

The Role of Macro-Prudential Supervision

Charles Goodhart

Financial Markets Group, London School of Economics

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By
C.A.E. Goodhart
Financial Markets Group, London School of Economics

1. Why is Macro-Prudential Supervision needed?

The experience of the last few years reveals, all too starkly, that the achievement of price stability, as evidenced for example by the successful conduct of inflation targets, does not guarantee financial stability. Initially there had been fears that the pursuit of price stability might lead to greater volatility in real output (Rogoff, 1985), but, at least during the Great Moderation, (which we in Europe would date 1992-2007), the reverse was true. Output grew more steadily than in previous decades, prior to the collapse in 2008 Q4.

There may have been some, amongst officials, economists and commentators, who believed that such greater macro-economic stability, in inflation and output (and also in nominal interest rates and unemployment), would bring in its train greater stability in asset prices. If such macro-economic fundamentals were behaving more steadily, then surely asset prices would also do so? Yet, even if we exclude the latest crisis years, there is little evidence of greater asset price stability during the years 1992-2006 than in the previous equivalent period 1977-1991, with the exception of government bond prices.

Thus in Table 1, we take the standard deviation, around the trend as measured by an H-P filter applied from 1970 to end 2009, for a set of US variables.

Table 1

Standard Deviation around Trend	1977-1991	1992-2006
NYSE	1.255553	4.389932
US Housing Prices	0.838291	0.748006
\$/Yen Exchange Rate*	0.000368	0.000515
\$/£ Exchange Rate*	0.103489	0.066887
US 10 year T Bond	0.894748	0.492445

* For Exchange Rate data, the HP filter is from 1971 to 2009.

Sources:

FED St Louis – US Housing Prices, Exchange Rates and US 10 year T Bond

IFS(IMF) – NYSE S&P 500

There are reasons to explain the divergent behaviour of macro-economic fundamentals and asset price variability. One set of such reasons relates to the relationship between the time-varying risk aversion of agents operating in financial markets, and the macro-economic fundamentals. This was primarily developed by Minsky (1977, 1982 and 1986). When the macro-economic fundamentals appear to be set fair, risk aversion falls. Financial intermediaries both increase leverage and move along the risk curve, the more so as relatively riskless interest rates on public sector debt decline. To use Minsky's terminology, borrowers and lenders move from hedge assets/liabilities to more speculative assets/liabilities, and in some cases to Ponzi assets/liabilities. So when, after a period of successful steady expansion, an adverse shock occurs, it is likely to have a much more devastating effect on financial stability, than that same shock

would have had during a period of greater macro-economic disturbance, (Vardoulakis, et al, 2010). The enhanced effect of such a shock, following a period of successful steady growth, may be all the greater if market participants have an exaggerated belief in the ability of the authorities to protect them from such tail events; a belief which became known as the 'Greenspan put'.

Be that as it may, the evidence is now clear that the achievement of price stability does not guarantee financial stability. Moreover, financial instability can imperil macro-economic outcomes. Although the objective of achieving financial stability was given something of a back-seat in the years up till 2007, partly because responsibility for the financial supervision of individual institutions was hived off, in many countries such as Japan and the UK, to a separate Financial Services Authority, it was historically and traditionally the second core purpose of most Central Banks.¹ Now the need to achieve that objective has been re-affirmed and re-emphasised.

So there are now to be two, separate targets for Central Banks to achieve. But Central Banks typically have a single instrument, the ability to control and vary the official short term rate of interest. This has led many, following Cecchetti, et al (2000) to argue that inflation targeting be amended to allow interest rates to 'lean against the wind' of asset price fluctuations.

¹ Within the euro-zone there was also the complication that, whereas the conduct of monetary policy was transferred to the European Central Bank (ECB), prudential supervision remained nationally based.

There are gradations to this proposal. At a minimum there is a continuing need to reconsider how housing prices might best be included in the main inflation indices, since booms/busts in housing and property prices have been the most common accompaniment of episodes of financial instability. For example, housing price movements have been (so far) excluded altogether from the Harmonised Index of Consumer Prices, commonly used in Europe, and the way that they should be measured for the assessment of inflationary pressures remains contentious.

The use by the European Central Bank (ECB) of a second monetary pillar could also be viewed as an attempt to incorporate some such 'leaning'. Financial booms, and busts, are usually accompanied by major fluctuations in leverage and credit expansion, and these latter are likely, (but not alas certain), to show up in monetary aggregate data – unless hidden in the 'shadow, or near, banking system'. Moreover, from a central banking viewpoint, such a second pillar has the virtue of relating policy to monetary aggregates, which, unlike housing or equity prices, are more clearly in the locus of monetary policy. Yet, particularly in the short run, the monetary variables are so hard to interpret that the ECB has, as far as can be assessed from the outside, made relatively little quantitative use, so far, of its 'second pillar' in setting official interest rates.

This is partly because of difficulties in assessing whether financial markets, and asset prices, have moved significantly away from equilibrium. There are always siren voices, often from eminent economists, to argue that the Dow Stock Exchange index at 15,000

or housing price/income ratios of 4 or 5, are perfectly consistent with equilibrium, (given prospects of faster growth and lower real interest rates than in the past). In the face of such uncertainty, it takes a brave and determined Central Banker (and one whose political base is solid) consciously to aim to depress the real economy in order to mitigate a perceived, but uncertain, asset price boom.

Moreover, one of the key elements of an inflation targeting regime lies in the ability of a credible Central Bank, adopting such a regime, to stabilise inflation expectations. The successful dedication of the interest rate instrument to the medium-term stabilisation of prices is a powerful instrument for that purpose. Blurring the focus of interest rate adjustment to incorporate two targets would, on this view, weaken both the accountability of the Central Bank and its ability to keep inflationary expectations anchored. At a time when many are fearful either of a future upsurge of inflation or of persistent deflation, or even of one followed by the other, the need is rather to reaffirm the focus of Central Banks in using macro monetary policy, i.e. interest rates (plus Quantitative Easing when the zero bound is hit), to hit the inflation target, rather than diluting that focus by adding a second objective.

But, if official interest rate adjustment is to continue to be dedicated to the macro-economic purpose of maintaining price stability, then how are central banks to achieve their concern with maintaining orderly financial conditions as a pre-condition for the maintenance of price stability, now that that role has become so prominent? At

present, the powers of most central banks in this field are limited to ‘delivering sermons and organizing burials’, King (2009). So, the search is on, at least in some quarters, for a second (set of) instrument(s), macro-prudential counter-cyclical instruments, which may be wielded by central banks, alongside and independently of official interest rates. This would allow the Tinbergen principle, of two objectives and two instruments, to be achieved.

Discussions on such a second (set of) instruments, to allow for the achievement of the second core purpose, have differed somewhat between Europe and the USA.

Europeans have mainly advocated counter-cyclical regulations, to be applied and adjusted by the relevant regulatory/supervisory authorities. Many Americans are, however, sceptical and dubious about the application of official regulation, and would prefer to adopt some form of market-based reform, that could limit both moral hazard and ‘too-big-to-fail’ (TBTF), and could do so quasi-automatically without any (discretionary) intervention by the authorities. Per contra, the Europeans tend to feel that recent events have discredited reliance on market forces, and that market forces need to be better controlled by official directives.

This distinction between the European and the American approaches to finding a second set of instruments is far from absolute. Thus many in the USA, especially Krugman’s ‘salt-water economists’, will be happy to go along with the proposals for regulatory reform, e.g. those emerging from the Basel Committee on Banking

Supervision (BCBS) in December 2009. Indeed, the executive's own proposals, as outlined by Secretary of the Treasury, Tim Geithner, and included in Barney Frank's House of Representatives Bill, has much in common with the European/BCBS' set of proposals. By the same token some American proposals for market-based reforms, such as the use of conditional convertible bonds, (now known as Co-Cos), although proposed in the USA (Flannery, 2005, Squam Lake, 2009), have been put into practice, (I believe for the first time), by a UK bank; and UK building societies have also been investigating their adoption.

Undoubtedly the distinction drawn here between European-style regulatory reform and US-style market-based reform is fuzzy and inexact. Nevertheless it is my contention that there is sufficient meat to this distinction to make it the framework for this paper. So, in the next Section we will review a set of European regulatory and then American market-based proposals, in each case reflecting on the disadvantages and problems that each face.

