrium', and may harm the economy when they snap back to their 'proper' level. The concept that asset prices may be in disequilibrium is, however, contentious. Clearly asset prices are what they are at any time because there is as much buying as selling, as many bulls as bears, at that price. So for a central bank to raise (lower) interest rates without being able to point to a forecast of future inflation exceeding (falling below) target, just because it viewed an asset price as being intrinsically too high (low) would be difficult to justify publicly and politically. Central bank officials are not universally known for their

prescience in calling the turn of asset markets. It is, perhaps, worth recalling that Alan Greenspan termed the US equity market as containing ‘irrational exuberance’ in 1996, when the Dow stood at about 6500, not only far below its subsequent 2000 peak of 11,700, but even below its subsequent trough in 2002 of about 9000.

For such reasons I share the conventional, and consensus, view that the straight-forward allocation of monetary policy, in the form of interest rate adjustments, to the maintenance of consumer price stability is appropriate, though I believe that house price inflation should be represented in that index. This does not, however, mean that I would not respond at all to perceived asset price fluctuations. What I would try to do is to find another instrument.

Note that a main, perhaps the main, concern about asset price bubbles is that their collapse would weaken the banking system, causing systemic financial instability, and thereby leading to a debt/deflation spiral, (I. Fisher, 1932). This was a large part of the story in many 19th century cases, in 1929-33 in the USA and much of Continental Europe, in Scandinavia in the early 1990s, in East Asia in 1997/98 and in Japan more recently. In so far, therefore, as the central bank has a prime concern for systemic financial stability, it should want to promote a program of counter-cyclical prudential regulations, where these latter become restrictive during asset price bubbles and relax during asset price downturns.

Unfortunately the system of financial regulation is developing in a manner which will have exactly the reverse proclivity. Under the Basel II accord for financial regulation, this will become more pro-cyclical. The main aim of Basel II is to make capital

adequacy requirements (CARs) more risk sensitive. But the probability of default (PoD) of a borrower increases in downturns, even though the risky venture itself is usually initiated, and financed, in the preceding upturn. So measured risk rises in slumps, and falls in booms, as do non-performing loans. The Basel Committee of Banking Supervision was not only aware of the likely pro-cyclicality of (Pillar 1) Basel II, but also took steps to try to ameliorate that problem, for example by requesting banks to ‘look through the cycle’ in assessing PoDs. Even so, the implementation of Basel II is likely to cause CARs to vary in a significantly more pro-cyclical fashion than did Basel I, with the consequence that the dynamic interaction of bank lending and asset price cycles could become even more pronounced.

There is, however, an opportunity, under Pillar 2 of Basel II, for the regulatory/supervisory authorities in any country to superimpose additional capital requirements on its own banks. So if the authorities wanted to do so, they could require the banks under their control to build up capital, even more than required under Pillar 1, during periods of asset price appreciation.

The main problem facing any one country trying to introduce contra-cyclical financial regulation is that in a global financial system, such banking business might just be transferred abroad; geographical disintermediation would take place. The main danger would arise from domestic banks booking business through subsidiaries abroad, (the business of foreign branches being treated as part of the domestic bank). There would have to be supplementary measures taken to deal with this, for example by imposing

some direct controls on certain transactions between domestic banks and their subsidiaries.

If that loophole were closed, informational frictions, both of banks about new borrowers and of borrowers about alternative (foreign) loan opportunities, could limit the extent of disintermediation. In any case, if the concern is that a domestic asset price downturn could lead to financial fragility emerging in domestic banks, would it not be beneficial to divert some of the lending supporting that asset price bubble to foreign banks? In the earlier years when the development of the London docklands financial centre at Canary Wharf appeared risky, considerable comfort was expressed by the fact that a large part of its bank finance came from foreign banks.

