

A special report

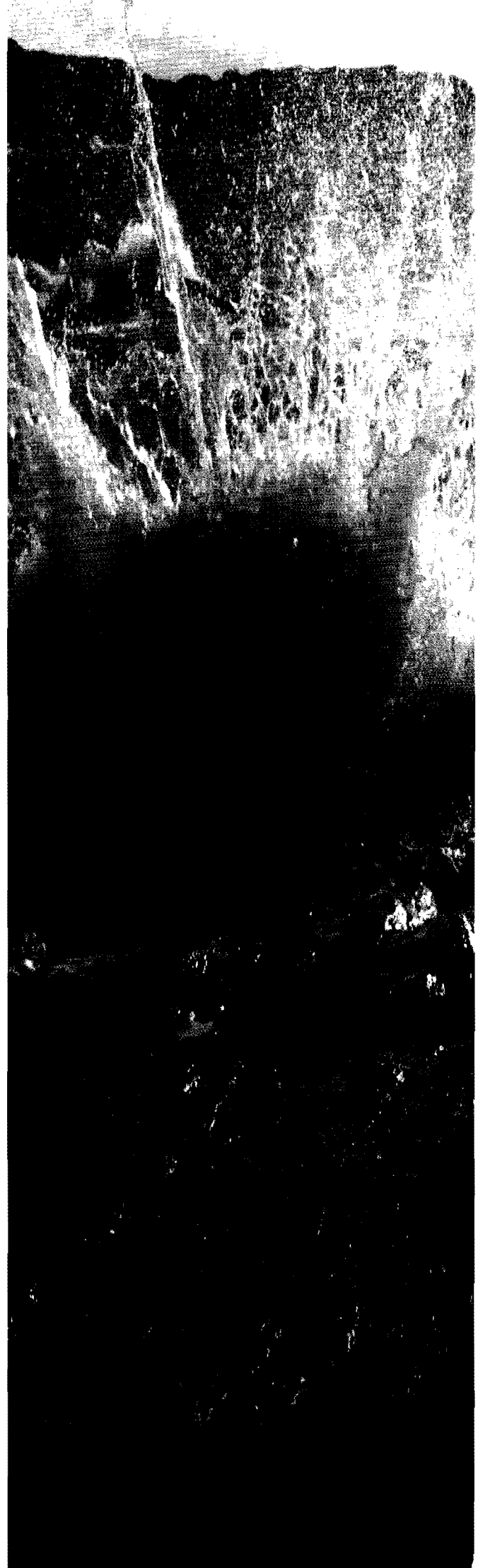
An unnecessary crisis?

Banks, central banks and the
Northern Rock affair

A special report by
Professor Tim Congdon



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Professor Tim Congdon is a shareholder in Northern Rock and has been active on behalf of a number of shareholder groups with regard to the actions of the UK Treasury in taking the institution into public ownership. The comments and views expressed in this publication are his own.

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Executive summary of 'An unnecessary crisis?'

Discussion points for long-run investment decisions

1. In the short run the demise of Northern Rock and the collapse of its business model have strengthened the competitive position of the clearing bank groups in the UK domestic banking scene. Will the widening of their net interest margins offset the large fall in fee income that is now under way?
2. Is the Bank of England still the City of London's main spokesman in the UK's policy-making system or is it now antagonistic to the interests of British banking and the financial sector? What are the long-run implications for the City relative to other financial centres and so, for example, to the demand for high-paid finance sector staff and office space in London, and to the associated tax revenues?
3. Do the international banking conglomerates that have emerged since the mid-1980s have a valid business model? Do the conflicts of interest between their operations lead to abuse, including neglect of customers' best interests?

Summary of reasons for the failure of Northern Rock

Northern Rock suffered a disastrous run on its deposits in September 2007 largely because of a very damaging media leak, but it was 'an accident waiting to happen'. Management had been expansionist and successful for several years, but their growth plans in 2007 were too ambitious and left them vulnerable to a funding crisis. The Bank of England's failure to act promptly and efficiently as Northern Rock's 'lender of last resort' was the immediate cause of the September debacle, but five background influences were important,

1. an over-reliance on wholesale funding, just ahead of the closure of the wholesale funding markets in the summer of 2007,
2. a sharp decline in UK banks' cash and liquidity ratios, a trend which by the early years of the 21st century had been under way for over half a century,
3. uncertainties about the Bank of England's responsibilities to UK banks in a cash crisis, following major money market reforms as recently as May 2006,
4. the Bank of England's ability to operate as lender of last resort autonomously (i.e., without reference to the Treasury) had been undermined by restraints on its income and expenditure, and so on its capital resources, imposed by the Treasury in the decades following nationalisation, and by the 1998 Bank of England Act which split the supervisory role between the Tripartite Authorities, and
5. official decisions were partly a response to a climate of hostility towards 'banks', which arose partly from bank's commercial success and the resulting high incomes since the 1980s.

