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Liquidity and Money Market Operations: A Proposal

By C.A.E. Goodhart

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Liquidity and Money Market Operations: A Proposal¹

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

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 <u>as a whole</u> 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 shortterm (e.g. overnight) rates close to the policy rate, chosen generally on broad macroeconomic 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 interbank 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)), <u>http://www.federalreserve.gov/generalinfo/fract/sect19.htm#_ednref4</u>

B. Current Problems

The above sketches the standard arrangement for liquidity provision prior to midsummer 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 <u>cash</u> 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.





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:-





Source: Bank of England website



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 Cental 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.





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 <u>principle</u>. 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 <u>not</u> 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 <u>requiring</u> banks to hold some minimum ratio of liquid assets is almost totally useless, since the volume of assets <u>within</u> 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 <u>primarily</u> 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:

- get rid of, or greatly reduce, the stigma problem of commercial bank borrowing from the Central Bank;
- 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) <u>always</u> 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 <u>should</u> 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



Upper Corridor Bound



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 <u>branches</u> 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 <u>effect</u> 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, <u>interacted</u> <u>with</u> 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 <u>two</u> 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 intramarginal 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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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	
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Ueposits/ 1 otal 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%	67.46%	66.30%	5
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Comprises commercial banks,	credit un	ions and	savings in	nstitution	s, and m	oney ma	rket fund:	s as defir	ned in the	FED					
bank holding companies, and h	nercial b	anks inclu	de U.S	chartere	d comme	ercial ban	ks, foreig	n bankin	g offices	in the U.	Ś.		a.		e:
institutions include savings and	loan as	sociations	, mutual	savings l	banks, ar	nd federa	l savinds	banks. T	he data	are deriv	pe				
from the FED Flow of Funds qu	uarterly p	ublication	. Claims	on Centr	al Gover	nment (lii	ne 22a) e	xclude cl	aims on						
government-sponsored credit a Institutions (line 22a). Demand	Deposits	and gove	comprise	nterprise checkal	s, which ble deno	are inclu	ded in Cla	aims on I	Vonbank	Financia	_				
accounts. † Beginning in Decer	mber 200	01, data ar	re based	on a nev	v reportin	ig system	which p	rovides in	nproved	classifica	ttion				
and sectorization of the accoun	its														

Appendix A

United Kingdom (February 2008), Annual II Time Scale: billions Beanks' Claims on Public Sector			 						15				10.10		
Scale: billions 118 Banks' Claims on Public Sector 4.	IFS series.														
Banks' Claims on Public Sector 4.	963	964	1965	1966	1967	1983	1984	1985	1986	1987	2003	2004	2005	2006	2007
Banks Claims on Public Sector 4.						いい行いなっていたこと	and the second second	NAMES IN	の語言の問題	「日本ない」のであっていた。		ALC: NOT	1 1 N 1		
	4.986467	4.66881	4.97216	5.09306	6.033	58.6193	63.4357	51.41114	14.2283	13.82	5.957	14.742	14.521	-2.918	
Danks Total Domestic Claims	10.96647	11.63881	12.47216	12.65306	14.153	178.3633	209:9707	218.8041	332.6733	391.227	-1630.597	1822.342	2009.391	2253.292	
Deposits (Demand Dep. & Time Dep.)	9.152	9.574	10 298	10 703	19 095	106 300	101.654	125,680	167 041	202 EDE	1071 0	1000 55	101.00	10001	1
Total Liabilities (exc. Other items)	11.984	13.019	14.168	15.272	17.965	457.016	575.271	551.7	661.342	799.172	3055.09	3449.82	4016.38	1020101	
					1.0	が行き	の時 時になっ	North Carl	いうのないので	State State				20.00	5
Sanks' Claims on Public Sector/ Banks' otal domestic Claims	45.47%	40.11%	39.87%	40.25%	42.63%	32.87%	30.21%	23.50%	4.28%	3.53%	0.37%	0.81%	0.72%	-0.13%	Si-
Deposits/ Total Liabilities	76.37%	73.54%	72.68%	70.08%	66.94%	23.26%	21.15%	24.59%	25.39%	40.50%	41.61%	40.57%	39.71%	40.84%	
OTES: UK										14 14 15 15 15			2		
A new system of bank returns w rernight are now reported in line I is estimated to have increased onetary sector as described in ti e same exclusions as the banki eginning in 1987, Comprises U.P ocieties as defined by the Buildin boteties as defined by the Buildin troduced for the building society. K. banking institutions sector.	was intro e 24 rath d by abo the Deck ing sect ring Socie y sector s of certa	oduced ir her thatn but 1,300 ember 15 or. † Pric s authori sties Act in the U.	n 1975. A in lin 25 0 million 981 issue or to 1987 ized unde of 1986. K., result ritions in t	ks a resu pounds if of the B of the B of the B of the B of the B of the Chan of the Chan	of approv of approv sterling. 1 ank of El g societie nking Aci tember 1 tiscontin nel Islanc	change, kimately t Beginn ngland's ss are tre t of 1987 992, a n uity for m t sand th	(1) mone 700 millio ing in 198 Monetary ated as f and, bec ew balarn nost of the	y at call a phound: 81, they c y and Fin, part of the jinning in ce sheet e building Man were	and mone s sterling comprise ancial St. January report fo j society e include	ey placed the U.K. attistics, sector. 1987, b rm was data. FF d as par	2) line subject to uilding Prior t of the				
anking Survey: break in series occurs in July 19 eries occurs in January 1987 as a new balance sheet renort forms	999 as e a result	a result o of a cha	of the cha unge in th	inge in th le covera	e definiti ge of bar	on of the nking ins	monetar titutions.	y authori A break i	ties' sect in series	or. A bre occurs ir	ak in n Septeml	ber 1992	as a resi	Ħ	