There is, nonetheless, a political economy concern about the contra-cyclical use of Pillar 2. This is that one of the main objectives of the Basel Accords, both Basel I and II, has been to bring about an international level playing field, so that there can be fair competition between banks head-quartered in different countries whenever they compete. The application of Pillar 2 by an individual country would, and indeed would be intended to, handicap banks subject to such extra CAR, vis a vis other banks. Depending on circumstances this could cause resentment amongst, and strong lobbying by, those banks that were affected.

Be that as it may, one of the best leading indicators of financial fragility in an individual bank or for an aggregate banking system is a rapid expansion of lending, taking such lending well above trend levels. So, the need is to have some mechanism for restraining such growth, whether in aggregate or by sector, when it interacts with

an asset bubble. One could try to design Pillar 2 in a quasi-automatic fashion, so that the greater the rate of expansion of such lending, the higher the CAR.

There remain, of course, several areas of continuing debate about inflation targetry, but such targetry has seemed largely successful, and the debate often on second-order issues.

2(C). What Could Go Wrong?¹

The last fifteen years, or so, have been a period of enormous success for Central Banks. Some of that success may have been fortuitous, with a relatively benign political and economic conjuncture, see Benati (2005). Some other part due to a once-for-all effect of declining inflation, and inflation volatility, combined with falling, and quite stable, interest rates. One must expect conditions to become more difficult over the next fifteen years.

If so, there may well be increasing political attacks on Central Bank independence, the more so where real economic growth becomes slow or stuttering. The analytical concept of the vertical Phillips curve is not one that lends itself easily to the public imagination. The idea that an increase in interest rates to safeguard price stability may be the best way to maintain long-run growth is not self-evidently obvious, especially to indebted business-men.

Moreover there is often a problem with democratic legitimacy, perhaps especially so

¹ This sub-section is taken from Goodhart (2005).

in the EU, and least in the UK. The main dangers are likely to be political, rather than economic. Combine slower growth, with perhaps a mistake in judging the transmission mechanism, and it is easy to see how a populist politician might choose to run against Central Bank independence. I have elsewhere (e.g. Goodhart, 2002; Goodhart and Meade, 2004) tried to draw an analogy between the independence of the legal system and the operational independence of Central Banks. The latter, however, is more recent, less entrenched in our social and political mores, and far more fragile than that of the legal system. It could still all go wrong; if it did so, I would expect the chief weakness to be political fragility.

3. External Stability

When looking at an individual economy by itself, (i.e. a closed economy system), there is, at present, a considerable degree of consensus about the basic model, (the three equation model described above), the nature of the transmission mechanism (via real interest rates) and the appropriate objectives of the central bank, (price stability in the medium run; trading-off fluctuations around the targets for output and inflation in the short-run). That consensus disappears when we move from a closed economy to considering international monetary relationships. First, there is no generally accepted model of the determination of exchange rates in the short to medium run; purchasing power parity eventually becomes restored in the longer term, but so slowly as to be beyond current policy horizons. In the meantime there is no clear understanding of the route whereby PPP becomes re-established. Although academic attempts to explain exchange rate fluctuations continue (Rey and Hau, 2004), modelling the exchange rate as a random walk remains the standard to beat.

Nor is there great confidence in our knowledge of the transmission mechanism whereby (monetary) policy affects the exchange rate. One of the few stylised facts in this field, that exchange rates would appreciate in response to an increase in domestic interest rates, has been called into question in recent years. In so far as international capital flows have become increasingly equity, rather than debt, related, a rise in interest rates could reduce rather than encourage inward capital flows.

A decade, or so, ago, one of the main transmission channels for monetary policy onto the domestic economy, at least for small and medium-sized open economies, was external. That is to say a rise in interest rates was expected to appreciate the currency, and the pass-through of lower import prices would then help to lower inflation. Nowadays both of those influences, the effect of interest rates on exchange rates, and of exchange rates on domestic prices, have been perceived as more muted, and even in the case of interest rates occasionally ambiguous of sign.