Then at the end we turn from the question of what instruments should be used to maintain financial stability, to the question of what should be the role of the Central Bank in their application. Once again, there is a distinction between the European approach, where Central Banks have been reinforcing their role in the financial stability field, for example with the introduction of the (Central Bank dominated) European

Systemic Risk Board (ESRB), and the American approach where there have been widespread objections to giving the Fed the leading role in this respect.

2. What Macro-prudential Instruments?

2(A)(1) European-style counter-cyclical instruments

As noted in several Reports, e.g. Brunnermeier, et al., (2009), the focus of regulation/supervision, in the decades up until 2007, has been on the individual bank, or financial intermediary, with insufficient attention being paid to systemic effects and spill-overs, externalities. This is now being corrected. A more systemic approach needs to be put in place. The formation of the European Systemic Risk Board is an example of this new approach. Although the (legal) power to enforce and to amend regulation remains with the individual nation state within the EU, the ability of the ESRB to issue warnings and to propose regulatory changes, and to require the relevant national authorities to comply with such proposals or to explain why not, could (depending on how the ESRB performs in practice) prove a powerful mechanism for initiating macro-prudential supervision² and control.

² It may be worthwhile to reiterate the distinction between regulation, which involves setting the rules of conduct, and supervision, which concerns monitoring adherence to such rules and enforcing compliance with them.

But the ESRB provides a procedural mechanism, wherein the macro-prudential instruments can be deployed. Turning now to the instruments themselves, there are two main such instruments, and a penumbra of less conventional, and perhaps more fundamental, possibilities.

The two main instruments are capital and liquidity ratios. Let us turn to capital ratios first.

2(A)(1a) *Capital Ratios*

Risk management is a complicated business, with many facets. The Basel Committee on Banking Supervision (BCBS) Capital Accord of 1988 only addressed credit risk. They turned next to the subject of Market Risk, comprising interest rate risk, liquidity risk, etc., in banks' trading books. When they circulated their early discussion drafts, they soon found that their heuristic, rule-of-thumb approach to assessing such risks was technically far behind the internal risk management approach of the large international banks, who had been developing internal risk management models based on finance theory, in particular the Value-at-Risk, VaR, Model. The BCBS recognised that they were comparatively deficient in risk modelling, and in effect adopted the commercial banks' internal modelling techniques, both for the Market Risk amendment to the Basel Accord (1996) and, more important, as the basis for Basel II. In a sense the BCBS had been intellectually captured.

Basel I had soon come under fire. Its risk 'buckets' were far too broad. Any loan to a private corporate had the same (100%) weight whether to the largest/safest company or to some fly-by-night start-up. So the regulators were requiring too much regulatory capital to be placed against 'safe' loans, and too little against 'risky' loans. This led banks to sell off 'safe' loans (securitisations) to entities outside the regulatory net – including the emerging shadow banking system – and to hold onto their risky loans. So the regulation, intended to make banks safer, was instead making them riskier. The answer seemed to be to rely more on market risk assessment, either by credit rating agencies (CRAs), or, even better, by the banks themselves in either the Foundation or Advanced internal ratings based (IRB) approaches. The basic idea was to allow the regulators to piggy-back on the greater technical risk-management skills of the regulated, and one of the boasts of the authors of Basel II was that it aligned regulatory capital much more closely with the economic capital that the banks wanted to keep for their own sake.

This was, however, a misguided strategy. A commercial bank's concern is how to position itself under normal conditions, in which it can assume, even for large banks, that outside conditions will not be much affected by its own actions. If really extreme conditions do develop, the authorities will anyhow have to react. Moreover, such a bank is unconcerned with any externalities that its failure might cause. For such purposes tools such as VaRs, stress tests, etc., are well designed. But the regulators' concerns should have been quite different. Their concern should have been exclusively about

externalities, since the banks' creditors should properly absorb internalised losses. They should have worried about the strength of the system, not so much that of the individual bank, about co-variances rather than variances, about inter-active self-amplifying mechanisms rather than about stress tests that assume a world invariant to the banks' own reactions, (Brunnermeier, et al., 2009).

Why did it all go so wrong? First there was often an implicit belief that, if one acted to make all the individual components (banks) of a (banking) system operate safely, then the system as a whole would be protected from harm (fallacy of composition). Second, there was a tendency among the regulators, and at the BCBS, to patch up the system incrementally in response to criticism (and to events) rather than to think about fundamental issues. Regulators, and supervisors, tend to be pragmatists rather than theorists – and they had little enough help from economists, many of whose main models abstracted from financial intermediation and/or default!

Be that as it may, the slow, and painful, advent of Basel II did nothing to mitigate the cycle of credit expansion and taking on extra leverage, up until August 2007, and its abrupt and destructive reversal thereafter. Defaults, volatility and risk premia were all reduced to low levels (2003-6), and ratings whether by CRAs, or internally, were high and rising. With profits, and capital, further enhanced by the application of mark-to-market accounting, all the risk models and powerful market pressures were encouraging

banks, and other financial intermediaries, to take on ever more leverage, right until the bottom fell out of the market in July/August 2007.

The need is now to rethink the application of capital ratios. There are, at least, five issues that need to be considered, being

- i. The base to which the ratio should apply, notably whether this should just be a simple leverage ratio and/or risk-weighted, and its application to contingent calls on (bank) funding, e.g. off-balance sheet and unused credit lines, as well as on balance sheet items;
- ii. The definition of applicable capital for such purposes;
- iii. Whether the ratio should be constant, or time and state varying, and if the latter whether such variation be done by discretion or be done by some rule/formula;
- iv. The 'normal' level of such ratios; and
- v. The sanctions to be imposed for transgressing that level.

There are now answers to some of these questions. In view of the ease with which either a risk-weighted, or a leverage, ratio on its own can be manipulated (in the first case by levering up with assets whose risk-weighting is 'optimistic'; in the second case by holding riskier assets on balance sheet, while securitising/selling safer assets), the latest proposal of the BCBS is to go for both simultaneously. Again the treatment of contingent claims, and off-balance sheet entities, is being tightened up, but, in view of

the somewhat fuzzy nature of contingent commitments to extend loans (incomplete contracts) in future, this is likely to remain a grey area.

Similarly the definition of applicable capital is being narrowed. Various forms of hybrid, or subordinate, debt, that were junior to deposits, and so gave protection in the event of a default, but did not themselves provide much, if any, protection against that default, will no longer play a role, as they used to do in Tier 2, and in some cases even in Tier 1. The focus now will be on Tier 1 capital, and within that on Tangible Core Equity, or TCE.

Next, the prospective required ratios of Tier 1 or TCE capital both to RWA, or leverage, are being raised, but with a, quite long, transition period, at least until 2012, in view of both the current recession, the weakened state of the banking system and the slow growth (or even decline) in bank lending to the private sector.

Issues where there has been less agreement relate to (iii) whether the ratios should be constant, or time-varying, and (v) whether there should be a ladder of sanctions for transgressing the ratio. On issue (iii) many Central Bank officials claim that the opportunity for time/state varying ratios was already available under Pillar 2 of the Basel II accord, in a discretionary mode, to supervisors; that this option remains, and is all that is desirable. Against that, one can note that Pillar 2 of Basel II has rarely, if ever, been activated; that it is always going to be subject to the 'Level Playing Field' critique,

and that its activation will almost invariably run directly contrary to market forces and pressures, and so would be (politically) very unpopular. On these latter grounds one can argue that some form of 'rule' or 'formula' based mechanism needs to be put in place in order to give regulators/supervisors the backbone and support ever to introduce time/state varying ratios. In response to the valid criticism that no set of rules/formulae can ever fully and properly take account of the infinite range of future possibilities, they could be applied on a 'comply or explain' basis.

