

**Liquidity and Money Market Operations:
A Proposal**

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Liquidity and Money Market Operations: A Proposal¹

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A. Introduction

The relative liquidity of financial assets is significantly influenced by the Central Bank's willingness to buy such assets, or to accept them as collateral, in the course of providing additional cash to banks. Those assets which the Central Bank will deal in for such purposes become more liquid, and more marketable, than those that the Central Bank will not.

When the banking system as a whole is short of cash, it has no other recourse than to go to the Central Bank for assistance. The Central Bank has to provide this, since otherwise interest rates will rise very sharply, given the banks' inelastic demand for cash reserves. A Central Bank's choice, in practice, is the price (interest rate) at which it will supply the requisite cash, not the volume of high-powered cash reserves to supply. Normally a Central Bank will supply just enough cash to hold very short-term (e.g. overnight) rates close to the policy rate, chosen generally on broad macro-economic grounds, e.g. to maintain medium-term price stability.

Commercial banks, however, differ from each other in many dimensions, e.g. clientele, business strategies, risk preferences, expertise, etc., etc. So treating all

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banks as similar, e.g. the representative bank assumption, is an unhelpful concept for most analytical purposes. Thus, even when the aggregate demand and supply of cash reserves are in balance (at an overnight rate close to the policy rate), some banks will still be short of cash and other banks will have excess cash balances. Normally the individual diversity of cash positions between banks, which occurs continuously, is resolved through the inter-bank loan market, whereby surplus banks lend on to deficit banks. Allen and Gale (e.g. 2004, 2007) have written extensively on the workings of this market, whose details also depend on the money-market techniques of each Central Bank at the time, see Schnadt (1994).

Particularly when such inter-bank lending is unsecured by collateral, surplus banks will be chary of lending to deficit banks beyond some limit, or cap, in case the deficit bank cannot repay. When some event(s) occur that raise concern about the potential of the deficit bank to repay, the size of the limits on lending may be cut sharply, sometimes to zero. So the deficit bank may not be able to satisfy (all) its demand for cash liquidity in the inter-bank market at the going rate; moreover it is usually unwilling to advertise its comparative weakness by bidding for funds, in the inter-bank market or elsewhere, at a premium above the market rate. Similarly the surplus bank(s) may be left with excess cash balances, whose investment in short-term safe assets will tend to drive down their rates relative to the policy rate, e.g. Treasury Bill rates may decline relative to the policy rate.

Central Banks have responded to the likelihood of markets being unable to balance the cash needs of deficit and cash-surplus banks, (especially likely during periods of increasing risk aversion), by introducing a corridor-system. Whereas standard market

mechanisms are used to keep very short-term rates in line with the policy rates, banks which found themselves still in deficit, towards the end of the market day, could borrow at the rate at which the upper corridor band, (otherwise known as a standing facility or discount window), is set. This has, typically, been set 1% above the policy rate, though the FOMC cut the margin to 0.5% (fifty basis points) on [check date] to encourage use of such facilities. Similarly, a lower level is placed on the decline of short-term interest rates on safe assets by having a lower corridor band, usually at an interest rate 1% below the policy rate, at which rate surplus banks can place deposits at the Central Bank. Most Central Banks, except the Fed, now have such a lower band; the Fed will also become able to offer interest rates on deposits with itself after October 1, 2011.²

On occasions the shortage of liquidity in some deficit bank looks likely to last for longer than a day, or two, for example because it is perceived by other banks as subject to insolvency risk and/or has a business strategy that has left it exposed to persistent cash drains. In that case a Central Bank has to decide, in conjunction with the Ministry of Finance and supervisory authority (if separate), whether to allow the bank to fail (and be liquidated) or to provide it for some longer period with Emergency Liquidity Assistance (ELA) in the Central Bank's role as Lender of Last Resort (LOLR). Such ELA may also be set at a rate 1% above the policy rate, but may be individually negotiated at a higher, or lower, rate on a case by case basis.

² Following the Act of October 13, (2006), (120 Stat. 1968, Section 19 (b) (12)), http://www.federalreserve.gov/generalinfo/fract/sect19.htm#_ednref4

B. Current Problems

The above sketches the standard arrangement for liquidity provision prior to mid-summer 2007. The financial turmoil since then has laid bare four (or more) problems with this standard system:-

(i) The Stigma Effect of Central Bank Penalty Loans

It was already noted that commercial banks did not like offering over-the-odds (a premium) for borrowing in the market because of the reputation risk; it advertised their weakness. Exactly the same is true for borrowing (on ELA or at the upper corridor) from the Central Bank, when that borrowing can be perceived. The FOMC ingeniously tried to counter the stigma effect by having some of their strongest banks 'volunteer' to borrow on one occasion from the discount window, but this was perceived as stage-managing and largely discounted. Although use of the standing facility in the UK is meant to be undisclosed, only a few banks use it to obtain large amounts of cash. By telephoning around the relevant banks, persistent journalists have often been able to deduce which bank did make use of this facility. Barclays was thus identified twice within the space of a month as doing so, and entirely unjustified aspersions were cast against its financial position in the Press. The consequence was to make Barclays hoard cash even more, thereby worsening the constipation in UK sterling interbank and wholesale money markets.