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Canada (February 2008). Annual IFS s	series.					14. 320					1 1 1			-	1
Time	1963	1964	1965	1966	1967	1983	1984	1985	1986	1987	2003	004	2005	1016 200	100
Scale: billions	1000					の日本の時代に	なんないというない	いたいあるいの	時に見ていたのである	ないの語を行う					
Banks' Claims on Public Sector	2.106	2.016	2.36	3.745	7.313	25.543	23.981	24.469	27.815	24.733	139.2309	138.4738	150.7608	174.6341	
Banks' Total Domestic Claims	- 11.231	12.466	15.171	22.196	29.053	291.003	313.271	340.629	361.197	392.806	1729.191	1855.153	2036.592	2344.71	1
Deposits (Demand Dep. & Time Dep.)	16.21	17.936	19.861	26.033	29.966	261.312	280.729	300.726	326.827	354.65	1764 32	1862 208	2046.085	2306 973	1.
Total Liabilities (exc. Other items)	19.537	21.458	23.255	30.055	33.949	361.889	385.695	422.176	450.609	474.696	1863.809	1962.449	2154.692	2433.318	1
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Banks' Claims on Public Sector/				-		The state of	BAR BAR	「「「ない」ない	の語からの	建設市地に行い				1	
Banks' total domestic Claims	18.75%	16.17%	15.56%	16.87%	25.17%	8.78%	7.66%	7.18%	7.70%	6.30%	8.05%	7.46%	7.40%	7.45%	
Deposits/ Total Liabilities	82.97%	83.59%	85.41%	86.62%	88.27%	72.21%	72.79%	71.23%	72.53%	74.71%	94.66%	94.89%	94.96%	94.81%	
Copyright Statement: 'Title and own	ership of th	e data rem	ain with IM	īĿ											
Citation for data: International Mon	etary Fund	(IMF), IFS (website), E	SDS Inter	national, (M	IIMAS) Univ	rersity of N	lanchester				1 1 1			

Canada

Banking Institutions:

companies, local credit unions, and caisses populaires. † Beginning in December 1981, all wholly- and majority-owned subsidiaries 25, which were previously calculated from monthly averages of Wednesday figures in the absence of an adequate classification of the chartered banks (including mortgage loan subsidiaries and foreign banking subsidiaries) are consolidated in accordance currency transactions booked outside Canada from the IFS presentation. Beginning September 1987, excludes the Quebec institutions, money market mutual funds, and non-money market mutual funds and excludes caisses populaires. Data are with Canadian banking law. Unconsolidated data are not available on a monthly basis. In addition, data for lines 24 and savings banks. † Beginning in December 2001, includes life insurance company annuities, government owned savings of month ends, are now calculated mostly from month-end figures. Adjustments have been made to exclude foreign Comprises chartered banks and Quebec savings banks. Beginning in March 1967, includes trust and mortgage loan based on a new reporting system which provides improved classification and sectorization of the accounts.