Despite these analytical weaknesses, there was some considerable agreement, (the Washington Consensus), that countries should, whenever possible, focus their monetary policies on domestic price stability, eschew controls on international capital movements and allow their exchange rates to float freely. It was always agreed that there should be some exceptions to this Consensus, for example among small, open economies with little, or no, capacity or credibility to maintain domestic price stability by an independent monetary policy. These could be encouraged to adopt a hard peg, a currency board or even to join a currency union.

But the experience of the Asian crisis of 1997/98 gravely weakened the Washington Consensus. Countries which maintained, or re-adopted exchange controls, (China, India, Malaysia), were perceived as doing better than those without. The dynamics of a freely-floating exchange rate could, in the course of a ‘sudden-stop’ panic, (see the various articles by Calvo, e.g. 2003, 2004, 2005), lead to a disastrous combination of devaluation, inflation and sharp reductions in output. Those that could establish, and maintain, a pegged exchange rate in those circumstances were, initially, praised. In order to maintain such a peg, against vicissitudes and speculative attack, (e.g. Hong Kong 1998), sizeable reserves would be needed. Once Asia recovered from the 1997/98 crisis, the pegs (against the US\$) also enabled the Asian countries to expand on the basis of export-led growth, especially when the \$ depreciated. So, for some seven years, 1998-2005, there was a combination in much of Asia of pegged exchange rates, reluctance to lift exchange controls on capital flows, export-led expansion and massive increases in foreign exchange reserves. Whether, and how, that policy combination will change within Asia, following China’s recent policy adjustment has yet to be seen.

The ferocity of the ‘sudden stop’ financial crisis is greatest when a country’s debt is denominated in a foreign currency, usually the US\$, e.g. because of ‘original sin’. So the danger of devastating international financial crises has been less for the industrialised core countries, the majority of whose external liabilities are denominated in their own currency. Partly as a result, the advantages of maintaining a free, open international capital market have not been questioned – as in the case of emerging economies – in the core industrialised countries.

That said, the fluctuations in bilateral exchange rates between the core industrialised countries have been large, and, since often not clearly related to fundamentals, somewhat destabilising. For example the euro went from 119 against the US\$, to 82, back to 135 and now back down again to about the level at which it started. While it is always possible, ex post facto, to find some factors to ‘explain’ these gyrations, it is quite hard to demonstrate how such market movements can have been equilibrating.

There is, therefore, some generalised concern that in a world in which all the main participants operate primarily to establish domestic price stability, and leave their exchange rates floating freely, the resultant fluctuations in such exchange rates will be volatile and, quite frequently, unhelpful. Paul Volcker has made this point in many addresses. The question, however, is what, if anything, to do about it, a problem made more difficult since we cannot well explain why exchange rates have behaved in this way.

One answer, for a small and medium-sized economy, is to join a larger currency union, which latter will approximate to a closed economy, thereby greatly limiting the shocks arising from the erratic behaviour of the foreign exchange market. This was, and remains, one of the key advantages of forming, and joining, a currency union, such as the euro. Questions relating to the political and economic conditions that may determine the optimal extent of currency unions, however, go well beyond the scope of this paper.

So let us take the number of countries with an independent monetary policy and an individual exchange rate as given. The question then arises whether, in a country

primarily aiming at domestic price stability and with no exchange controls, there is any secondary mechanism for influencing exchange rates, and whether and when that should be used. It is difficult to influence expectations. Under a pegged exchange rate system the protestation of a Minister of Finance that his currency was fairly, or even undervalued, was usually a good ‘sell’ signal, that a devaluation would be soon forthcoming.