The reputational risk is, of course, even greater if a bank is perceived as being in receipt of ELA. In the case of Northern Rock a steady, but silent, run of wholesale

depositors became transformed into a dramatically visible run of retail depositors, (normally a most stable bunch), by a combination of the announcement of ELA, together with a mixture of hysterical reporting by the Press and a failure of the authorities to provide sufficient public reassurance.

One response to this is to retreat from transparency to secrecy. The UK White Paper (Cm 7308) of January 2008 suggests that as a possible route, (Sections 3.36 – 3.46), and the Governor of the Bank of England stated, in evidence to the Treasury Select Committee (2008, pp 55/6), that he would have preferred to provide ELA to Northern Rock in secret. Is such a response either feasible or, if feasible, desirable?

Banks usually know the approximate condition of their competitors, because they are constantly dealing with each other. Moreover any large scale and persistent application of ELA will become known over time to a widening range of people. Would it really have been possible to keep the assistance, given its scale, to Northern Rock secret for long? Against that, time is of the essence in financial crises, and contingency plans for soothing PR could be put in place against the eventuality of revelation, (but the weakness of Northern Rock had been evident for some time and no contingency plans for public reassurance seem to have been made ready!).

Moreover, the temper of the times is for more, better and quicker information, e.g. mark-to-market accounting and the Market Abuse Directive (MAD). A persistent refrain in the current crisis has been that the poison needs to be lanced by a rapid discovery of the true, 'fundamental' prices of complex derivatives and an open statement of bank losses and balance sheet positions, (not least in the UK White Paper

itself, e.g. Section 1.23; is the White Paper internally consistent on the virtues, or otherwise, of transparency?). While I have my doubts about the view that such market openness is achievable and a healthy disinfectant, to swim in exactly the opposite direction and make Central Bank dealings with individual banks (at the upper band as well as ELA?) secret would seem a retrograde step.

But how else remove the stigma effect? We shall return to this question later.

(ii) The Need for Term Lending

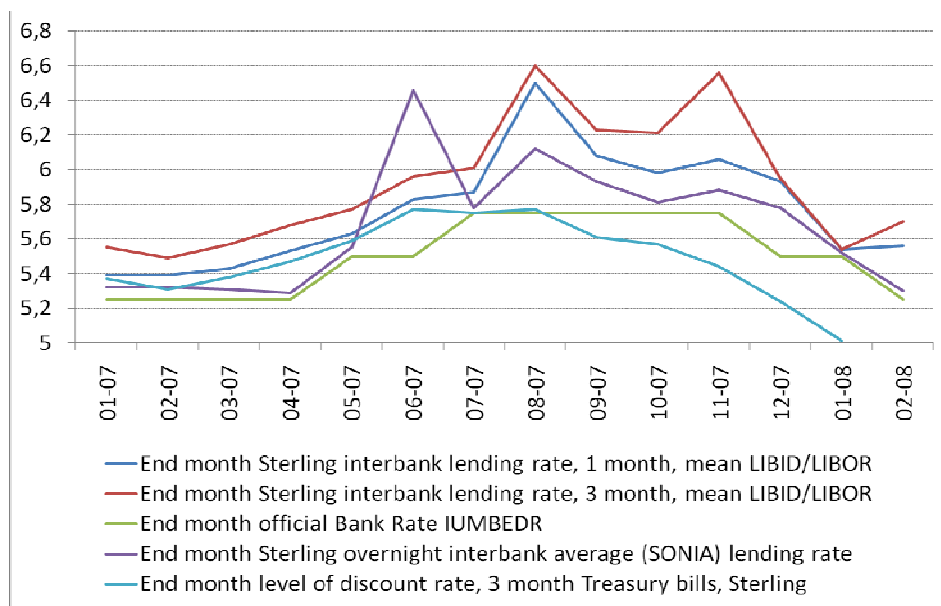
This account of money market operations so far has been based on the authorities acting to even out the supply with the demand for cash at the chosen policy rate. But the particular problem of the recent financial dislocation was not, for the most part, a shortage of cash. Indeed for most of the time since mid-2007 banking systems have been provided with plentiful cash, at times ‘awash with cash’, so that overnight rates have generally, (but not always), traded below the policy rate.

Instead, the problem that banks perceived related to their access to sufficient funds a few weeks, or months ahead. A large number of banks, (a number that was so large as to surprise most non-bank observers), had established non-bank subsidiaries, ‘conduits’ or structured investment vehicles (SIVs) of one type, or another. These were mainly financed by short-term (one, or three, month Asset Backed Commercial Paper, ABCP). For reasons explained in Goodhart (2008), the money market managers who held such paper became no longer willing to roll them over after mid 2007. So the banks could see their contingent commitments, here and elsewhere,

coming home to roost. Meanwhile bank loans, that such banks had hoped to offload onto capital markets, e.g. financing leveraged buy-outs, private equity financing, etc., became unsaleable at any reasonable price. In short, the financial dislocation led to a systemic process of re-intermediation of assets onto bank balance sheets.