Sweden (February 2006). Annal IFS series. Tites <th></th>															
Search billions 11963 11964 11965 11964 11965 11965 11965 11965 11965 11965 11965 11965 11965 1106 2006 2005 2006 2005 2006 2005 2006 2005 2004 2005 2004 2005 2004 2005 2004 2005 2004 2005 2004 2005 2004 2005 2004 2005 2004 2005 2004 2005 2005 2004 2005 2004 2005 2004 2005 2004 2005 2004 2005 2004 2005 2004 2005 2004 2005 2004 2005 2005 2004 2005 2004 2005 2004 2005 2004 2005 2005 2004 2005 2005 2004 2005 2005 2004 2005 2004 2005 2005 2004 2005 2005 2004 2005 2001 20016 2001	Sweden (February 2008). Annual IFS se	eries.													
State <th< th=""><th>Time</th><th>1963 1</th><th>1964</th><th>1965</th><th>1966</th><th>1967</th><th>1983</th><th>1984</th><th>1985</th><th>1986</th><th>1987</th><th>2003</th><th>POOC</th><th>2006</th><th>000</th></th<>	Time	1963 1	1964	1965	1966	1967	1983	1984	1985	1986	1987	2003	POOC	2006	000
Bankis Claims on Public Sector 4 sb 5 6.02 4 3.23 4 197 4 9.02 110.055 110.653 10.654 4 6.574 6 570.163 177.7461 168.673 257.56 270.159 Periodic Claims on Public Sector Banks 14.012 47.655 2.6061 5 6.449 6 52.66 3 936.14 6 57.760 6 2716.006 2716.006 2716.006 2716.00 2 2056.01 2 205.153 Defout Labilities (ex.: Other Herns) 6 6.2500 5 5.643 6 5.73 7 6 5.64 1 2 5.5 5 5.61 1 2 5.5 5 5.64 1 2 5.5 5 5.6 1 2 5.6 1 2 5.5 5 5.6 1 2 5.6 1 2 5.6 1 2 5.5 5 5.6 1 2 5.6 1 2 5.6 1 2 5.6 1 2 5.6 1 2 5.6 1 2 5.6 1 2 5.5 1 2 5.6	Scale: billions					-	ANTI-ANDER PARTY		202-	0001	1001	2002	2004	CONZ	2000
Banks Total Domestic Claims 44.012 47.551 55.061 56.430 52.061 56.430 52.061 56.430 52.061 56.430 52.061 56.430 52.061 56.430 52.061 56.430 52.061 56.531 1116.681 1201.77 1116.681 1207.76 56.44.69 55.57 61.14 69.55.57 56.54.67 585.47 886.333 45.44.89 1201.77 201.61 201.77 201.61 201.77 201.61 201.77 201.61 201.77 201.61 201.77 201.61 201.77 201.61 201.77 201.61 201.77 201.76 201.61 201.77 201.76 201.61 201.77 201.76 201.61 201.77 201.61 201.77 201.61 201.76 201.61 201.76 201.61 201.76 201.61 201.76 201.61 201.76 201.61 201.61 201.76 201.66 201.66 201.66 201.66 201.66 201.66 201.66 201.76 201.66 201.66 201	Banks' Claims on Public Sector	4.95	5.032	4.323	4.197	4.902	110.083	110.634	96.43	96 731	116 018	177 7469	100 6700	057 50	001 020
Decosits (Dermand Den, & Time Den) 48.6i 55.507 61.14 69.56 55.46/7 55.56/7 61.14 69.55 61.14 69.55 61.14 69.55 61.14 69.55 61.11 68.256 7.1000 2001.1 111.11 111.11 2001.1 111.11 2001.1 111.11 2001.1 111.11 2001.1 111.11 2001.1	Banks' Total Domestic Claims	44.012	47.857	52.061	56.439	62.986	399 115	434 149	437 040	101.00 105 AAE	570 000	00-0120	103.0/33	90.107	2/0.193
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Lote Labilities (exc. Other items) 68.266 (a) 73.306 (a) 74.405 (b) 57.4648 (b) 57	Deposits (Demand Dep. & Time Dep.)	48.66	52.208	55.587	61.14	69.356	354.676	385.474	398.353	454.489	481 588	1001 47	1118 82	1065 00	0 207 1
Barnis Otalia concerning in the sector Banks in 51% (Mark) 11.25% (0.51% (0.51% (0.51%) 27.58% (0.51.6% (0.51%) 27.68% (0.51%)	Lotal Liabilities (exc. Other items)	68.2585	73.3069	78.4065	86.2176	94.7125	574.648	612.375	- 652.801	732.044	819.65	3391.404	3862.198	4409.492	5009
lotal domestic Claims <u>11.25% 10.51% 8.30% 7.44% 7.78% 27.58% 25.46% 20.65% 19.52% 8.44% 6.57% 6.57% 7.34% 7.39% 7.30% 7</u>	Banks' Claims on Public Sector/ Banks'					1.1.1.				States and a	State of the second second				
