

Macro-Prudential Supervision

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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. 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. 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.

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. 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. But what form might such additional macro-prudential instruments take?

2. What Macro-prudential Instruments ?

2-1 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 (ESRB) 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 supervision¹ and control.

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.

¹—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.

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

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 recognized that they were comparatively deficient in risk modeling, and in effect adopted the commercial banks' internal modeling 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 as described by its Chairman, Nout Wellink, in September 2010, and known colloquially as Basel III, 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 has been 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 overall leverage, are being raised, but with a, long, transition period, until the end of 2018, 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.² Ideally we should have both time/state varying capital ratios and dynamic pre-provisioning.

In the past a major weakness of the BCBS approach has been an unwillingness to apply sanctions. Since laws and sanctions are a national prerogative, and the BCBS has no formal basis and acts as an advisory body, it had 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. At last the BCBS has moved on from this in recommending sanctions, when core equity falls below 7% of RWA.

Treating proposed ratios as required minima, of course, destroys, 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 had been a major draw-back of the whole BCBS approach until now. Despite the example of the FDIC Improvement Act (1991) in the USA, which established a sensible ladder of sanctions, the BCBS had up till now, refrained from grasping this nettle.

Liquidity Ratios

² - Rafael Repullo pointed this out to me.

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.³

Other, somewhat less conventional, proposals

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

³ 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:-

- 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.

- 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,⁴ such as increasing taxes on size, inter-connectedness and certain prescribed activities (e.g. 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 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.

⁴ 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

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 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 the Dodd-Frank Act of July 2010, 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 once favourably received by the 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.
- 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.

2.2 Generic Problems with such 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 Euro-zone 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 Schoemaker, ‘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 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.

3. Conclusion

The introduction of counter-cyclical macro-prudential instruments should be done. Nevertheless the exercise will be difficult and success is far from assured. At least the BCBS, and to a lesser extent the EC, are now headed in the right direction. Let us hope that they, and the ESRB, will significantly improve the achievement of financial stability.

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