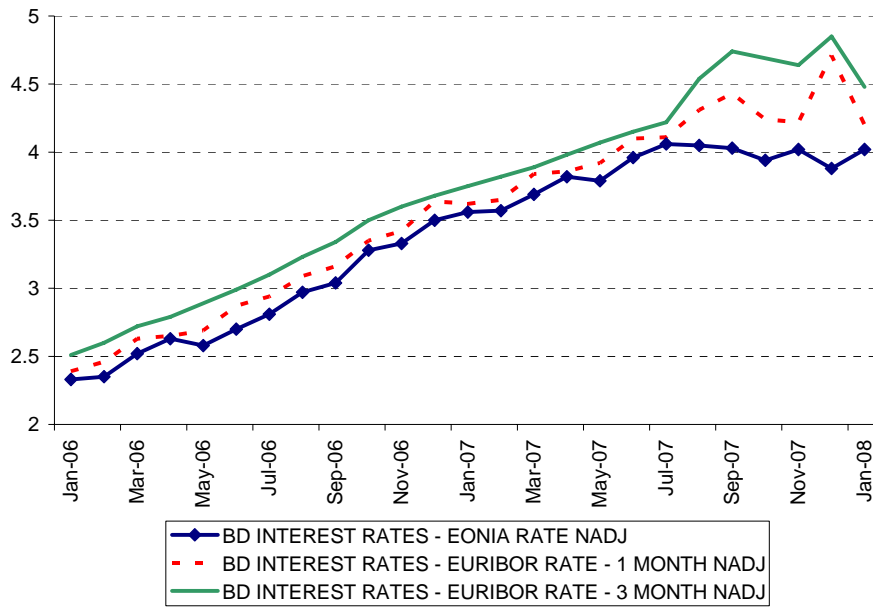
Facing such a predictable development, just where were banks going to find the funds to meet this extra forecast requirement? They bid for funds in wholesale inter-bank markets, (a demand that was exacerbated by the wish of many banks and companies generally to show a liquid, cash-rich, balance sheet at their end-year accounting date, notably on December 31, 2007). The result was to drive one and three month LIBOR (London inter-bank offer rates) to a massive premium, above both the overnight rate, the policy rate, and one and three month Treasury Bill rates. Charts showing this, separately for the dollar, sterling and euro, are shown below:-

Chart 1: UK



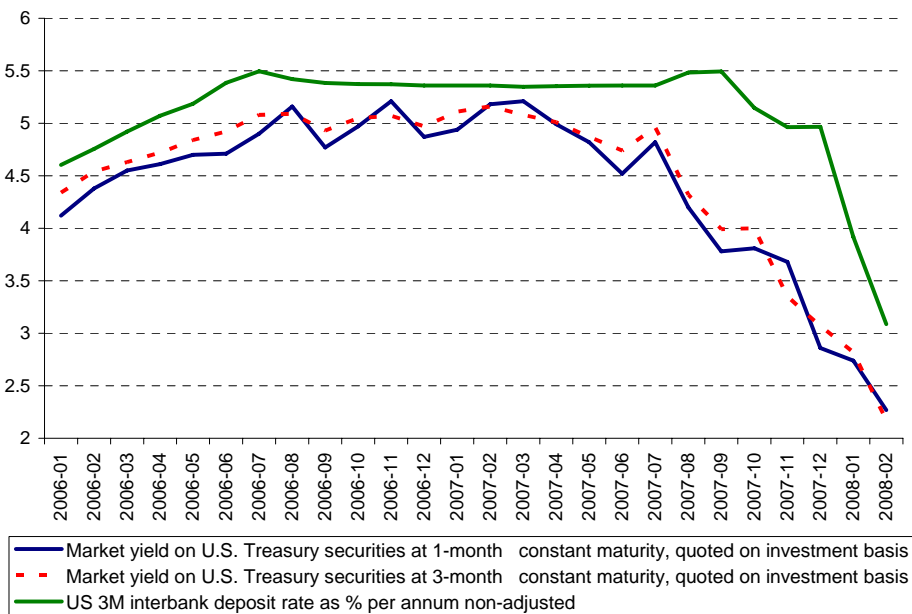
Source: Bank of England website.

Chart 2: Euro



Source: ECB

Chart 3: USA



Source: ECB and Federal Reserve H.15 series

This premium provided a measure of the pressures on banks caused by the financial turmoil. Moreover, since this was also a measure of the marginal cost of funds to the banks, they would tend to pass it on to clients wishing to borrow, (or the banks would refuse to lend at all to reduce their own need to access whole-sale markets). So the premium on 1 and 3 month LIBOR was sharply tightening overall financial conditions, even if the policy rate was held unchanged.