The main public policy issues arising from the Northern Rock fiasco are 'should the Bank of England – like most other central banks – continue to operate as lender of last resort to the banks or should it be merely a glorified economic research department?' and 'if it is agreed that it should be a lender of last resort, how should that role best be specified?'

1 Introduction:

The need to define and diagnose a 'liquidity crisis'

The UK banking crisis of autumn 2007 was – above all – a crisis of liquidity. When a loan from the Bank of England to Northern Rock became expedient, the problem was not that Northern Rock lacked capital, but that it could not repay retail depositors with legal-tender pound notes (or 'cash', for short). The Bank of England's loan to Northern Rock was immensely controversial and raised fundamental questions about the organization of the British financial system (and indeed all financial systems). The questions include,

- 'assuming that the government has appointed a bank (and only one bank) to handle its financial business, and that this bank (i.e., the central bank) has the unique privilege of being able to issue legal-tender notes ('cash'), should this bank make loans in the legal-tender money to any non-governmental, private sector entity?',
- 'if it is deemed that only some private sector businesses should qualify for loans from the central bank, what are the criteria which qualify them and exclude others from such loans?', and
- 'on what basis – in terms of price, quantity and duration – should such loans be extended?'.

To answer them an extended scene-setting analysis is needed

1. to consider the functions performed by organizations calling themselves 'banks', to explain the patterns of specialisation within the banking system, and, in particular, to distinguish between clearing banks and other banks,
2. to describe how and why a distinct central bank develops given these patterns of specialisation,
3. to identify the value of the banking services (the provision of finance and 'liquidity') that banks, particularly clearing banks, provide to non-banks,
4. to propose that the cost and efficiency with which banks extend loans and provide liquidity to non-banks depends partly on their relationship with the central bank, and
5. to show how a 'liquidity crisis' of the Northern Rock variety could have arisen in a financial system in which all banks were, at least reportedly, profitable and solvent.

In its initial stages the discussion is largely historical in character. Since banking began in England roughly 600 years ago, this may seem an odd approach to the commercial realities of the early 21st century in which Northern Rock operated. But the discussion of one topic – the creation of money in an economy with bank credit – has most resonance when set in its historical context. This topic undoubtedly baffles many people, with the commonplace characterisation of the Bank's loan to Northern Rock as 'government money' being particularly unfortunate. Some members of the public seemed to think that the loan came from a big pot of bank notes, which contained a finite 'lump of money'. On this view the larger the loan from the state-owned the Bank of England to Northern Rock, the less 'money' was available to pay teachers and nurses. A better understanding is vital if light is to be shed on the many complexities of the Northern Rock affair.