The most obvious secondary mechanism for influencing the exchange rate is (sterilised) intervention, (n.b. so long as a country is aiming to maintain some positive policy short-term interest rate, all exchange rate intervention will be quasi-automatically sterilised). There are fewer constraints on intervention to prevent currency appreciation, than to prevent depreciation. There is no limit to the accumulation by a central bank, or Ministry of Finance, of foreign assets, whereas the quantum of foreign reserves that can be made available, e.g. by borrowing, to prevent depreciation has a limit. In both cases, i.e. intervention to prevent appreciation (or depreciation), the resultant impact on domestic interest rates, upwards (downwards), of such sterilisation is unhelpful. Moreover, in the absence of exchange controls, the potential scale of official intervention is small relative to the size of the overall market. Furthermore, the difficulty of establishing what might be the ‘equilibrium’ value of an exchange rate, and/or when the current, actual exchange rate might revert to that equilibrium makes officials uncertain when/whether the likelihood of stabilising profitably from intervention outweighs the risks of endangering taxpayers’ money by so doing. Finally the decision to intervene involves two sets of officials in most countries, that is the Ministry of Finance (Treasury) who are generally in charge of the overall strategy of international monetary affairs and the central bank which

usually carries out the actual tactical operations. Although the Ministry of Finance can – in most countries – override the central bank, it would normally be hesitant to do so. So both institutions have, in effect, a veto to prevent such operations; such dual control makes intervention even less likely. Even so, there have been cases of large scale, persistent intervention, notably in Japan,

For all these reasons intervention by central banks in most industrialised countries, with the exception of Japan, has been extremely rare. My own view is that the authorities should be braver, and be prepared not only to call a misaligned (or an unstable) exchange rate, but also to intervene to try to correct that. A possible forthcoming problem is that the world's monetary system may in future change from one with a single hegemonic leader, (the US\$), to one in which there are two, or perhaps three, poles. The experience of the inter-war years, when there was not such a clearly designated single hegemon, (as before 1914, the UK pound, or after 1945, the US\$), indicates some of the potential dangers. In so far as, perchance, both the euro and the \$ became twin poles, might changes in sentiment towards, or against, one or other spark off (self-fulfilling) fluctuations in capital flows and exchange rates that could prove damaging to the world economy – independently of movements in PPP? Could, or should, the main monetary authorities in the centre currency zones do anything to dampen such fluctuations?

By and large, the current position is that the monetary authorities are unhappy about the excessive volatility of (both real and nominal) exchange rates, but do not really understand what causes that, and feel unwilling to use intervention to mitigate it, in large part because they doubt the latter's efficacy. While the above views are

commonly shared (a consensus), it is equally felt that this is not a desirable state of affairs. This will remain a subject of continuing analysis and debate.

4. Systemic Stability

4(A). Managing the Reserve Base, the Payments System and the Money Market

Bankruptcy, (default following an inability to pay contracted debts), is an essential discipline in capitalist economics. Otherwise enterprises could continue, and expand, indefinitely by issuing liabilities, whose promised payment need not be honoured.

Such firms are said to be on a soft, as contrasted with a hard, budget constraint.

Enterprises in communist countries generally had soft budget constraints; that created problems for the allocation of scarce resources, efficiency, incentives and quality control.

Commercial banks, being private sector capitalist enterprises, are subject to those same hard budget constraints; they can and do fail. In order to persuade depositors to hold their deposit liabilities with themselves, banks have to promise depositors (in earlier centuries their note holders) that they can convert their deposits (at sight or after due notice) into the currency reserve base, whether gold or the legal tender notes of the central bank. This is the convertibility commitment. So, commercial banks can create their own deposits, e.g. by granting loans, but they cannot create their own cash reserves.

When the first central banks were created, for example the Bank of England in 1694,

they too were private sector companies with a presumed hard budget, i.e. a capacity to fail and to become bankrupt, as John Law's bank in France did. But these (central) banks had strong government support from the outset, including the grant of certain banking monopoly rights. Such support and advantages soon turned them into the largest and most powerful bank in their own country. For a variety of reasons it then became more attractive to the other private banks to hold their cash reserves as deposits with this central bank rather than in the form of gold bullion. One of these reasons was that a private bank customer of the central bank could expect to be able to borrow from the central bank whenever (temporarily) short of cash, just as their own customers would similarly turn to them for (temporary) financing. Indeed, the central bank, being the strongest bank in the country, could lend to commercial banks, which found themselves short of cash, when all other avenues for obtaining such extra reserves became effectively closed, e.g. because of a financial panic. Thus the central bank became the Lender of Last Resort.