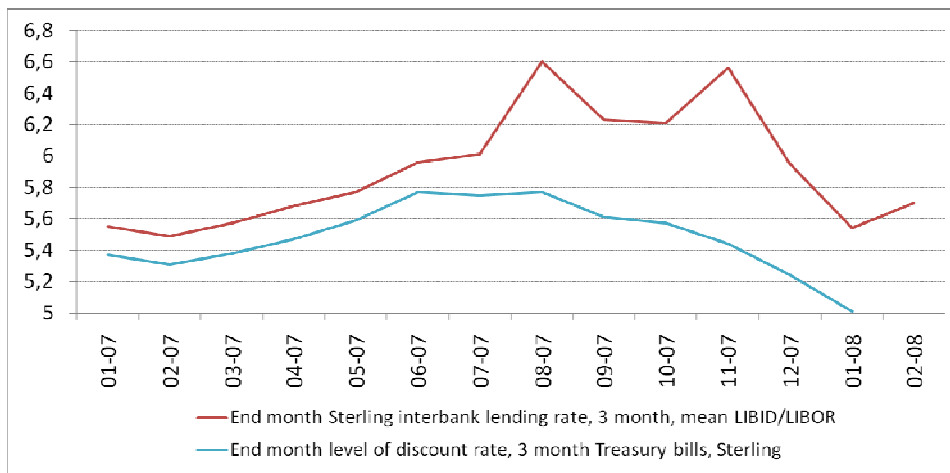
The response of the Central Banks was partly to lower the policy rate, especially in the USA, (or to hold it at a lower level than it might otherwise have reached, in the case of the ECB), and partly to try to tackle the premium on 1 and 3 month money by lending directly at such a longer tenor. Whether a Central Bank is injecting loans on a 1 day, 1 week, 1 month or 1 year tenor, it is still adding cash into the system. The provision of sufficient funding by the Central Bank to make significant inroads into the LIBOR term premium was likely to oversupply the banking system with surplus immediate cash, driving overnight rates towards the lower band of the corridor. So large-scale term lending by Central Banks had to be balanced by opposite short-term exercises withdrawing overnight money from the banking system, a version of Operation Twist.

Because banks normally have an extremely inelastic demand for surplus cash above their minimum requirements, (notably when it is zero-yielding), a Central Bank can drive overnight rates into line with the policy rate with what often seems a remarkably small scale of net open market operations. The demand by banks in the latter half of 2007 for 1 and 3 month funding was on an entirely different, much larger, scale.

Whether the extent, and nature, of the longer term lending undertaken by the main

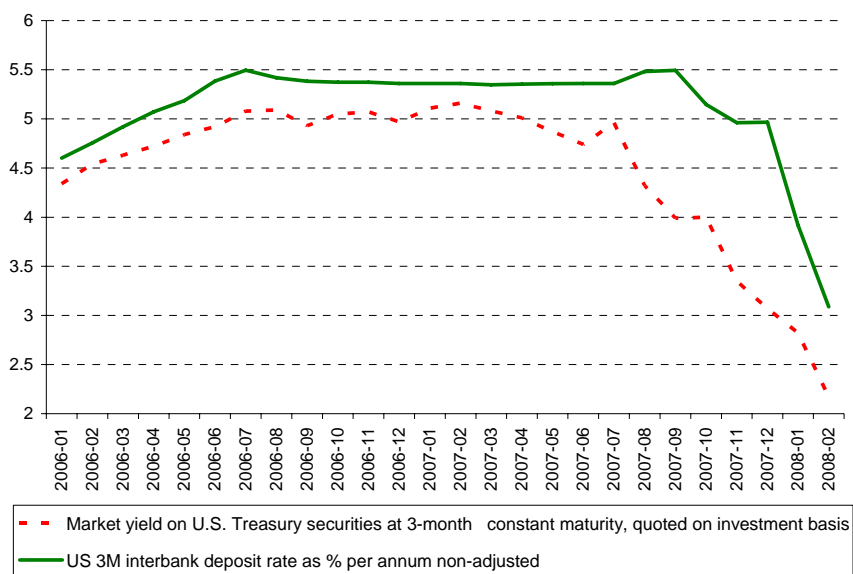
Central Banks involved had more than a marginal effect on the respective LIBOR premia will be a subject for future research and will not be discussed further here. But each Central Bank behaved somewhat differently, and the relative time path of the 3 month LIBOR premium over the current 3 month TB rate is shown below:-

Chart 4: UK



Source: Bank of England website

Chart 5: US



Source: ECB and Federal Reserve H.15 series

In the event all the three main Central Banks involved, Fed, ECB and BoE, developed their own particular use of longer-term auction facilities (TAF), and undertook some version of Operation Twist. But, what and whether this had much effect is yet to be fully analysed, and will not be taken further here.