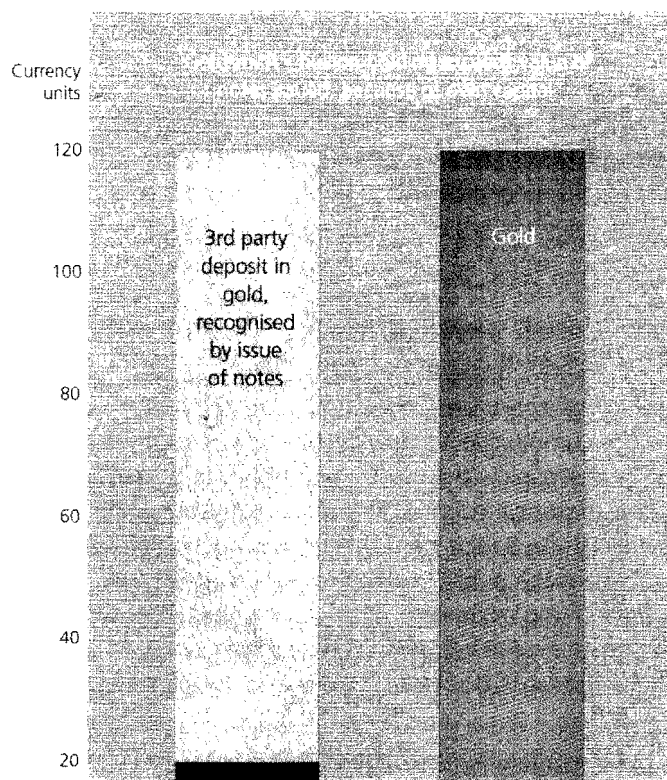
Banking is not about big pots of bank notes. Instead it is concerned with balance sheets, balance-sheet entries, and the simultaneous addition and subtraction of identical amounts to and from assets and liabilities. These activities are a large-scale and mostly successful attempt to create 'something from nothing'. A lengthy excursus into the mechanics of balance-sheet manipulation – which takes up all of the next three sections – is needed to explain why banks and central banks exist, and how central banks relate to banks.

2 The emergence of banking: Where does money come from?

A stylised account of the development of monetary arrangements sees banking as an outgrowth of the safe-keeping of money. In the simpler versions of this account one and only one kind of money – typically a precious metal such as gold or silver (i.e., ‘bullion’) – existed before the start of banking. The bullion was placed with a custodian of some kind (a goldsmith, a coin dealer or even a scrivener) and a note was issued to acknowledge receipt. As the note was convertible into bullion at a later date, its holder could make payments with it in the same way as with the physical metal. Meanwhile the custodian could extend an interest-bearing loan in bullion. As long as the bullion was repaid before the note was redeemed, he could pocket the interest. Since at the outset of the process the custodian would back the note at least 100 per cent with bullion, and even later his assets consisted of bullion in his vaults and a loan repayable in bullion, it is a moot point whether he created money. He was a money-lender, not a banker in the modern sense. As the custodian invariably had some capital of his own, his balance sheet might look as in Diagram 1.

Diagram 1: Beginnings of banking

Deposit covered at least 100% by bullion



Banking began when the custodian realized that, because of the wide acceptability of his notes in payment, he could make a loan in notes rather than in bullion. A new loan could be extended by the issuance of notes (at negligible cost) to the borrower, i.e., an addition to liabilities, and the marking of the loan amount on the other side of the balance sheet, i.e., an equal and offsetting addition to assets. Apparently by magic, the banker could create new money – the notes – out of thin air. In the literature this ability to create money from nothing is known as the possession of ‘the widow’s cruse’, after a passage in the Book of Kings in the Bible.

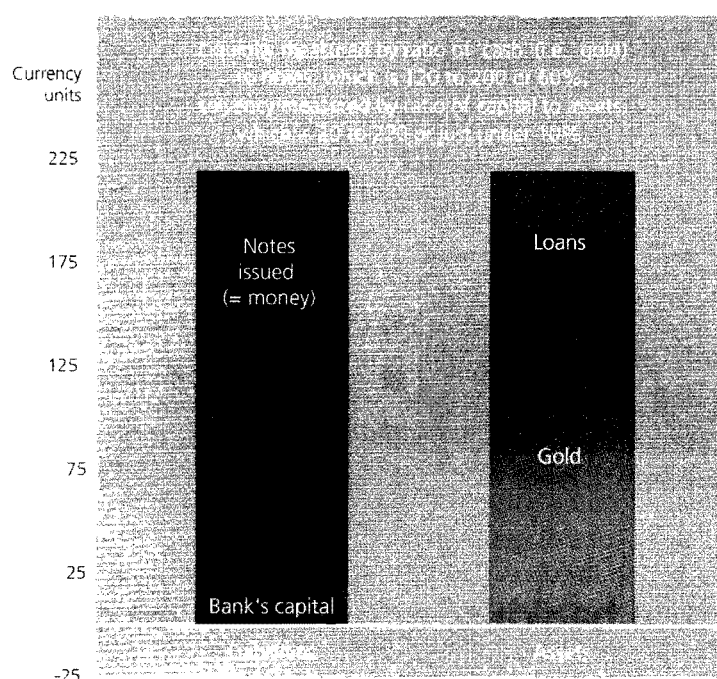
Of course the conjuring-up of money in this way was not magic. Assets and liabilities are merely entries

in a balance sheet, and their totals must always be equal and offsetting. If there was any magic here, it lay in the banker's ability to charge a higher interest rate on the loan than he paid on the deposit. A new income stream was created, with the banker 'using his capital twice'. (The double usage of capital is found in a wide range of financial activities, including the underwriting of insurance risks and securities' issues. It is discussed below further in Section 9.)