Under the gold (or silver) standard, the central bank maintained a large stock of metallic reserves, whereas the private banks kept their own reserves in the form of central bank liabilities. This led to the settlement of inter-bank payments taking place over the books of the central bank. So the central bank naturally became a protagonist in the payment and settlement mechanism. Moreover, with the private banks using the central bank as their own bankers' bank, this gave the central bank insight into the conditions, policies and strengths of its customers, and therefore gave it information on when to extend and when to withhold leading of last resort.

As a consequence of their historical evolution, central banks were allocated two main

responsibilities. The first was maintenance of the gold standard, a macro-monetary responsibility that has now metamorphosed into inflation targetry. The second was financial stability. Most of the time, notably when facing domestic demand shocks, these objectives are not in conflict. When a domestic boom (slump) occurs, the central bank aims to reduce (to expand) its cash reserves and to raise (lower) interest rates, thereby both helping to achieve its macro target and applying contra-cyclical pressure to the banking system. To do this effectively requires yet another central banking function, that of so managing and operating the money market, notably by open market operations, that it can achieve a chosen level of short-term market rates, (by the same token, this requires the central bank to be able to control the volume of its own liabilities). The quantity of central bank reserves is the dual of the official policy rate. Why central banks choose to target the interest rate rather than the reserve bank is a separate, longer but sensible story, (see Bindseil, 2004)). So, the organisation, management and operation of money markets is yet another central bank function.

Occasionally, however, the two major central bank objectives, that is of domestic price stability and of systemic financial fragility may conflict, for example after some major supply shock. The question of how to deal with such possible conflicts between these two main objectives formed a major part of much early writing on central banking, notably Henry Thornton's (1802) Enquiry into the Paper Credit of Great Britain and Bagehot's Lombard Street (1873). The bottom line was that in a serious crisis the central bank should give priority to financial stability, but do so in a very tough-nosed fashion, with high interest rates to borrowers, both to lessen 'moral hazard' and to constrain any deviation from its macro-monetary objective.

These first three central banking functions, i.e.:-

1. the provision of the cash reserve base of the financial system;
2. close involvement in the payment and settlement systems within the economy;
and
3. management and operation of the money market, so as to determine the short-term policy set interest rate;

all remain integral to financial systems around the world. There is currently little, or no, sign of any significant change, or threat, to the continuation of such central bank operations.

A few years ago there was a temporary burst of interest in the question whether the technological development of (various forms of) e-money could pose a threat to all three functions. In practice, e-money is substituting new forms of bank payment (e.g. debit and credit cards, direct debits, etc.) for old (paper-based cheque payments). The ability of e-purses to replace cash usage has proven disappointing to its advocates, (problems remain relating to the anonymity and security of such payments). Even apart from such practical, teething problems, there remain good theoretical reasons for believing that central banks can retain the essential features of the above functions, (see the special issue of International Finance on 'The Future of Monetary Policy, ed. A. Posen, 2000).

4(B). Banking Supervision

Earlier I claimed that, not only did the central bank's function as the bankers' bank

lead it to assume the role of lender of last resort, but also that that same function had given it valuable (private) information wherewith to carry out this role. That latter argument needs to be qualified. At least until the end of the 19th century, central banks also continued ordinary commercial banking functions. Nevertheless their various special obligations meant that they were not as able, or as willing, to undertake commercial activities and new business as aggressively as the fast-expanding commercial banks. So, from being the largest bank in the country, at the start of the 19th century, the central bank became often considerably smaller (in terms of the size of its total assets/liabilities) than the main commercial banks. These latter often saw the central bank as a privileged rival, (a view that was reciprocated), and even threatened at times to set up separate central reserve-holding institution. These massive commercial banks would not happily allow a rival to have entry to pore over their books. Indeed, central banks retreated from concern about the internal conditions of the banks, to whom they might lend, to concern about the quality of the assets, the commercial bills, which they might have to buy to inject liquidity into the system, the ‘real bills’ doctrine. While all this is a long and quite complex history, the key point is that, by the end of the 19th century, central banks, at least in most countries, did not undertake direct, continuous supervision over the main commercial banks in their own countries.