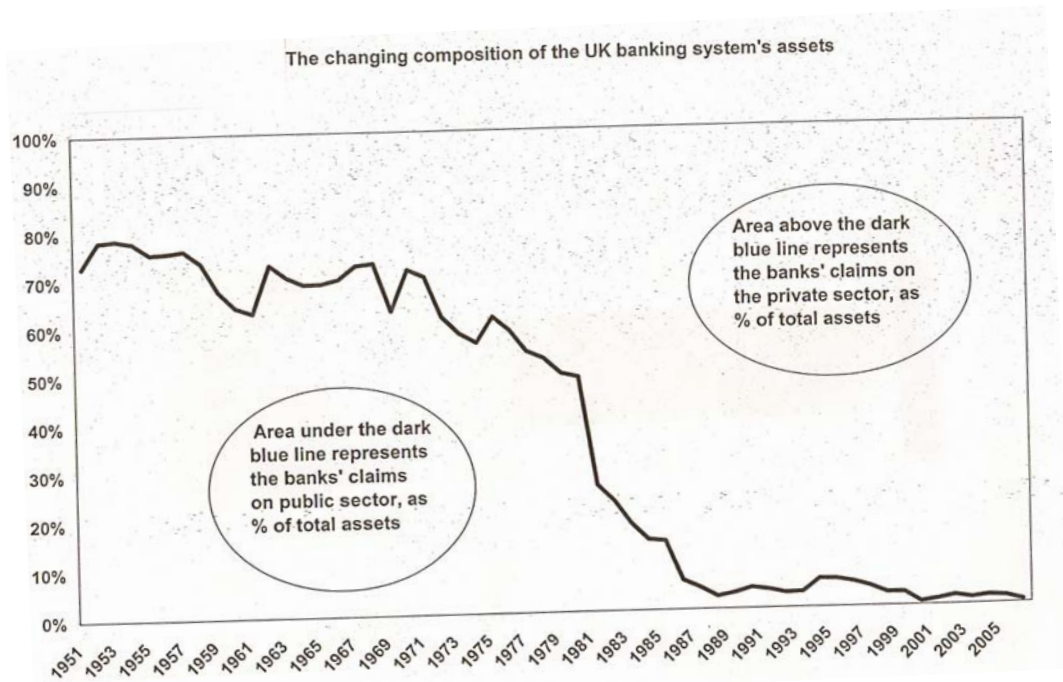
(iii) The Erosion of Bank Liquidity Ratios

Central Banks nowadays normally inject cash on the basis of repo lending, secured by the deposit of collateral. Although ultimately backed by the government and the taxpayer, Central Banks have a relatively small capital base and normally a small balance sheet, relative to the huge size of many of the commercial banks in the Central Bank's charge. This is one reason, amongst others, why Central Banks are unwilling to accept credit risk, though there have been examples, notably among South American Central Banks, when these have operated with negative capital (see Fry, 1992, and Fry, Goodhart and Almeida, 1996).

So Central Banks have traditionally only lent against (the collateral of) highly liquid assets. Such recognized liquid assets have primarily taken the form of public sector assets, in part because public sector debt (when denominated in domestic currency) bears no credit risk, and partly because it has a broad, deep and resilient secondary market, with less price impact from sales. By the same token, however, such liquid assets carry a lower yield.

Over time the business models of commercial banks have increasingly tended to seek to profit from liquidity transformation, and by switching away from holdings of public sector assets into less liquid private sector assets. Meanwhile the inherent liquidity, heretofore provided by public sector assets, was to be replaced by liability management in wholesale markets. Or at least that was the theory until the wholesale markets for funding dried up in Summer 2007. It is difficult to document these trends exactly because of changes in the statistical accounting of bank balance sheets, but some tables, originally prepared for a different publication, are attached in Appendix A. A diagram, which T. Congdon originally prepared of the ratio of public sector to private sector assets in UK banks' balance sheets is shown below.

Chart 7



This caused a problem. In order to obtain additional liquidity from Central Banks, commercial banks generally pressed for a wider range of assets, including private sector paper, corporate and residential debt, to be accepted as collateral. But there was a division of views amongst Central Banks whether this was right in principle. Had not the commercial banks brought this problem on their own heads by imprudent behaviour? Was there not moral hazard in bailing out illiquidity, closely akin to the moral hazard of bailing out insolvency? Was it right to leave all the upside of liquidity transformation to the commercial banks, and leave the downside of liquidity shortages to the Central Bank? Did not this involve the Central Banks accepting a 'liquidity put', even worse than the putative Greenspan 'put' on asset market support? But even if the answer to the above four questions was 'yes and yes again' can a Central Bank afford to remain on a principled high-horse while the banking system slid towards a serious crisis? The answer to this final question was surely 'no', and trumped all the other issues.

There was also an associated practical issue. Such private sector assets, that might be proffered as collateral, both exhibited credit risk and were traded in far less liquid secondary markets, with less resilience and greater price impact from sales. A Central Bank accepting them would either have to lower its standards for avoiding capital impairment (or get government support on that score), or would have to impose such a large discount (or hair-cut), that the access to Central Bank funding by such a route would come at a considerable penalty (and be less useful to the commercial bank).

There is, therefore, a question whether commercial banks should be encouraged to hold larger proportions of high-grade liquid assets. But even if the answer to this

question should be ‘yes’, the time to apply such encouragement is not in the middle of a crisis, but rather in normal times. But in such normal times standard liability management is plentiful and cheap. Holding extra liquid public sector assets just will seem a pointless loss of interest rate margin. Note moreover that requiring banks to hold some minimum ratio of liquid assets is almost totally useless, since the volume of assets within the required minimum cannot be sold (or even perhaps pledged), and are therefore not truly liquid at all.

We will address this question again later.