The systemic concern that many academics have at the forefront of their minds is of a generalised asset price boom/bust within their (national/regional/sectoral) financial systems, which would be represented by a general expansion in (a) credit to the private sector, (b) leverage, and (c) asset price increases, especially in housing and property. On the other hand, the concern that more politicians/commentators have at the forefront of their minds is the contribution that individual financial institutions (banks) may make to the potential instability of the system as a whole. Thus 'systemic' financial intermediaries may be identified, perhaps on some (as yet undecided) combined criteria of size, activities, and inter-connectedness, and regulated/supervised separately from the rest. Even within the set of 'systemic' financial intermediaries, the required capital ratio might, perhaps, vary depending on the assessed, (but how measured) extent of that individual intermediary being systemic. Although the measurement of the extent of individual systemic weight is far less advanced than the measurement of overall

cycles in leverage/credit expansion, etc., the momentum for varying such ratios for each individual 'systemic' institution has been, on this view, rather stronger.

In view of the difficulties of any mechanism of time/state varying capital ratios, other methods for achieving some counter-cyclical effects remain also under consideration. A leading example has been the Spanish dynamic pre-provisioning procedure. This, however, falls foul of accountants and tax authorities, (who fear that it may be used to defer tax payments). In particular accountants dislike applying generalised probabilities rather than specific outcomes. Considerable pressure is now, however, being applied to accountants to accept generalised provisions, at least to assets in the 'hold to maturity' category, which provisions might be state varying. This approach, of course, has many overlapping characteristics with a state varying capital ratio, and the choice between the two could depend on which seemed more acceptable and 'do-able'. Cyclical movements in expected losses are, however, much smaller than cyclical movements in unexpected losses, so adjusting capital is much more important than adjusting provisions.³ Ideally we should have both time/state varying capital ratios and dynamic pre-provisioning.

It is, perhaps, with the final issue, the applicable ladder of sanctions, that least progress has been achieved. This reflects an inherent weakness in the BCBS international procedures. Since laws and sanctions are a national prerogative, and the BCBS has no

³ Rafael Repullo pointed this out to me.

formal basis and acts as an advisory body, it has always refrained from suggesting any sanctions as a consequence of undershooting its proposed ratios. The untoward result of this has been that virtually all those involved whether ratings agencies, market operators and commentators, or even the regulators themselves, have taken the BCBS proposed ratios as absolute minima which can never be infringed without serious reputational consequences.

But this, of course, destroys, indeed has destroyed, the potential buffering role of (required) capital, and has transformed the usable buffer into the shape of the much more exiguous margin above the required capital ratio. That has been a major drawback of the whole BCBS approach to date. Despite the example of the FDIC Improvement Act (1991) in the USA, which established a sensible ladder of sanctions, the BCBS has still refrained from grasping this nettle. Of course, if the normal required ratio was set relatively low, with an expectation that there would be much more aggressive use of time/state varying counter-cyclical add-ons, it could amount to much the same in the end, but there is no evidence at all of this being likely. Instead the currently most probable outcome is for a large increase in the standard required ratio(s), after a transitional period, with little, or no, counter-cyclical additionality. If so, it behoves the BCBS to consider, and to suggest, how an appropriate ladder of sanctions might be introduced and applied. There is, alas, not much sign as yet (2009) that the BCBS are moving in this direction.

2(A)(1b) *Liquidity Ratios*

The Basel Committee on Banking Supervision had failed in an earlier attempt to reach an Accord on Liquidity in the 1980s. Partly as a result, asset liquidity had subsequently been run down. The general hypothesis, shared alike by most bankers and most regulators, was that, so long as banks had 'sufficient' capital, they could always access efficient wholesale money markets, and thereby replace asset liquidity by funding liquidity. While these money market liabilities were short-term, compared to bank assets, the interest rate and credit risks generated by such a maturity mismatch could then be resolved by securitisation and by hedging via derivatives. Finally the assumption was that adherence to Basel II would ensure 'sufficient' capital.

These comfortable assumptions fell apart in the summer of 2007. The actual, and prospective, losses on mortgage backed securities, especially on sub-primes, and the gaming of Basel II, especially by European banks, meant that adherence to the Basel II requirements was not enough to provide complete assurance on future solvency in many cases. Especially with the opacity of CDOs, the markets for securitisation dried up, as did short-term wholesale markets, e.g. asset-backed commercial paper, and unsecured interbank term loan markets. This led to a liquidity crisis.

According to the prior set of assumptions, this could/should never have happened. It took everyone, including the central banks, largely by surprise. One response was that

this pickle was largely the fault of the commercial banks' own business strategies, (too few 'good' public sector assets, too much reliance on short-dated wholesale funds and securitisation, too great a mismatch, etc.); so to help banks out of this hole would generate moral hazard. Perhaps, but the virulence of the collapse became so great that all the central banks were forced to expand their provision of liquidity over an ever-increasing range of maturities, collateral and institutions.

When it comes to designing specific liquidity ratios, many of the same considerations apply, such as:-

- i. The base, for example whether done on a simple leverage ratio basis, or assessed via a maturity mismatch (or a combination of both?). How to handle contingent claims on funding needs;
- ii. The definition of liquid assets for such purposes;
- iii. Whether the ratio should be constant, or time/state varying, and if the latter whether such variation should be done by discretion or by some rule/formulae;
- iv. The 'normal' level of such ratios; and
- v. The sanctions, if any, imposed on transgressions of the normal level.

Many of these involve the same issues as were already reviewed for the application of capital ratios, and do not need to be repeated here. But, whereas virtually everyone accepts the need for capital ratio requirements, not everyone, notably not Buiter (2008), sees a need for imposed liquidity ratios. In part such disagreement relates to

the definition of liquid assets (ii above), and, deriving from that discussion, a deeper analysis of exactly what is the purpose of liquidity ratios in the first place.

The point at issue here is that a Central Bank can, if it so chooses, buy, or more usually lend against the collateral of, virtually any asset. Moreover, during the recent crisis, Central Banks both lent against a wider range of collateral assets, or, when they sought to maintain the strict nature of their lending terms, they agreed to a swap, under some Special Lending Scheme, of non-acceptable assets (e.g. various kinds of mortgages) for acceptable assets (e.g. public sector debt). Willem Buiter has simply taken this logic to its extreme. Thus a Central Bank can, in principle, liquefy any asset – though it will be hesitant to do so if there is no stable market price for that asset, since it puts excessive risk on its books. Any asset that can be transformed into cash by borrowing from a Central Bank is liquid. Hence all assets are, in principle, liquid; so all commercial banks are, at all times, fully liquid, and there is no need to require banks to hold some sub-set of particular (usually low-yielding, public sector) assets. It is just a tax on banks and a subsidy to the government.

What, if anything, is wrong with that argument? There are, in my view, at least two inter-related counter-arguments. The first relates to time. If a bank holds only relatively illiquid private sector debt, it will find it hard to raise cash quickly by selling such assets on the private market, at least without generating a sizeable reduction in the prices of such assets, and thereby amplifying the crisis (an externality). So such a

commercial bank would be forced to turn to the Central Bank for liquidity support at a very early stage in the crisis. The problem with that is that, in a crisis, time is short and of the essence. Time is always needed, and rarely sufficient, to discover the facts and to assess how best to resolve the issue. Moreover, the stigma issue, whereby a bank requesting liquidity support from the Central Bank is perceived by the market as, *ipso facto*, less creditworthy, has not yet been resolved. So greater reliance on the Central Bank for liquidity support enhances the potential conflict between transparency and policy effectiveness (n.b. the political row over the secrecy surrounding the Bank of England's loans to the Royal Bank of Scotland (RBS) and to Lloyds Bank in the autumn of 2008).

The second issue relates to the discount, the terms on which the Central Bank should lend to commercial banks. This issue has been muddled by the common, but misguided, claim that the Central Bank should only lend at a penal rate, relative to the market. The basic error of this position becomes clear by realising that, if the Central Bank is only to lend on worse terms than the market, it would never be asked to lend at all! The truth, however, is often that the assets which a commercial bank can pledge, or sell, are sufficiently illiquid that that action could reduce their value considerably. If these are all that a commercial bank has available, then the Central Bank faces a serious problem. Either it will be prepared to lend at such a large discount to the current market that it protects its own position, but provides little, if any, assistance to the borrowing bank, and may thereby provoke further (mark-to-market) falls in such asset prices; or it will

lend on relatively generous terms, thereby supporting the borrowing bank and the market, but by so doing put its own balance sheet, and by inference taxpayers, at risk. It is essentially this same conundrum that put the TARP exercise in difficulties; too low a price, and it does not help the banks; too high a price, and taxpayers may be subsidising banks.