The banker's notes were ultimately convertible into bullion, but immediate redemption was unlikely and interest could be charged on a loan in notes, just as it could be charged on a loan in bullion. The early banker's balance sheet might look as in Diagram 2. As loans paid interest, it is obvious that – for any given profit margin on the loan – the bank's profitability was a positive function of the ratio of loans to bullion in the vaults. The banker therefore had an incentive to economise on the non-interest-bearing bullion. On the other hand, the higher the ratio of loans to bullion, the greater was the risk that the gold and silver would be depleted by redemptions. Banking involved a balancing-act, between return (increasing with the ratio of loans to total assets) and safety (decreasing with the ratio of loans to total assets).

Diagram 2: Early banking

'Fractional reserve' banking begins, and banker is concerned about both solvency and liquidity



It is crucial to notice that – even at this embryonic stage in banking development – the wide acceptability of notes in payment did not mean they were as trustworthy monetary assets as bullion. Bullion was always 'worth its weight' in gold or silver, whereas banks might be unable to redeem their notes 100 per cent in bullion. The distinction between two types of monetary asset, between the very safe 'base money' and the money issued by banks as a substitute, was and remains fundamental. The Northern Rock affair is the latest example of a recurrent tension in banking systems.

The evolution of money and banking is a fascinating subject, but unfortunately lack of space prohibits a more detailed discussion. Over time four processes are to be found in the historical record of most countries, including Britain. These are,

1. The work of bullion was increasingly done by paper substitutes (initially in note form) and, since the USA's suspension of the dollar's convertibility into gold in 1971, paper money has no gold or silver backing anywhere in the world.
2. Just as the work of bullion could be carried out by notes, so the work of notes could be carried out by instructions to transfer notes between bank deposits. This has increasingly been the real-world business

pattern, because payment by means of 'scriptural money' is more convenient and less costly than payment by the physical transfer of notes.

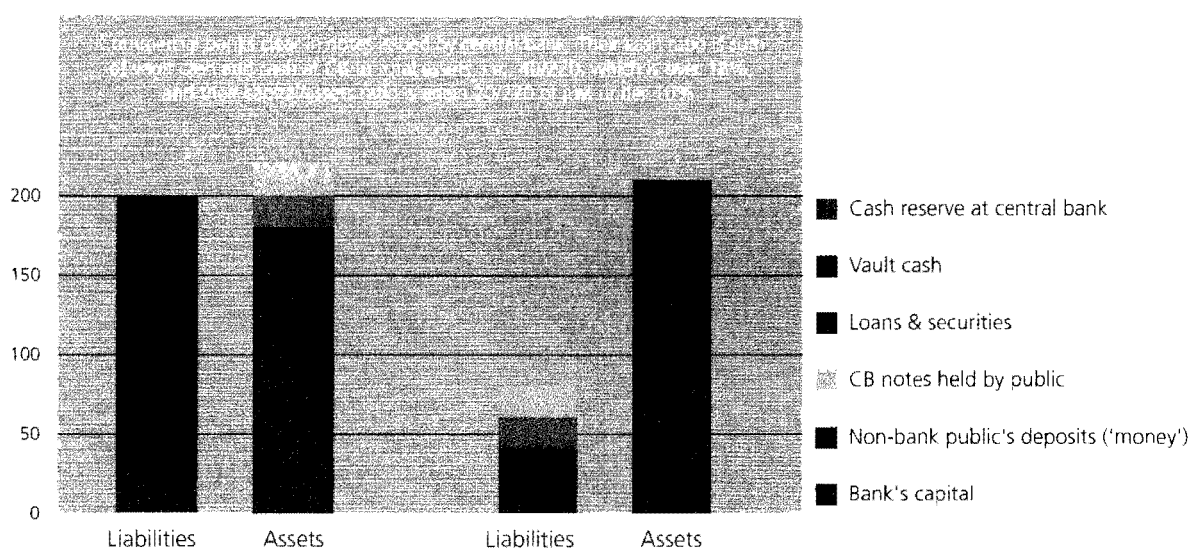
3. Payments against bank deposits have become much larger than payments in notes, while the value of money balances in deposits is nowadays a multiple of that held in note form.