Moreover, the comparative reduction in the relative size of the central bank, (in terms of relative capitalisation, or asset book, compared to the overall size of the banking system), meant that it was even less able to resolve banking crises on its own. While it is true that a central bank can create liquidity without limit, it cannot create capital. There are, indeed, a few special financial crises that just call for extra liquidity, e.g. IT

related problems as with the Millennium scare, 9/11, etc. But in most cases when financial institutions face liquidity problems, there are solvency concerns in the background; otherwise the liquidity problem would have been sorted out in the efficient inter-bank market. So, the onset of any serious banking/financial crisis is often going to force the central bank to look to other partners to help bear the burden of any loss, either to other commercial banking institutions, or – and certainly in the really serious cases – to the government. The central bank has rarely been the sole arbiter and manager of financial crises. Moreover the regulatory basis under which the banks operate has normally been set by government; after all setting regulation is the province of the legislature. Having set the regulations, governments usually establish institutional arrangements to see that the regulated banks honour them, as with the Office of the Comptroller of the Currency (OCC) in the USA.

There was some direct supervisory oversight by central banks of commercial banks in a few European countries in the 1920s, but it was not perceived as a general, necessary responsibility of central banks. When the financial crises occurred in the 1930s, most of the regulatory response came from the executive branch of government in the shape of new laws, e.g. restricting bank competition, and new institutions, e.g. the FDIC in the USA. Apart from a few European countries, the 1930s crisis did not result in a more specific supervisory role for central banks.

In any case a combination of circumstances (e.g., Socialism and greater government intervention, the exigencies of WWII financing, the laws passed in the 1930s, the memory of that crisis, etc.) caused bank lending to be controlled by direct credit constraints and directed towards claims on the government itself and on large

corporations during WWII and succeeding decades. The system was economically inefficient but the banks were safe. As noted in Eichengreen and Bordo (2003), there were hardly any bank failures in any country between about 1938 and 1970. During this long period, concern about, and familiarity with, banking supervision atrophied in most countries. It became a minor administrative matter, handled outside the central bank in many countries.

When the banks, and financial systems, became liberalized, in most industrialised countries in the 1960s and 1970s, and especially with the onset of the disturbed macro-economic conditions in the 1970s, banking crises began to recur. A new twist was that improved communications, notably IT, and international trade, was increasingly making banking a globalised, international competitive business. So, unlike earlier decades, regulation and supervision could no longer be done by each nation state independently, because of the effect on international competition, the 'level playing field'.

Governments, however, found it difficult to agree on international regulation. Into that vacuum stepped central banks which formed the Basel Committee on Banking Supervision (BCBS) in 1974; central bankers had a stronger ethos and tradition of close co-operation and compromise than politicians. So the BCBS set soft-law international regulatory guide-lines, and, where necessary, governments rubber-stamped these into legal directives. With central banks taking the lead on setting banking regulations, it was natural that the same institution would take a much more high profile role on banking supervision domestically. So, a central bank function, bank supervision, that had been dormant for decades, and not particularly prominent

even before then, suddenly mushroomed in scale, scope and personnel, certainly so in the UK.

This was to be short-lived in many countries, again including the UK. There were several reasons for this (see Goodhart, 'The Organisational Structure of Banking Supervision', 2000). Amongst these were the blurring of divisions between commercial banks and other financial institutions, (insurance, asset management, investment banking), with the rise of universal banks. Efficiency arguments indicated that a single overall financial supervisor should be made responsible for a single, seamless financial system. Of course, the central bank could, in principle, have taken on the role of also being that single supervisor. But there were a range of arguments, relating to democratic legitimacy, potential expansion of the safety net, reputational concerns for the central bank, etc., that argued in favour of a separate financial supervisory authority. Against that, there were arguments about information availability and crisis management that could be produced in favour of leaving the supervision of the main commercial banks, at least, with the central bank.