So, even when a Central Bank may be put under pressure ultimately to lend against any asset that a commercial bank may have available to offer, the existence of a liquid asset ratio provides protection for a Central Bank from having to do so. It not only provides time for the authorities to resolve the crisis, but also greatly reduces the difficulty of being able to decide on the appropriate terms for doing so. Once, however, one recognizes that the purpose of a liquid asset ratio is essentially to provide protection to the Central Bank, from being forced quickly into a position of making markets in illiquid assets, it provides at least an initial guide to thinking about both the composition and the normal amount (ratio) to be required of such assets. In particular, private sector markets, especially for mortgage-based assets, can rapidly become illiquid, and wholesale funding markets also can dry up. This suggests that liquid assets, for this purpose, should consist primarily of public sector debt, and also be sufficient to meet liquidity needs for a sufficiently long period, say 10 weeks, that could enable a Central Bank to respond to a generalised liquidity drought.⁴

⁴ A subsidiary issue is whether there should be a limit on the maturity/duration of the public sector debt that could be counted as liquid. My view is that no such limit is needed for the following reasons:-

2(A)(1c) *Other, somewhat less conventional, European proposals*

The core of most European proposals consists of a reinforcement of capital/liquidity ratios. Such proposals may be extended, or adjusted, in a variety of ways:-

- i) Pigovian taxes
- ii) Application to a wider base of systemic intermediaries
- iii) Extended margining

a) Pigovian Taxes

In so far as capital/liquidity ratios force banks to reorient their portfolios in a way that they would not do voluntarily anyhow (in which case the regulation is superfluous), they represent an added cost to the bank involved. An alternative way of seeking to make banks behave in a systemically safer way is to impose taxes on such facets of their behaviour as could lead to systemic failure and the use of taxpayer money,⁵ such as increasing taxes on size, inter-connectedness (?) and certain prescribed activities (e.g.

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- 1) All such debt is liquid in the sense of (almost always) being tradeable in large volumes at low bid-ask spreads without changing prices much against the trader.
 - 2) While interest rate risk does increase with duration, that risk can be specifically hedged via swaps. What matters is the interest rate risk of the bank's portfolio as a whole, not that of any individual item within it.
 - 3) Once there is confidence in future price stability, as in the 19th century, long yields tend to move very little in response to changes in short rates. In the 19th century in the UK Consols were widely regarded as the most liquid asset, beyond cash, that a bank could hold.
 - 4) Any line drawn, above which such debt would not be treated as liquid, would not only be arbitrary, but would also cause market distortions.

⁵ N.b. note that the imposition of ex post, i.e. after the crisis, levies on surviving banks will not have such a beneficial effect and will have other disadvantages as well

prop desks). The obvious advantage of this is that it would be an attempt to make the banks pay, up front, for such systemic cost that may have to be borne later by the taxpayer. In this respect it has much in common with the various (American) schemes for insurance, to be discussed later.

There would, however, be great difficulties in estimating such Pigovian taxes fairly and efficiently. Most (European) proposals for such ex ante levies simply involve either a pro rata, or a progressive, levy related to some measure of size, with no serious attempt to assess systemic risk. There could be an obvious likelihood that such levies would just deteriorate into being a populist means of raising revenues at the expense of banks. Unless such a tax was applied world-wide, it, like the Tobin tax, would be massively avoided by migration.

Whereas those subject to capital/liquidity ratios can, and do, appreciate the rationale for such requirements, a levy, that was performed broad-brush, rather than closely tailored to systemic externalities, would just be perceived by those paying as a penal attack on banks (and other institutions) subject to it. It would, therefore, likely to be even more subject to massive avoidance schemes, whether by transferring financial intermediation geographically or within each country across the border to non-taxed intermediaries.

In the current climate of popular anti-bank opinion, however, and now that President Obama has called in January 2010 for an ex post tax on US banks, which relied heavily on wholesale markets, the (world-wide) introduction of such a tax seems virtually assured. At a time of stretched public sector financing, with banks being deeply unpopular, the attractions of a tax which could also be justified on the grounds of being a pay-back for past, taxpayer funded, crises, or a protection against the need for similar future taxpayer funding, seem overwhelming. Besides the USA, Sweden has already introduced such a tax; Germany and the UK are planning to do so; and the IMF will be proposing, in April 2010, ways of doing so. The question now is not whether such a tax will be introduced, since it will be, but rather the form that it will take, and the consequences of its introduction. These latter issues have still to be determined.

b) A Wider Base?

The aim of introducing reinforced capital/liquidity ratios on banks is to reduce systemic risk, of the kind recently suffered. But the failure of financial intermediaries, other than banks, can have systemic implications. Indeed, the main problems in the USA arose amongst non-banks, e.g. the broker/dealer investment houses, such as Lehman Bros and Bear Stearns, (though the two remaining such houses have now become banks), insurance companies, such as AIG, monolines, the GSEs, Fannie and Freddie, and money market mutual funds, (such as Reserve Primary Fund after the Lehman default).

One approach, perhaps more explicit in the USA than in Europe, with Secretary of the Treasury, Tim Geithner's plan and Barney Frank's House Bill is to designate a set of financial intermediaries as systemic, and to extend macro-prudential regulation to them too. But just how does one define, or calibrate, which institutions are systemic, and would not the set of systemic institutions be subject to continuous change, depending on conditions, innovation, etc? But at least the line of analysis in the USA is rational, whereas in Europe proposals to extend (macro-prudential) regulation beyond the banking system seem to relate more to the political popularity of the institutions involved rather than to their capacity to set off systemic financial collapse. Thus the main thrust in Europe has been towards extending regulatory controls over hedge funds and private equity, whose capacity for causing systemic failure is limited (pace LTCM), whereas there has been much less concern about insurance (and reinsurance) companies and mutual funds.

c) Extend Margining

In a sense both capital and liquidity ratios represent a version of margining. As the bank increases the size of its portfolio, it has to hold additional margins of both capital and liquidity. This concept of margining can be extended to other financial sectors. For example, and particularly, in the housing market one could apply maximum, or even time/state varying, Loan to Value (LTV) ratios, or Loan to Income (LTI) ratios. The same approach can be applied to the financing of equity positions, and, in principle, to a wide range of financial markets.

A general problem, for such additional margining, is that money and finance are fungible, so that there are usually several alternative methods of achieving a desired financial position, e.g. by switching finance to an uncontrolled (possibly foreign) lender. Of course if the main purpose of the exercise is to protect the domestic lender, not the domestic borrower, from taking up a, supposedly dangerous, position, the ability of the borrower to refinance from an uncontrolled source may not be such a worry. If the main aim is to protect the borrower from getting over-extended, then the usual support mechanism is to remove legal protection against default for a lender who has not abided by the margin regulations.

Besides such proposals for extensions of capital/liquidity ratios, there are a number of more radical ideas for changing the structure in which banks, and perhaps other financial intermediaries, operate and to do so in such a way as to aim to make them less subject to systemic collapse. Such proposals include:-

- i. The removal, or the reduction, of the tax allowance (the tax wedge) on interest rates – as was done for household mortgage interest payments in the UK. This proposal was apparently favourably received by the Shadow Chancellor, George Osborne in the UK, but would be difficult to introduce unilaterally without raising international cross-country competitiveness concerns, and has not, I believe, been widely promoted outside the UK.

ii. The amendment, or adjustment, of limited liability for certain financial operations, or certain financial agents. For example, certain types of intermediation, such as hedge funds, or prop desk activity, could only be undertaken under a partnership arrangement. Alternatively certain classes of financial officials, e.g. directors and senior officials of banks for example, might have an additional liability for n times the par value of a share in their own company, which liability would continue for j years after they had left that bank. There was a proposal, by Neil Record in the Op. Ed. pages of the Financial Times, (January 6, 2010), to make all bonus payments to highly-paid bankers subject to claw-back. Again the (legal) complexity of such an exercise, alongside other problems, has been such that there has been little support for such an approach, though there are arguments in its favour.