4. The issuance of notes, used in relatively small transactions often by people of little financial sophistication, was restricted to one institution, typically the banker to the government, and notes themselves were deemed to be legal tender. Legal-tender notes are the 'monetary base' of the modern economy and perform a role analogous to that of gold in a pre-modern economy.

In this altered world the structure of the banking system can be portrayed, in highly simplified form, as in Diagram 3. But what is the new institution, the institution that is banker to the government and the issuer of legal-tender notes?

Diagram 3: Structure of modern banking system

Only central bank issues notes, which are legal tender and are banks' cash reserves



3 The emergence of central banking: a functional account

An implication of the last three of these four processes is that the modern world – like the late medieval world in which banking began – has two distinct kinds of monetary asset,

- 1.** legal tender notes issued by the banker to the government, and
- 2.** deposits at commercial banks.

The banker to the government is owned by the state in most countries, including Britain, whereas commercial banks are typically privately-owned and profit-seeking. The banker to the government is able to create new legal-tender notes at virtually zero resource cost, since it can expand the note issue by giving instructions to a printing press and using the notes to purchase whatever assets it wishes. So the banker to the government possesses – to use the phrase introduced in developing the idea of goldsmith-banking – the widow's cruse in the creation of legal-tender notes. No interest is paid on notes, while bank deposits can be both non-interest-bearing and interest-bearing. Because no interest needs to be paid on notes, the banker to the government makes an extremely large profit (relative to cost of production) on the note issue. Legislation invariably ensures that this profit is returned to the government.

The notes are worth their stated nominal value by law, whereas the deposits are convertible into notes at par only in principle. If a commercial bank is badly mismanaged and loan losses eliminate its equity, the

deposits are repaid at less than par. As the Northern Rock affair has demonstrated, members of the British public are well aware of the difference between safe legal-tender cash and potentially unsafe deposits, which mimics the distinction between notes and bullion in early banking. The situation of the commercial banks in a modern economy resembles that of the primitive banker in another important respect. As the modern commercial bank must be able to repay notes at par, it keeps a reserve of notes 'in its tills'. So-called 'till money' or 'vault cash' is not a remunerative asset since no interest is earned on it. Nevertheless, the ability to receive and repay notes over the counter is a precondition for deposit-taking and so for 'banking' in this sense.

It is possible for a banking institution to accept notes over the counter and to repay these notes as and when they fall due, but to refuse customers' requests to make payments to third parties. Such a bank is therefore not involved in cheque clearing or so-called 'money transmission'. Banks operating on these lines give their depositors a savings book, but not a cheque book. Historically, examples in Britain were the 'trustee savings banks' and the building societies, both of which might come under the generic label retail savings banks.

In theory a retail savings bank could have created money in just the same way as the early banker. However, as a practical matter both in the UK and elsewhere such banks usually expanded their assets only after the prior receipt of funds. Mutual ownership by depositors, rather than ownership by third-party shareholders, suited the rather routine and unexciting character of the business conducted by retail savings banks. In many cases they did not have extensive branch networks, with their local origins reflected in names that continue until the present (Northern Rock, Alliance & Leicester, Bradford & Bingley, Cheltenham & Gloucester, the Chelsea Building Society and so on).