Deposits/Total Liabilities T123% T	total domestic Claims	11.25%	10.51%	8.30%	7.44%	7.78%	27.58%	25.48%	22 06%	10 5.2%	20 A8%	C EAO/	C 670/)010 F	1
Copyright Statement: Title and ownership of the data remain with MR ⁻ Citation for data: International Monetary Fund (MR ⁻), IFS (website), ESDS International, (MMAS) University of Manchester Votes: Sweden Sweden Sweden Sanking Institutions: Seginning in December 2001, comprises all resident units classified as other monetary financial institutions (other MFIs) in coordennee with 1995 ESA standards. Prior to December 2001, consolidates the commercial banks, large savings banks, sooperative banks, and deposit liabilities to the private sector of the postal giro system. Demand, Time, Savings banks, if at on accounts of deposit money banks are not strictly comparable with earlier figures, owing to the adoption of the European Union accounting tatistics using national needber 2001, data are compiled in accordance with the European Union accounting tatistics using national needber 2001, data are compiled in accordance with the European Union accounting tatistics using national needber 2001, data are compiled in accordance with the European Union accounting tatistics using national needber 2001, data are compiled in accordance with the European Union accounting tatistics using national needber 2001, data are compiled in accordance with the European Central Bank's framework for monetary tatistics using national needber 2001, data are compiled in accordance with the European Union accounting tatistics using national needber approach. Prior to December 2001, deposit money banks' positions with other banking institutions are classified in the fitters.	Deposits/ Total Liabilities	71.29%	71.22%	70.90%	70.91%	73.23%	61.72%	62.95%	61.02%	62 08%	58 76%	20 1 80/	%/C'0	1.34%	%79.10
Notes: Sweden Sweden Sweden Service Sweden Som in December 2001, comprises all resident units classified as other monetary financial institutions (other MFIs) in Beginning in December 2001, comprises all resident units classified as other monetary financial institutions (other MFIs) in accordance with 1995 ESA standards. Prior to December 2001, consolidates the commercial banks, large savings banks, cooperative banks, and deposit liabilities to the private sector of the postal giro system. Demand, Time, Savings banks, cooperative banks, and the postal giro system. T Beginning in 1983, data reflect improved classification of accounts. T Beginning in January 1996, system. T Beginning in December 2001, data are comprised with earlier figures, owing to the adoption of the European Union accounting system. T Beginning in December 2001, deposit money banks are not strictly comparable with the European Central Bank's farmework for monetary tatatistics using national residence approach. Prior to December 2001, deposit money bank's footign are counting tatatistics using anational residence approach. Prior to December 2001, deposit money bank's footign not the European Union accounting tatatistics using national residence approach. Prior to December 2001, deposit money bank's positions with other banking institutions are classified in ther items (net) (line 27h).	Copyright Statement: 'Title and owner	ership of the	data rema	in with IMF						00000	0/01-00	07.10/0	0/ 10.07	×0.10%	20.49%
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