Whereas in the USA these latter arguments have prevailed, in a growing number of other countries the contrary set of arguments has won, and separate, specialised Financial Services Authorities have been established. This, however, is a relatively recent development. It raises the question of what the future role and functions of a central bank in this field will be.

A central bank, however, cannot avoid being involved and concerned with the systemic stability of the financial system as a whole. Its macro-monetary policy will

not work smoothly if the payments and banking system are in a shambles; its direct involvement in the payments and money-market system will bring it information that is independent of, and separate from, that arising individual bank supervision; the resolution of banking crises is very likely to involve the Lender of Last Resort function, for no other body can provide quick access to cash funds.

Thus it would seem certain that a separate FSA, the central bank and the government will have to work very closely together, to share information and views and to handle any (occasional) crisis. Beyond that, quite what will be the responsibilities and the functional scope for central banks without supervisory responsibilities remains unclear.

The future handling of international systemic/supervisory problems has become, if anything, even more complex and obscure. With the spread of international banking, many major banks have subsidiaries and branches in numerous countries. In some countries, notably in Eastern Europe, the banking system is dominated by foreign-owned banks. The relative responsibilities of home and host supervisors is becoming an increasingly difficult and heated question. Moreover, the effects of a banking crisis are likely to spread over several countries. When this is so, how will crisis management be handled? Even more problematical, how will resulting loss burden be shared, and who will decide whether subsidiaries are to be rescued or liquidated?

Previously central banks took the lead in establishing international regulatory norms via the BCBS. Now the BCBS is having to be expanded to accommodate the growing number of FSAs. As the size of the BCBS increases, can it remain as effective as in

the past? Moreover, crisis management, and taking on the burden of losses, must involve Ministries of Finance (Treasuries). As financial crisis become more international in character, how will such political bodies manage to resolve the resultant problems. The relative roles of FSAs, central banks and Ministries, plus the international financial institutions, (IMF and World Bank), in the resolution of such crises remains unclear.

The future role of central banks in the field of maintaining financial stability, both domestically and internationally across borders, remains clouded with uncertainty. My personal feeling, however, is that the occasion when central banks took a pre-eminent, leading role, which may provisionally be dated from 1974 till 1997, (when the UK FSA was established), was the product of particular conditions and is now gone forever. We will see.

5. Conclusions

We have examined three aspects of stability of concern to central banks.

In the first of these, the pursuit of domestic price stability, there is, on this view, a remarkable consensus of both theory, practice and policy. The outcome has been notably successful, at least so far.

In the second instance, the achievement of external stability, there is far less theoretical understanding. Partly in consequence, there is a consensus against intervention. Practice and policy have been largely passive. The outcome for

exchange rates has been volatile and often unhelpful. If the international system moves from a single hegemon to a (twin) polar basis, such volatility could get even worse.

In the third area, that of financial stability, three central banking functions, i.e. the provision of the (cash) reserve base, oversight of the payments system and management of the money market, appear to remain firmly entrenched, well-functioning and not subject to serious challenge. On the other hand the role of central banks, in supervision, regulation and crisis management, which sprang suddenly into major importance in the 1970s, has now been much diluted by the emergence of FSAs and the (possible growing?) involvement of Ministries of Finance. But much remains unclear in this rapidly changing field, not least because the handling of essentially internationally problems by national entities is still to be resolved.

Bibliography

Bagehot, W., (1973), Lombard Street, (Kegan, Paul and Co.: London).

Benati, L., (2005), 'The inflation-targeting framework from an historical perspective', Bank of England Quarterly Bulletin, 45 (2), (Summer), 160-168.

Bernanke, B. and M. Gertler, (1999), 'Monetary policy and asset price volatility', in New Challenges for Monetary Policy, Proceedings of the Jackson Hole Conference, 26-28 August, published by the Federal Reserve Bank of Kansas City, reproduced in Economic Review, Fourth Quarter, 17-51.