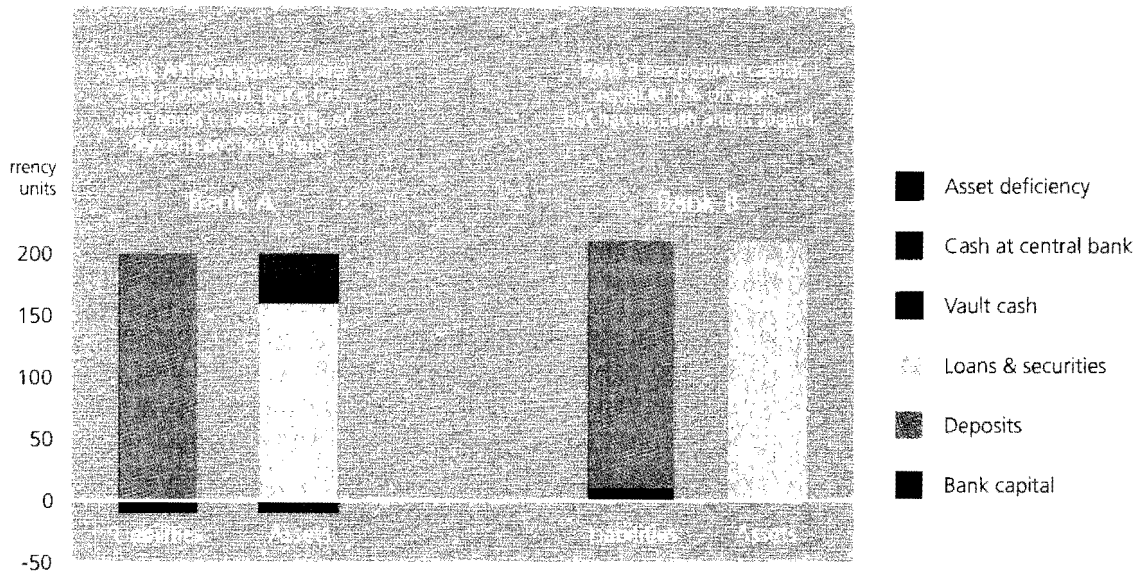
A separate, more ambitious and more important category of bank must now be described. They provide a wider range of services, not only taking and repaying notes over the counter, but also handing out cheque books to customers and acting on instructions to make payments which are mostly to non-customers. It must be reiterated that – at least notionally – the payments are settled in legal tender notes or their equivalents, with all the hassle that involves. These banks' role in money transmission is associated with heavy investment in branch networks which are geographically extensive and indeed often national in coverage. The existence of the branch networks is vital in extending the area of acceptability of cheque payments against deposit liabilities, in a way that is inconceivable for the more localised retail savings banks. Further, a number of banks performing similar money-transmission tasks for their customers may agree that claims on each other are mutually acceptable up to certain limits, which depend on considerations such as asset quality and capital strength. Banks with money-transmission capability can therefore, at least to some extent, create money 'by a stroke of the pen' and so possess the widow's cruse. But – unlike the banker to the government – they create money in the form of deposits, not money in the form of legal-tender notes.

It is essential to notice that this creation of new deposits can occur only if a bank has sufficient 'cash' among its assets and a cushion of capital to protect depositors if a significant proportion of its loans becomes delinquent. Technically, the bank must be both liquid (i.e., with a high enough ratio of cash to assets) and solvent (i.e., with a clear excess of assets over non-equity liabilities, most of which are likely to be deposits). 'Liquidity' and 'solvency' are distinct attributes of a bank's balance sheet, and appropriate levels – or, better, appropriate ratios – of both are necessary to the successful conduct of a banking business. Nevertheless, the modern banking company resembles the primitive goldsmith-banker in wanting to lower the ratios of cash and capital to its balance sheet totals. According to Phillips in his 1921 classic text on Bank Credit, 'the essence' of banking 'consists in the practice of extending loans far in excess of either the capital or the cash holding of the bank in question'.

A bank is said to be 'liquid' if it has a high ratio of legal-tender notes (and/or other assets quickly convertible at minimal cost into notes) relative to its other assets. The term refers, in other words, to the composition of a bank's assets. A bank is described as 'solvent' if it has positive equity capital and an associated excess of assets over non-equity liabilities, which are usually dominated by deposits. In discussions of banking the notion of 'solvency' is therefore concerned with the adequacy of assets relative to a defined total of non-equity liabilities. The valuation of non-cash assets (i.e., the banks' loan and securities portfolios) is important to solvency, but not necessarily to liquidity. One point vital to the

discussion of the Northern Rock affair should immediately be clear. This is that a bank can be solvent (in that it has high quality assets the value of which is higher than that of deposits), but also illiquid (with an inadequate holding of cash relative to non-cash assets).