(iv) The Lack of a Counter-Cyclical Instrument

The major Central Banks around the world, and even more so the international financial institutions, e.g. at the BIS and IMF, had been well aware that liquidity had been in excess between 2002 and 2006, as measured for example by a remarkable reduction in risk premia (of one sort or another). They were also fully aware that this condition was unsustainable, and that a snap-back from yield and risk-seeking to credit aversion could be sharp and brutal. As a generality they did not forecast the precise trigger for this snap-back, i.e. the woes of the sub-prime mortgage market in the USA; but the timing, occasion and form of such triggers is probably unknowable in advance. There is no serious, empirically founded, case for establishing some new, or reshuffled, early warning system in the international financial architecture.

Having perceived the likely outlines of the problem, Central Banks then did nothing about it. They could hardly raise interest rates, since the output gap and forecasts of

medium run inflation remained well behaved. There is now a reprise of the arguments about using interest rate policy to lean against the financial wind, and whether the Fed was right to lower interest rates so much in 2001/2, and keep them so low so long. But interest rate policy is surely predicated primarily to the pursuit of medium term price stability; its role in offsetting, somewhat independent, fluctuations in liquidity and in risk preference must be limited under any circumstances.

But there was no other instrument that Central Banks could use for this latter purpose. As I, and several other economists, have argued, and we believe have demonstrated, (e.g. Danielsson, et al., 2001; Goodhart, et al., 2004; Goodhart and Segoviano, 2004; Repullo and Suarez, 2007), recent changes in the formulation and application of Capital Adequacy Requirements have made them even more pro-cyclical. The greater the risk sensitivity (of Basel II and mark-to-market accounting), the greater the procyclicality! In this particular respect, Basel II is part of the problem, not the solution.

C. What Needs to be Done?

What is, therefore, needed is a mechanism, or mechanisms that will:

1. get rid of, or greatly reduce, the stigma problem of commercial bank borrowing from the Central Bank;
2. provide Central Banks with an instrument which can be varied over time both as a public signal and as a means of affecting the access of the banking system to additional liquidity;

3. give commercial banks an incentive, especially in normal times, to hold adequate liquid assets.

To hope to achieve all these desiderata simultaneously in one scheme is a tall order, but I do at least try to address the main problems in the Preferential Access Scheme set out below.

D. The Preferential Access Scheme

One of the basic problems of our current money market set-up is caused by a continuing and misplaced reverence for the Bagehot dictum that Central Banks (IMF) should only lend to individual banks (countries) at a penalty rate. If so, only banks (countries) which are inherently fragile will approach the Central Bank (IMF) for funding, and that is bound to imply a stigma. So the reputational risk will interact with the penalty rate to cause banks (countries) only to approach their Central Bank (IMF) when they are at their last gasp, often too late to repair the worsening condition by moderate measures.

Instead what is needed is to undertake a partial reversal of the Bagehot dictum. What is needed is to induce all relevant banks (countries) always to be borrowing an initial tranche of funds from the Central Bank (IMF). That avoids the stigma of borrowing at all. To induce banks (countries) to do so the cost of this initial tranche has to be kept very low.

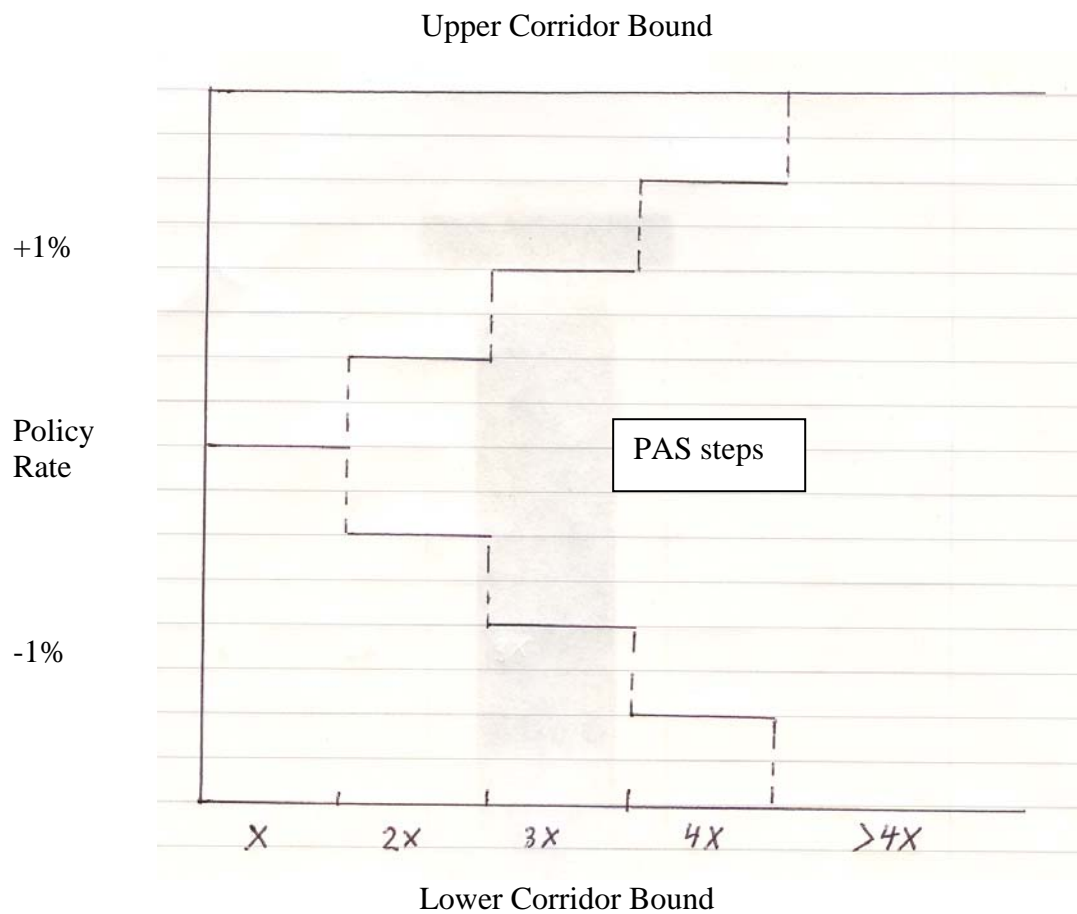
The basic idea then is to make the cost of borrowing from (or depositing with) the Central Bank an increasing (decreasing) function of the scale of such borrowing (depositing), perhaps by having a series of, probably equally lengthed, tranches, and possibly also a function of the initial duration of such lending. Working out such a functional relationship would not be difficult. It would remain true, of course, that the more fragile banks (countries) would be borrowing in the higher tranches at a higher marginal cost, but it should be easier to keep the marginal tranche/cost undisclosed than to keep hidden the occurrence of borrowing at all.³