A version of this approach was, however, used both in the USA, and elsewhere, prior to the 1930s. This was to make bank shares subject to an additional call on all shareholders for an additional amount, usually equal to the initial par value of the shares, (though the additionality could, in principle, be varied at the time of initial issue), whenever a trigger, (usually a sufficient decline in the share value itself), was reached (Macey and Miller, 1992; Grossman, 2001). Given the generic similarity between these schemes, and the conditional convertible capital (CoCo) proposals, to be discussed below, it is surprising that there have

been so few recent studies on the historical experience of such callable share schemes, and why they fell out of favour in the 1930s, and subsequently.

- iii. Various methods of controlling, and limiting, officials' remuneration, (e.g. the Walker Report, 2009). This issue, however, gets so caught up in so many other political and populist matters, and is, perhaps, so tangential to the wider issue of macro-prudential regulation, that it will not be further pursued here.

2(A)(2) Generic Problems with European-Style Macro-Prudential Regulations

There are major problems of measurement (primarily of systemic risk) and of calibration (of the macro-prudential instruments). It is extremely difficult to assess the risk of a systemic collapse at any time. Most early warning systems soon become relatively useless out of sample, because in so far as a systemic problem can be predicted, market agents will take steps to offset, and hence prevent, it occurring. Almost by definition, financial crises are only predicted by a small minority of commentators. In my view the best work on pre-conditions for a financial crisis has been done by Claudio Borio, and colleagues (2002, 2004 and 2009), at the BIS, who have focussed on two main factors, being unusually rapid expansion of (bank) credit and unusually high levels, and growth rates, of housing and property prices.

Having (dimly) assessed the uncertain probability of either an individual default, or a systemic collapse, what then is the (marginal) effect of requiring either higher capital, or liquidity ratios, in averting such an outcome? On capital, some work has now started on this, examining tail events, and the 'marginal expected shortfall', as developed by Acharya, et al., (2009) of NYU, but such work remains at a nascent level. As Hellwig reminds us (1995 with Blum, 2008), there has been no proper analysis of the appropriate quantitative requirement for capital; and the analysis of the need for liquidity, (see earlier Section) is, if possible, even more rudimentary.

In such circumstances required ratios are usually chosen by some rough rule of thumb, e.g. to equal the ratios held already on average, or by those banks whose performance has seemed best. Moreover, little, or no, attention is given to the fact that the effect of imposing a 'required' ratio depends sensitively on the (ladder of) sanctions imposed for transgressing that requirement. Given the (usually) arbitrary number chosen, getting the pattern of sanctions roughly right may be the most important feature of the regulatory exercise, but one that is all too rarely attempted.

Be that as it may, in the aftermath of the worst financial crisis for 75 years, and with little analytical help from economists, the general cry from regulators is that capital and liquidity ratios should be raised, and considerably so, especially in certain areas such as the capital requirements for trading books.

The effect of this will be to raise the cost of bank intermediation. The supposed (Modigliani-Miller) offset via lower debt costs, (as credit risk declines), will not work in so far as depositors were already fully insured. And where they were not so insured this effect may well be matched by an enhanced reassessment of the inherent riskiness of banks. The idea that tougher regulation would bring down risk premia on bank wholesale funding significantly in the near future is, in my view, improbable. Of course, such tougher regulation is to be introduced over a transitional period, but bankers are forward-looking, and such proposed regulations will cast their shadow forward.

The, almost inevitable, result will be higher spreads between deposit rates and loan rates, (the spread being a measure of the cost of intermediation), and a significantly smaller share of bank intermediation within overall financial intermediation. After all, one of the aims of such tightened regulation is to cut an overly-large, some would say bloated, banking system down to size, and to make the diminished remainder safer (and duller) as well as smaller.

Will it be good, or bad, to shrink the banking sector as a proportion of the overall financial system? The truth is that we do not know; we have barely begun to ask that question. It is unlikely to matter much for the public sector, or for large private sector corporations, since they both can access capital market directly. It will probably have a less serious effect on Anglo-Saxon countries, where capital markets are more advanced, than in Euro-zone countries which rely more on relationship banking. It is ironic that

much of the pressure for much tougher regulation comes from just those same Eurozone countries, since it may have a more adverse impact on their own systems. Perhaps the marked current decline (as of early 2010) in Eurozone bank lending and deposit base is a precursor of a long-lasting effect.

The main concern relates to the financial (borrowing) opportunity for households and SMEs. Most of mortgage finance and of lending to SMEs has been originated by banks, and most used to remain in bank portfolios (hold to maturity). The faster growth of credit expansion than of the growth of the retail deposit base in recent years led both to the expansion of bank wholesale funding (including off-balance-sheet SPVs) and securitisation (originate to distribute, OTD). Both such channels have recently gone into reverse. If these, particularly securitisation, cannot be revived, then limiting the availability of household and SME finance to what can be provided from the natural growth of retail deposits (with deposit rates held down to sustain bank profitability) may be quite problematical. How this concern may play out, and be resolved perhaps, is just not knowable at present.

Another possible feature of the toughened regulatory regime may be enhanced counter-cyclical add-ons during boom periods. The intention is that these should be relaxed during downturns. But many bankers are sceptical whether effective ratios can be significantly reduced during a crisis, or a bust. A severe downturn raises risk aversion, and perceptions of risk. Even if the regulators should reduce required ratios at

such a moment, would the market, the credit rating agencies, etc., be willing to countenance banks taking advantage of that to lower actual ratios? So many bankers doubt whether supposed counter-cyclical, time/state varying regulations would actually work that way in practice. They see such proposals as a method of jacking up such ratios in the good times, while market forces keep actual ratios at this elevated level in the bad times. So they suspect that so-called counter-cyclical measures will just in practice be another way of raising capital and liquidity ratios throughout the cycle.

Such generalised regulatory tightening will, also of course, exacerbate the border problem between the regulated and the unregulated. The more rigorous are the constraints on the regulated, the greater the incentive to jump over the border and undertake unregulated business. The greater the focus on the banks, and the more constrained their activities (e.g. narrow banking), the greater the likelihood of encouraging intermediation elsewhere and the greater the probability that the next crisis will centre in the, artificially promoted, unregulated sector.

Of course there is then a temptation to extend regulation even further through the financial system. But where does one draw the line? Since the main objective is to prevent systemic collapse, the answer presumably is to include within the regulatory net all those financial institutions (including market infrastructure institutions, such as Centralised Clearing Houses) whose failure could have systemic consequences. Indeed

the current general idea now is to have a separate regulatory system for systemic institutions, and a lighter regime for the non-systemic.

But, although such proposals are widely set forth and endorsed, there is little enough analysis of how to measure the extent to which an institution may be systemic. About the best that can be done is to assess how far a change in one bank's market position has a contemporaneous effect on other banks' positions; this branch of analysis includes the Brunnermeier and Pedersen (2009), Adrian and Brunnermeier (2009), 'CoVaR'; Acharya, et al., 'Measuring Systemic Risk', (2010), 'Systemic Expected Shortfall'; and Segoviano (and Goodhart) (2006, 2009 and 2010), 'CIMDO'. Also see the IMF Global Financial Stability Report, April 2009, Chapter 3.

Moreover, the extent to which an institution may have a systemic effect is not constant, but will vary over time, and dependent on the state of the economy. Perhaps one of the greatest weaknesses of present regulatory proposals is that such proposals often depend on the ability to distinguish a set of 'systemic financial institutions'. Yet there is no present ability to define such a set, nor even to outline in any detail the characteristic (factors) that should be the basis of such a definition. Nor is the set of systemic financial institutions likely to be constant over time, or invariant to the conjuncture.

Of course one can reasonably identify the extremes, i.e. those institutions which are so large, so central and so interconnected that their failure would cause havoc elsewhere,

and those equally so small, idiosyncratic and special that their failure would be almost unnoticed. But there will be a large (and changeable) grey area in between. How will the line be set in this grey area? With such an arbitrary dividing line, how can one justify different regulatory regimes that depend on accidents in setting this line? If the division between the systemic and non-systemic, and the criteria for making this division, is reported, it is likely to set up incentives for re-jigging the business to be on one side, or the other, of the line, (whichever side is felt to be preferable). If the treatment, on either side of the dividing line, was to be different, could the authorities keep the listing, and the criteria for that listing, secret? Given the general advantages of transparency, and the need or accountability, should they wish, or be allowed, to go for secrecy in any case?