Diagram 4: Insolvency vs. illiquidity



Making payments across bank accounts rather than in cash is highly efficient, but too much inter-bank indebtedness can be risky. In the historical record the banks therefore set up a clearing mechanism to cancel offsetting debit and credit entries. This mechanism – which took the tangible form of a clearing infrastructure in a particular building ('the clearing house') – enabled total payments by Bank A's customers to Bank B's customers to be compared with total payments by Bank B's customers to Bank A's customers, and a transfer of notes (in notes, it must again be remembered) equal to the difference in the totals is sufficient to 'clear' the business. Of course settlement in terms of the difference was less costly than settlement in terms of the totals, because fewer notes had to be moved. In the UK banks which issued cheque books to customers and belonged to the London clearing house became known as clearing banks.

Now came a key refinement. Although clearing reduced transactions costs, clearing in notes remained messy, awkward and expensive. It may be recalled that the notes are issued by the banker to the government. Each of the clearing banks therefore decided to open accounts with the government's banker. Ostensibly, the accounts were a third type of monetary asset, the deposits maintained by the commercial banks at the banker to the government. But in practice these deposits were without question convertible into notes at par because the banker to the government always honoured its commitments. The bankers' deposits at the government's banker were taken to be so interchangeable with notes that they come to one and the same thing. Indeed, the commercial banks lumped their vault cash and these deposits together in what they called their 'cash reserves'. The practice continues to this day.

So the commercial banks – naturally and because of the spontaneous play of market pressures – started to conduct business with the banker to the government, which in Britain had been the Bank of England since 1694. Because of its strategic location at the intersection of payments flows and the very special character of its liabilities, this bank became known as the central bank. Given the nature of its own business, the central bank was banker to the government and logically to one and only one type of bank, the clearing banks. An important consequence of the resulting pattern of specialisation now needs to be emphasized. The central bank can create at virtually zero cost the legal-tender cash which is their main liability and clearing banks can similarly create at virtually zero cost the deposits, supposedly convertible at all times into cash, which are their main liability. But clearing banks cannot create new legal-tender cash. Clearing banks possess the widow's cruse in only one type of money.

4 The rationale of the inter-bank market

The UK's retail savings banks could have opened accounts at the Bank of England, but in fact this is not what the trustees savings banks did while they existed and not what the building societies (or ex-building societies like Northern Rock) have done until quite recently. Instead they took cash over the counter and sometimes had accounts with clearing banks, but did not open accounts or have any meaningful business relationship with the Bank of England. Indeed, the UK experience was that until 1979 several organizations calling themselves 'banks' had only a limited relationship with the Bank of England. In the 1970s one type of banking company – known as the non-clearing banks – opened accounts at the clearing banks and to some extent borrowed from them, and used the proceeds of their inter-bank loans to lend to companies. Such non-clearing banks typically had no retail deposit-taking at all and were not involved in cheque-clearing. Like retail savings banks, they did not maintain a deposit at the Bank of England.

Could non-clearing banks create money in deposit form? By themselves they could not, but in conjunction with the clearing banks they could. When the clearing banks agreed to lend to them, in the first instance equal sums would be added to the clearers' assets (an inter-bank loan) and the clearers' liabilities (a deposit held by the non-clearing bank at a clearer). As the deposit was an inter-bank item, it was not money in the hand of persons or companies, and was not included in 'the quantity of money'. But – when the non-clearer paid the sum in its own deposit at a clearing bank to a company – the proceeds of the clearers' loan would end up in a non-bank agent's clearing bank deposit, just as it would have done if the loan had been made directly by a clearer.