So, the basic method would involve having tranches for each bank individually, as a % of their relevant deposits. The cost of the initial tranche could be zero, (i.e. free liquidity, apart from the opportunity cost of using collateral), in that the cost of borrowing in this tranche and the return on deposits at the Central Bank would be the same, and equal to the policy rate. Once a bank wished to borrow (deposit) a larger sum than this first tranche, the cost of borrowing into the second (third) tranche could rise by 25 (50) basis points. If the scheme was to be symmetrical the return on deposits with the Central Bank could decline in similar steps.

So after four steps the system would revert to the present corridor system (with bounds plus, or minus, 1%) as shown in the diagram below:-

³ Indeed the aggregate amount of bank borrowing and deposits should be published by the Central Bank. I am indebted to John Veale for this helpful suggestion. [Also note the distinction between such relative transparency and the proposal to hide the Bank of England's dealing with banks in Chapter 3 of the Treasury's January White Paper, Cm 7308.]

Diagram 2: The PAS system



The choice of deposit base, to which the tranches could be related, is optional. It could be limited to sterling retail deposits held in the UK, using the Deposit Insurance scheme as the statistical basis, on the grounds that retail depositors need most support and that retail depositors and retail banks are the most politically sensitive components of the banking system. Or it could be a much wider and inclusive base, e.g. all sterling and foreign currency deposits held with any bank registered in the UK, i.e. excluding deposits held in the UK in branches of foreign banks, and deposits of subsidiaries of UK banks held outside the UK. Or it could be some half-way house.

Either way the deposit base on which the basic tranche size for each bank was estimated would have to be the level attested in its latest, publicly available, audited accounts. Back-dating the statistical base to the latest audited accounts would help to prevent banks in difficulties from gaming the system, and, by relating the base to publicly available accounts, would help to warn everyone, authorities and market, of attempts to game the system.

The key point is that the length of the tranches, the chosen % of the allowable stock of deposits, would be a choice variable for the authorities. By increasing the size of each tranche, say in a liquidity crisis from 1% to 3%, the Central Bank could both signal and also effect a major easing in liquidity. Similarly, during a period of excessive liquidity, a Central Bank could both signal and effect a tightening of liquidity by reducing the tranches, say from 1% to 0.5%, or even all the way down to zero.

The Central Bank would have to give commercial banks time to prepare and adjust to changes in the size of the basic tranche. It would fit in well with the present system of policy rate adjustments, if a Financial Stability Committee could meet at roughly the same time at the Central Bank, perhaps with supervisory participants – if there was a separate FSA – and Ministry of Finance observers, to set the tranche % size, to last on each occasion until the next such meeting. This would give such Financial Stability Committees (FSCs) a focus, a public voice (signal), and an instrument, all of which the badly lack at present.

If such FSCs were to meet on roughly the same regular, e.g. monthly, cycle as Monetary Policy Committees (MPCs) it would make sense to allow banks to borrow (deposit) for durations up until the end of that cycle, at interest rates related (per tranche) to the current policy rate. It would be possible to arrange (allow for) lending/depositing at longer durations but that would lead banks to adjust the tenor in line with their expectations of future changes in the policy rate. Within each ‘maintenance period’ the banks could then choose both the duration of their borrowing/deposits, up until the end of that period, and the scale of such borrowing/deposits, i.e. the marginal tranche, and hence the marginal cost (yield) on such borrowing (deposits). This approach has some similarities with what is already done at the ECB, but not only extends it, but makes the crucial tranche size a choice variable for the Central Bank.