Bindseil, U., (2004), Monetary Policy Implementation, (Oxford University Press).

Calvo, G.A. and E. Talvi, (2005), 'Sudden stops, financial factors and economic collapse in Latin America: Learning from Argentina and Chile', Inter-American Development Bank, NBER Working Paper, No. W11153.

Calvo, G.A., Izquierdo, A. and E. Talvi, (2003), 'Sudden stops, the real exchange rate, and fiscal sustainability: Argentina's lessons', Inter-American Development Bank, Research Department (CERES), NBER Working Paper, No. W9828.

Calvo, G.A., Izquierdo, A. and L.-F. Mejia, (2004), 'On the empirics of sudden stops: The relevance of balance-sheet effects', Inter-American Development Bank, NBER Working Paper, No. W10520.

Eichengreen, B. and M. Bordo, (2003), 'Crises now and then: What lessons from the last era of financial globalisation', ch. 3 in P. Mizen (ed.), Monetary History, Exchange Rates and Financial Markets: Essays in Honour of Charles Goodhart, Vol. 2, Cheltenham, Edward Elgar, 52-91.

Fisher, I., (1932), Booms and Depressions, (Adelphi: New York).

Goodhart, C.A.E. and E. Meade, (2004), 'Central banks and supreme courts', Moneda y Crédito, 218, pp 11-59.

Goodhart, C.A.E., (2000), 'The organisational structure of banking supervision', Financial Markets Group, Special Paper, No. 127, subsequently published in Economic Notes 31, pp 1-32.

Goodhart, C.A.E., (2002), 'The constitutional position of an independent central bank', Government and Opposition, (Spring), 37 (2), pp 190-210.

Goodhart, C.A.E., (2005), 'Safeguarding good policy practice', in 'Reflections on Monetary Policy 25 Years after October 1979', Federal Reserve Bank of St Louis Review, 87 (2, Part 2), March/April, 298-302.

Gurkaynak, R.S., Sack, B. and E.T. Swanson, (2005), 'Do actions speak louder than words? The response of asset prices to monetary policy actions and statements', International Journal of Central Banking, 1 (1), June, 55-94.

McCallum, B.T., (2005), 'What have we learned since October 1979?', in 'Reflections on Monetary Policy 25 Years after October 1979', Federal Reserve Bank of St Louis Review, 87 (2, Part 2), March/April, 287-291.

Posen, A., (ed), (2000), 'The future of Monetary Policy', International Finance, 3 (2), (July), 187-308.

Rey, H. and H. Hace, (2004), 'Can portfolio rebalancing explain the dynamics of equity returns, equity flows and exchange rates?', American Economic Review, 94 (2), 126-133.

Thornton, H., (1802), An Enquiry into the Nature and Effects of the Paper Credit of Great Britain, (Reprinted 1962, Kelley: New York).

Woodford, M., (2003), Interest and Prices, (Princeton University Press: Princeton, N.J.).

Because central banks become more invested in the issuing and distribution of "money"™ they will probably gain more power at the expense of traditional banks. This might lead to instability of the banking sector. City coins. On a slightly smaller scale, other than central banks exploring CBDC, there are also some city councils that announced the creation of a cryptocurrency. Central banks should consider their specific country circumstances, paying careful attention to the risks and relative merits of alternative solutions. Further analysis of technological feasibility and operational costs is needed.™ This suggests they are not quite ready to approve a CBDC, but they might after further research has been done, or a country comes up with a solid plan for issuing a CBDC. Speech by Yves Mersch, Member of the Executive Board of the ECB, at the Economist Future of Banking Summit in Paris, 10 March 2015. Ladies and gentlemen, It is a pleasure to be here this morning to open this conference on the "The Future of Banking". What I would like to discuss in my remarks is the challenges facing the European banking sector and the right policy responses. The main point I would like to make is that we need a balanced approach " supporting the healthy forces of creative destruction, while at the same time protecting consumers and the essential functions of banks in servicin