All the above regulatory issues maintain an implicit assumption of a closed economy with a single government and legal structure, though possibly with several regulatory and supervisory bodies, subject to some kinds of coordinating mechanism. The most intractable regulatory problem however, is that almost all systemic institutions will have a significant cross-border presence. Such institutions are “international in operation, but national in death”. The legal systems, notably insolvency proceedings and bankruptcy laws, differ from country to country. This greatly complicates crisis resolution for such cross-border international systemic institutions; the Lehman Bros bankruptcy was a case in point. But this is a large subject, and both I and Richard Herring have written on this topic recently, to suggest a way forward, (Avgouleas, Goodhart and Schoenmaker,

‘Living Wills as a Catalyst for Action’, January 2010; and Herring, ‘Wind-Down Plans as an Alternative to Bailouts: The Cross-Border Challenge’, 2010); so I shall skip over this subject here.

Even when we side-step the international cross-border issue, the range of generic problems confronting (European-style) macro-prudential regulatory proposal remains formidable. And this is to discount, almost entirely, the generalised dislike of government intervention and regulation that pervades many (American) circles.

‘Regulation is static, whereas markets are dynamic’. It takes an inordinate time to agree and to introduce regulation. By the time that they are ready for introduction, the regulated will have found ways to avoid them. Regulators and supervisors are, by comparison to market agents, relatively poorly-paid bureaucrats, out of immediate touch with current market practices and realities. Any attempt to differentiate the imposition of regulation between countries, for example for counter-cyclical purposes, is likely to run up against the ‘level playing field’ challenge, that the country-specific requirement will simply shift intermediation abroad, though there may be ways to mitigate this.

For all such reasons, American economists and commentators have tended to follow a rather different path from their European colleagues, seeking to discover remedies for systemic fragility that are essentially market-based, rather than driven forward by government regulation. It is to these that we now turn.

B.2A American Style Insurance Mechanisms

Most Europeans see the appropriate response, by the authorities, to the recent financial crisis as involving the introduction of additional 'better' contra-cyclical macro-prudential mechanisms. Americans tend to be much more skeptical whether government regulation can be relied upon to work well. Many Americans have an inbuilt distrust of government intervention; recall Ronald Reagan's claim that one of the most frightening phrases was, "I am from the Government, and I am here to help".

Besides this, somewhat atavistic, distaste for government intervention, there is also a deeper, more structural concern that the relationship between the public authorities, (Ministry of Finance; Central Bank; Regulator/Supervisor), and the commercial banks (and OFIs) has become one of insurer/insured, (rather than of (Central) banker/client), a view which then brings into consideration how such insurance might best be priced and provided, (see Goodhart, 'Liquidity Management', 2009).

The new reality, post the Lehman failure, is that the public sector, the State, has become the ultimate guarantor of both the liquidity and the continued viability (solvency) of all the systemic parts of the financial sector. Or, in other words, that the public sector insures the systemic parts of the financial sector. Once upon a time, the relationship followed a banking paradigm. Just as a commercial bank assessed the potential

solvency (credit-worthiness) and the quality of collateral offered by the bank's client, so a Central Bank was supposed to assess the solvency and quality of collateral of a commercial bank coming to it for Lender of Last Resort assistance. If these were not good enough, the commercial bank should be let go, and allowed to fail (Bagehot, Lombard Street, 1873).

Under the pressure of recent events, this latter paradigm has been abandoned, in favour of broader insurance of the liquidity and solvency of all 'systemic' financial institutions. Liquidity assistance has been provided to an ever-widening range of financial intermediaries, on ever more dubious collateral, for ever-lengthening durations. Similarly, apart from equity holders, most bank creditors have been guaranteed. So, in effect, the public sector is insuring the core, systemic financial system.

Seen in this light, the potential for moral hazard and hence of costs to the insurer, in this case the taxpayer, are immense. The question then is how to price and provide such insurance in order to reduce (minimise) the costs whilst still retaining the benefits. One strand of thought is to try to require the insured to take out considerable self-insurance (co-insurance) as a precondition. One suggestion (Kashyap, et al., 2008, on 'Rethinking Capital Regulation') is to require all such systemic financial intermediaries to issue debt instruments, which could be forcibly switched into equity, at the fiat of the authorities, whenever a financial crisis was – in the opinion of those same authorities? – called.

These are now known as Conditional Convertibles, or CoCos, and a first issue was made by Lloyds Bank in late 2009. Further issues have been under consideration by British Building Societies.

A second suggestion (Hart and Zingales, 2009, 'A new capital regulation for large financial institutions) is to require any bank whose Credit Default Swap (CDS) price moves too high for too long either to raise more capital or be taken over by the authorities.⁶ The implications of such ideas for the cost and availability of capital to the banking sector have yet to be assessed.

A second strand of thought considers the price, or premium, at which the public sector might provide such insurance. An article of faith amongst such American economists, (not reciprocated by European policy-makers), is that the private sector is far superior to the authorities in price discovery, so that premia (the price for insurance) should be set by private sector insurers. But, 'Quis custodiet, ipsos custodes'? If the systemic financial sector cannot be allowed to fail, neither can its (private sector) insurers, (N.B. AIG!). A compromise solution, suggested by the economists at NYU, (Chapter 13 in Restoring Financial Stability, eds. Acharya and Richardson, 2009 and Acharya, et al., 2010), is to require private sector insurers to take on a small proportion of all such insurance, say 5%, big enough for them to price the risk carefully, but small enough for

⁶ Oddly enough, Hart and Zingales do not appear to have recognized that exactly the same idea lay at the heart of the Prompt Corrective Action feature of the FDIC Improvement Act of 1991, and yet that failed to work in 2007-9. See, for example, the IMF Global Financial Stability Report, April 2009, Chapter 3.

them to survive calls if/when a crisis occurred. Then the public sector would provide the remaining bulk (95%) of the insurance, piggy-backing on the price set by the private sector insurers.

Just when bankers and their hired quants have been under attack for abstruse financial engineering, financial economists have been coming forward with their own engineering proposals to try to make the banking/financial system safer. Some of these hark back to earlier, and since discarded, approaches. For example, the conditional convertible debt (already mentioned) has several features in common with the earlier practice whereby holders of bank equity, once a trigger was passed, could be called upon to provide an additional payment equal to the par value of that share, see for example Macey and Miller (1992) and Grossman (2001).

An ambitious proposal along such lines was put forward by Caballero and Kurlat in their paper 'The "Surprising" Origin and Nature of Financial Crises: A Macroeconomic Policy Proposal', put forward at the Jackson Hole Conference in August 2009. Under their proposal a central bank "would issue Tradable Insurance Credits (TICs). Each TIC would entitle its holder to attach a central bank guarantee to assets on its balance sheet during a systemic crisis. The amount of TICs required to insure a given type of security would be set by the CB to adjust for different fundamental riskiness", and "During normal times, highly leveraged and systemically important institutions must preserve a minimum TIC/Assets ratio", (ibid, pp 3/4). Also the CB can trade (OMO) in TICs itself.

Besides the generic problems that such insurance proposals have, reviewed in the next sub-section, there is the complication that, by needing to set the comparative TIC value of all bank assets, the Central Bank would in effect be making itself into a massive, and probably monopolistic, credit rating agency. Would the government tend to give favourable TIC scores to borrowers it liked (e.g. its own debt, mortgages) and low TIC scores to those it did not, (overseas loans, derivatives)?

Kotlikoff, and various colleagues (N. Fergusson, FT, December 2, 2009; J. Goodman, New Republic, May 14, 2009; C. Chamley, American Interest Online, May 1, 2009; E. Leamer, Forbes, April 29, 2009) suggest reverting to mutual fund banking, under what Kotlikoff describes as 'Limited Purpose Banking' or LPB. In much earlier article (Goodhart, 1987 and 1993, Chapters 1 and 2 of 1995), I had reviewed and given a criticism of such mutual fund banking. Essentially, when there is much asymmetric information, a key characteristic of the loan market, a debt contract, reinforced by default penalties, is the most efficient. In a sense what Kotlikoff is proposing is akin to Islamic banking, and we know the disadvantages of that. So, if bank assets are to be primarily in fixed interest debt form, it makes sense to back them by similar deposit-type liabilities. Moreover, given the asymmetric information, even in those cases where the asset/liability is supposedly in mutual fund format, investors often like to be able to place a nominal limit to their downside risk, as in the case of US money market mutual funds, where there was an implicit guarantee not 'to break the buck'. After all, mutual fund banking

has been possible, but did not supplant traditional banking; so the market evidence suggests that it has not been a preferred business strategy.