The scheme, outlined above, is intended to deal with the first two objectives of money market reform, i.e. to reduce the stigma attached to bank borrowing from the Central Bank, and, second, to provide an instrument which can be varied over time to affect liquidity. It does not, however, yet provides an incentive to banks to hold adequate liquidity in normal times. But that too can be achieved within the framework of this scheme.

This final objective can be tackled by stating that, once normal times have been resumed, or by some target date, the allowable tranche of liquidity for each bank will be a function of the (time-varying, set by FSC) % of allowable deposits, interacted with a variable which is a function of each bank’s prior assessed liquidity. So if bank X had large holdings of public sector debt, and few short-term wholesale liabilities, it

might be able to multiply its basic tranche by, say, a factor of two; while if bank Y was in the opposite, illiquid, state, its multiplier might be a half.

My own proposed liquidity variable would be an average of the coverage ratio (say at 1 week, 1 month and 3 months) at two prior dates, say on the last two attested balance sheet dates. The aim would be to allow banks to run down their liquidity sharply in crises without completely eliminating their future access to the PA scheme. So long as a bank's crisis lasted for a short time, its liquidity would only have fallen sharply on one of the two balance sheet dates. If all, or most, banks suffered a prolonged liquidity drain, the FSC could counteract that by extending, perhaps greatly, the basic liquidity tranche.

It would be important that each bank's relevant coverage ratio should be published and known in the market place, so that each bank's access to the PA scheme should therefore also be public knowledge. This should therefore provide an incentive for all banks involved in the scheme to keep adequate liquidity during normal, and good, times.

Banks without access to the PA scheme, or those that had exhausted their intra-marginal tranches, could still borrow (deposit) at the upper (lower) bound of the corridor in the normal way.

The scheme is surely somewhat more complex than the present system. There are a series of stepped tranches for each bank, calculated as a % of allowable deposits, with the rate charged on borrowing, (offered on deposits), rising (falling) in steps from

tranche to tranche. The key variable, which is the basic % of each tranche, is to be a choice variable for the FSC of each Central Bank, adjusted on the same temporal cycle as the MPC sets interest rates. In order to give banks an individual incentive to hold adequate liquidity, each bank's tranche length could be multiplied by a factor, greater or less than unity, reflecting its relative liquidity at some prior date(s).

It does not seem that complicated to me. Moreover, in so far as it is complex, the purpose is to achieve a particular set of objectives of money market management which are not currently being achieved. In so far as others can provide a better/simpler scheme to:

1. reduce the stigma of borrowing from the Central Bank;
2. provide a signal/instrument of liquidity management for Central Banks to use;
3. give incentives to commercial banks to hold adequate liquidity at all times;

then good luck and success to them.

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Liquidity Ratio(LR)

LR: US

United States (February 2008). Annual IFS series.																																																								
Time	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007											
Scale: billions																																																								
Banks' Claims on Public Sector	105.565	109.368	111.287	110.045	126.821	419.025	451.5	526.053	542.005	506.403	639.016	603.687	622.615	663.621																																										
Banks' Total Domestic Claims	405.665	444.759	488.098	515.585	565.814	2663.63	3046.73	3363.098	3706.579	3954.89	9574.696	10244.29	11212.81	12233.83																																										
Deposits (Demand Dep. & Time Dep.)	389.627	425.654	463.657	485.751	537.529	2516.234	2837.982	3070.96	3363.241	3492.314	7565.485	7989.899	8670.524	9493.215																																										
Total Liabilities (exc. Other items)	418.49	458.462	497.013	523.664	575.667	2941.146	3346.456	3666.75	4055.822	4289.676	10836.73	11875.31	12853.26	14319.26																																										
Banks' Claims on Public Sector/ Banks' total domestic Claims	26.02%	24.59%	22.80%	21.34%	22.41%	15.73%	14.82%	15.64%	14.62%	12.80%	6.67%	5.89%	5.55%	5.42%																																										
Deposits/ Total Liabilities	93.10%	92.84%	93.29%	92.76%	93.37%	85.55%	84.81%	83.75%	82.92%	81.41%	69.81%	67.28%	66.30%																																											

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Citation for data: International Monetary Fund (IMF), IFS (website), ESDS International, (MIMAS) University of Manchester

Notes: US

Banking Institutions:

Comprises commercial banks, credit unions and savings institutions, and money market funds as defined in the FED Flow of Funds accounts. Commercial banks include U.S.- chartered commercial banks, foreign banking offices in the U.S., bank holding companies, and banks in U.S.-affiliated areas and exclude international banking facilities (IBFs). Savings institutions include savings and loan associations, mutual savings banks, and federal savings banks. The data are derived from the FED Flow of Funds quarterly publication. Claims on Central Government (line 22a) exclude claims on government-sponsored credit agencies and government enterprises, which are included in Claims on Nonbank Financial Institutions (line 22g). Demand Deposits (line 24) comprise checkable deposits as defined in the FED Flow of Funds accounts. † Beginning in December 2001, data are based on a new reporting system which provides improved classification and sectorization of the accounts