There are a number of somewhat less ambitious proposals. One by Admati and Pfleiderer, 'Increased-Liability Equity: A Proposal to improve capital regulation of large financial institutions', work in progress, December 31, 2009, is primarily concerned to avoid the dilution of the discipline on bank executives that a high debt ratio gives after capital (and liquidity) requirements are jacked up. Rather than put the additional (limited liability) capital and safe assets in the bank itself, these are to be put into an 'Equity Liability Carrier', which also holds the smaller sliver of unlimited liability equity left in the commercial bank, (and the bank executives cannot be allowed to control the ELC).

A second proposal by Kashyap and Stein (2004) would be to encourage a market in regulatory capital warrants. Thus a well capitalised bank could sell part of its buffer over the required minimum to a less well capitalised bank. No actual assets would change hands, just the notional percentage for meeting the regulatory requirement. The idea would be to try to get an idea of how much the regulatory capital constraint was binding, and, perhaps by allowing the central bank to trade in this market, giving the authorities a chance to adjust the degree to which such a constraint was biting.

Finally, of course, we now have the US government proposal to levy a tax on banks, to the extent that they have not been financed by equity or insured deposits, with the aim of repaying, ex post, the prior cost of taxpayer support. In so far as (short term) funding via wholesale financial markets was perceived as inherently risky, this can be seen as a Pigovian tax on systemic risk, though its ex post, rather than ex ante, application somewhat weakens its value in that respect. Moreover, this has opened a Pandora's Box of opportunities for the fiscal authorities to levy taxes on a particular channel of financial intermediation. How far this will be taken, and what will be the effect on the structure and nature of financial intermediation cannot yet be discerned.

B.2B Problems of American Proposals

Economists are clever, ingenious, problem-solvers, and the proposals noted in the previous Section have all those attributes, but are they also operationally practical? We consider below a number of possible queries and reservations.

(1) Triggers

The existing system works reasonably well under normal circumstances, and there could be problems in giving banks quasi-automatic access to additional funding unless there was a systemic crisis. So several of these insurance proposals would only become operational if triggered by a systemic crisis. But how would that be defined? Whether it was defined, or discretionarily and subjectively decided (by whom?), would its

announcement have severe adverse market effects? If the trigger was discretionary/subjective, would then the temptation be to defer such an announcement?

(2) Death Spirals and other Market Reactions

Assume that you have bought a CoCo. Its value will decline sharply as the trigger approaches. How could you hedge your position? By (short) selling the underlying equity. So as conditions worsen, equity prices come under increasing pressure, making the trigger approach closer, and so on down.

Consider the Hart/Zingales proposal. A forced equity issue, probably in difficult or impossible market conditions, would make equity prices on all, somewhat similar, banks drop steeply, and CDS spreads rise. Contagion would then force a sizeable number of banks simultaneously into the new issue market at a highly inopportune moment. That market would shut, and, according to these proposals, all the banks would have to be liquidated, or more probably taken, temporarily into national ownership (nationalisation). It would be a total disaster.

Pricing and Profitability

Since the objective is to achieve a greater degree of self-insurance for banks, and other systemic financial intermediaries, such proposals generally have the insurer provide

additional funding at crisis times. So this will involve a large pay-out when most other assets are doing very badly (just like CDS). Clearly therefore the authorities should prevent such products being held by other leveraged financial intermediaries (such as AIG).

Given sensible limitations on purchasers of such (catastrophe) bonds, and their relatively unattractive pay-off structure, who would buy them and at what price? The Lloyds Bank issue was not a market offering, but a conversion from another, already impaired, bond.

Would the Admati/Pfleiderer proposal generate sufficient expected profits for the holders of the new Equity Liability Carriers to occasion enough capital inflows to maintain a sufficiently large banking system? I doubt it.

Border Problems

One can always constrain the portfolios and/or activities of banks sufficiently to make them as safe as anyone might want, for example by requiring 'narrow banks' or Kotlikoff's Limited Purpose Banking, or, more simply, by requiring higher capital and liquidity ratios. The problem is not just one of making a sub-set of financial intermediaries safe, but also of providing intermediation services overall in a way that maximises social welfare.

If there is excessive focus on making banks 'safe', the constraints on their activities and profitability are likely to drive business over the border to the unregulated sector of the financial system. Such flows would be wildly procyclical, enhancing the asset price/credit/leverage boom/bust cycle. The need is to look at the structural shape and functions of intermediation as a whole rather than just at the safety of banks.

3. The Organisation and Governance of Macro-Prudential Policy

A. Historical Background

Those Central Banks that were established in the earlier years before World War I were not founded in order to achieve price stability. This latter would be guaranteed by adherence to the Gold and Silver (or bi-metallic) standard. Of course, at times of severe pressure on the government, usually war-related, adherence to such a metallic standard might be suspended, but it was understood that resumption should be the objective of a properly-run government.

Whereas many Central Banks, e.g. in the UK and France, were founded to facilitate government (war-time) finance, a prime requirement for them was to enable financial stability, notably in the wider banking system, to be made consistent with price stability. This was particularly so in the case of the establishment of the Federal Reserve System

in 1913, in the aftermath of the 1907 crisis. This was required to provide 'an elastic currency', to prevent, or at least to mitigate, banking crises, a far cry from the rigid K% rule later advocated by Milton Friedman, in order to ensure price stability.

Meanwhile the great works on monetary theory, by Henry Thornton, An enquiry into the paper credit of Great Britain, (1802) and Walter Bagehot, Lombard Street, (1873), were largely, if not primarily, about the need to reconcile support for the domestic banking system in a crisis with maintenance of the Gold Standard. Much of the wider debate between the Banking and the Currency Schools covered the same ground.

The answer to this conundrum that was reached was for the Central Bank to lend freely to liquidity-short domestic borrowers during financial busts, but to do so at rates high enough to encourage capital inflows and to deter unnecessary borrowing, (n.b. such high rates were not necessarily to be penal and/or in excess of market rates, especially since some markets would then have ceased to function). So the key issue, relating to financial stability, was the decision on what terms the Bank should lend (Bank rate) either to the market as a whole (Open Market Operations, OMO) or to individual banks (as Lender of Last Resort, LOLR). At times, and on certain occasions, as in the latest crisis, this distinction between OMO and LOLR has become somewhat fuzzy.

It may also be helpful to recall what assets were considered most appropriate for Central Banks to discount. Under the Real Bills doctrine, which held at least into the

1930s, the favoured asset for Central Bank OMO and LOLR was private sector commercial bills. Since these were related to trade and output, it was thought that such finance could not lead to inflation, and would also be self-financing and hence safe. In contrast, lending collateralized on public sector debt was at times frowned upon. Since a government deficit was often not connected to output growth (e.g. wars, social security, etc.), financing government was not only in principle inflationary, but also might encourage yet larger deficit spending.

Monetary theory, at least in this respect, has now reversed. The Real Bills doctrine has been discredited. Instead, economists, such as Marvin Goodfriend (2009), now advocate that Central Banks should revert to operating solely in short-dated public sector debt, and entirely eschew dealing in private sector assets. The reasons for this latter position appear to be that the latter, private sector assets, entail greater credit risk, and so greater volatility in Central Bank profitability, (and hence impact on the taxpayer), and also that the choice of which private sector assets, in which to deal, could have distortionary, and hence quasi-fiscal, implications. In order to keep the Central Bank *simon-pure* in its independence from the government and Treasury, the proposal is then that its assets should be solely government debt. This, however, is a somewhat extreme position to which few in Europe would subscribe.

B. Operational Considerations

The main objective, of course, is to prevent asset price/credit/leverage cycles turning into booms and busts, via macro-prudential counter-cyclical controls over capital, liquidity and margining, and also to prevent regulation itself worsening the outcome by being procyclical. But experience indicates that regulation, or self-regulation, is unlikely to eliminate potential crises, and indeed, if badly designed, may even exacerbate systemic crises, as may well have occurred in 2007/8. But once such a crisis/bust occurs, then its handling will require either, or both,

- i. Liquidity injections, via OMO and LOLR
- ii. Capital support

Note that counter-cyclical easing of requirements for capital, liquidity and margins is quite unlikely to be effective on its own, though it may help. Such easing would then be running counter to market pressures, which during downturns moves strongly in favour of higher ratios and margins.

So liquidity injections are a prime instrument in the response to crises; historically they have been the key prudential instrument wielded by the Central Bank. So long as OMO and LOLR remain in the hands of the Central Bank, it would seem to follow logically that the Central Bank become the leading, pre-eminent authority in the pursuit of macro-prudential stability.

But could LOLR be provided from an institution other than the Central Bank? My colleague, Willem Buiters (2008), has argued that, in principle, the Central Bank could be required to provide an open-ended line of credit to the (micro) supervisory body, the Financial Services Authority (FSA) in the UK. The FSA could then use this line of credit to finance LOLR.

If this was to be done, however, the Central Bank would lose control over the composition of its own balance sheet, and, if the LOLR operations were large enough, possible on its scale and quantum as well. Moreover, many LOLR exercises are triggered by concern that a financial intermediary may default on a payment. How could a Central Bank maintain any confidence in its own management of the payments system, if the prerogative to exercise LOLR was to be handled by some other authority?

Central Banks recently have increasingly come to resemble macro-economic discussion groups, tacked on, slightly insecurely, to the rump of a more traditional Central Banking institution. If a supervisory authority (FSA) was to take over the LOLR role, would it in effect become the true Central Bank, allowing the interest-rate setting Committee to float freely as an independent arm of Treasury, but not a Bank in any realistic sense? Heaven forbid!

So let us assume that Central Banks maintain their independent command over OMO and LOLR. Since these are the main monetary instruments for dealing with financial busts/panics, this implies that such Central Banks must, at the very least, be major, if not the prime, participant in any mechanism for managing macro-prudential financial stability issues.

Having therefore determined that the Central Bank must be a major player in this operation, perhaps we might go on the other tack and ask instead whether the Central Bank could be the sole agent involved in this exercise. The answer to this is a straightforward 'no'. It cannot do so, because systemic financial institutions may, during a crisis, need capital support, rather than liquidity. A Central Bank cannot provide additional capital; only the Treasury (taxpayer) can do so.⁷ Thus crises have to be handled by at least two institutions, the Treasury and the Central Bank.

But is there a need for any other institution? Can the Central Bank, for example, besides its macro-prudential role take on the full range of additional supervisory functions, including micro-prudential oversight, conduct of business regulation, licensing of new institutions and products, resolution of failing institutions, oversight of insurance and pension arrangements, etc., etc. Here the answer is less clear. In practice a Central Bank could turn its hand to such exercises, but in principle it would be ill-advised to do

⁷ Many current proposals envisage a resolution fund paid for either ex ante, or ex post, by the banks, or a wider set of systemically important financial intermediaries (SIFIs) themselves. But such payments will generally go into public sector debt prior to use. When they are used, the Treasury has to find the money to redeem such debt sales. In any case in a major crisis such resolution funds usually turn out to be insufficient.

so (at least in a large developed country, issues relating to staffing, expertise, independence and financing often make the decision go the other way in small developed or in poorer, emerging economies).

The arguments in favour of a twin peaks' approach with a Central Bank charged with maintaining macro-prudential stability, and a separate FSA responsible for micro-prudential, conduct of business oversight, include the following concerns:-

- i. The reputational risk of micro-prudential failings;
- ii. Two regulatory eyes are better than one, especially where the regulators have different approaches and training;
- iii. The need to limit the powers of unelected Bank officials;
- iv. The need to focus the work of the Bank on a limited number of objectives and to constrain mission creep, so that expertise can be developed and managerial control maintained.

In so far as this 'Twin Peak' solution is regarded as preferable, it does imply a certain criticism of some recent actions by Central Banks. For example, the Fed should not have been arguing to retain control either of product regulation, or of micro-prudential oversight of the mortgage market.

C. Relationships with Government and Treasury

The distinction between illiquidity and insolvency is inherently blurred. Insolvency is usually triggered by illiquidity, the inability to pay bills when due. Naturally the illiquid will always claim that they are (fundamentally) solvent, but, apart from technical difficulties, if solvency was truly and obviously assured, why could not the illiquid have borrowed enough in open markets to meet their cash outflows? One of the main problems in handling the crisis that began in August 2007, prior to the Lehman Bros bankruptcy, was that it suited the banks to claim that the crisis was primarily one of insufficient liquidity, whereas the underlying problem related to bank solvency. In that context it was hard either to force banks to take steps to rebuild capital (reduce dividends and bonuses, raise new money on capital markets) or to develop the political momentum for a public sector injection of new capital into the banking sector.

So, the connections between liquidity assistance, undertaken by the Central Bank, and capital support, via the Treasury, are likely to be close, complex and intimate. The natural solution to such a necessary involvement is to form a tri-partite, or multi-partite, oversight financial stability committee. And that is what is generally done.

There are, however, a number of remaining questions and problems, with the following being a selection:-

- (i) Who has the final control? Who is in charge? This was a problem in the case of the UK's Tripartite Committee in the case of Northern Rock. Each participant had a veto over the usage of liquidity (or capital) support, so no member had final responsibility.

One answer is to give ultimate responsibility to the head of the Treasury at all times, but, if the Secretary of the Treasury can order the Central Bank over issues relating to financial stability, does that imperil the Central Bank's wider independence over monetary policy?

Another answer is to allocate the Chair, and final responsibility, to different members depending on the subject under discussion. If the issue concerns crisis resolution (and hence the potentiality of using taxpayer monies), the Chair belongs to the Treasury. If the issue concerns the prevention of systemic crises, the Central Bank could take the Chair, and if the issue related to conduct of business, or licensing new financial products, the FSA could do so.

- (ii) What should happen in the Eurozone, with a single Central Bank, but no federal Treasury?

In the absence of any central fiscal source of support, the Eurozone will inevitably have a more lop-sided, and less effective, mechanism for handling

crises involving several member states than could be the case in more complete federal systems. With no fiscal input, the administrative structure, notably the European Systemic Risk Board, will have to focus more on ex ante prevention than on ex post resolution. There remains no effective mechanism for the resolution of intra-European cross-border crises.

- (iii) How does one reconcile the need, in many cases, for fiscal input from the Treasury, in order to resolve crises, (thereby involving Treasury/Central Bank interaction, with ultimate Treasury control), with maintained Central Bank independence on monetary policy?

This is an issue that appears to exercise many Americans, but few Europeans. As a European I find it hard to see what the fuss is about. Surely professional bodies can work in conjunction on one issue, e.g. financial stability, and with (delegated) independence on another, e.g. setting interest rates.

Nevertheless, the recent shift from conventional to unconventional measures of monetary policy, notably credit (and quantitative) easing, especially when this involves purchases of private sector debt, does appear to have both blurred the distinction between monetary policy and financial stability measures, and to raise a greater possibility of Central Bank measures having a quasi-fiscal influence on the taxpayer. In this context it would seem right for a Central Bank,

when initiating such a policy, to seek support from the government beforehand. This was what was done in the UK.

There are, however, problems with following this precedent elsewhere. In the Eurozone, the ECB is legally constrained from seeking advice from governments. Yet when the ECB dipped a toe into such quasi-fiscal unconventional measures, by agreeing to purchase a (relatively small) amount of covered bonds, it elicited a strong, negative, public response from the German Chancellor, Angela Merkel. Naturally the agreed purchase went ahead, but there has been no further follow-up along the same lines, until the sovereign debt crisis in May 2010 prompted a volte face by the ECB.

In the UK, where the executive dominates the legislature, when Governor King wants both to inform the government of his intentions on unconventional measures and to obtain reassurance that such measures would not run counter to political/government wishes, he can, more or less, do so in one, private, conversation with the Chancellor of the Exchequer. This can be done quickly and without publicity. In the USA, control over the Fed lies ultimately with Congress. Getting approval from Congress in advance for a possibly contentious operation could neither be private, nor quick, nor with predictable effect. It is a characteristic of financial crises, that measures to resolve such a crisis need to be done quickly, indeed far too quickly for comfort, to be effective.

Quite where, if anywhere, these constitutional issues may lead will be for others to decide.

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