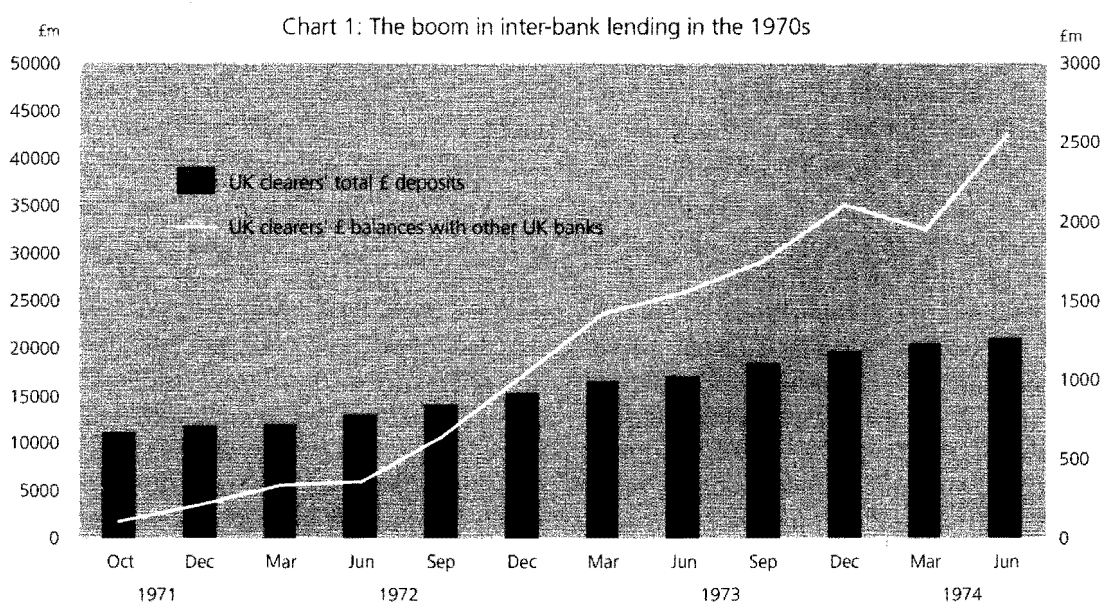
It might be asked, 'why did a clearing bank allow any banking business to be diverted in this way from its own balance sheet?'. At first glance, such diversion of business reduced its own profit-making opportunities. The answer lay in the distribution of capital in the banking system. As bank loans may not be repaid, banks needed to allocate capital against the loans in their balance sheets and to maintain sufficient total capital against all the assets they held. Although non-clearers did not leave deposits with the Bank of England, they did need official authorisation to participate in the London markets. Authorisation helped them to be seen as creditworthy. So, with the clearers assuming that loans to such banks were almost certain to be repaid, only a modest capital allocation was needed against the risk of non-payment. If the interest cost to the clearers of lending to the non-clearers was beneath the interest received, the surplus interest income was extra profit to the clearers.

Sure enough, the non-clearer's subsequent loan to a corporate entity might be risky and so would need a capital allocation, but the non-clearer – unlike the clearer – would in principle have the capital available for the purpose. The growth of the inter-bank market enabled the capacity to lend to be extended from organizations short of capital but with a retail deposit base (and possession of the widow's cruse in deposit money) to organizations with ample capital but without a retail deposit base. It enabled different financial organizations to specialise according to comparative advantage, intensified competition in the banking industry, and so improved the quality of the banks' services to other agents in the economy.

A further aspect – again important in the Northern Rock context – now needs to be analysed. A non-clearing bank could alternatively finance its loan portfolio by the issue of securities, to either banks or non-banks. If the securities were sold to the clearing banks, the effect of the transactions on the clearers' balance sheets would be much the same as if they had extended inter-bank loan finance to the non-clearer. On the assets side of the balance sheet the clearer would hold securities issued by the non-clearer and on the liabilities side it would have an extra deposit. In the first instance this extra deposit would be held by the non-clearer, but – after the non-clearer had in turn loaned out the funds, say, to home-buyers for the purchase of dwellings – the deposit would be issued to non-banks and would be 'money'. The clearer would need to add cash (to its assets) to support the balance-sheet expansion. But only a negligible extra capital requirement (on the liabilities side) would arise because its additional asset was a claim on an assumedly safe and trustworthy 'authorised bank'. Here are the dynamics behind a key process in the wholesale financial markets of the early 21st century. Securities issuance understandably became an attractive means of balance-sheet expansion within the international banking system, particularly to banks (like the UK's former building societies) with limited branch networks to collect retail deposits.

To summarise, the development of markets in inter-bank loans and in wholesale funding (which might be by means of securities) promoted the efficient use of capital in the banking system. The banks which can 'create money out of thin air' (i.e., clearing banks, with their branch networks) might have ample liquidity in the form of excess cash reserves, but be short of capital. By lending to non-clearing banks which do not possess the widow's cruse but may have abundant capital, the inter-bank and wholesale money markets improved the matching of capital to risks. One point must now be re-emphasized. The ability of the clearing banks to acquire assets in the wholesale money markets depends – just like the ability of the clearing banks to acquire any sort of asset – on having sufficient levels of capital and cash. Of course, if the clearing banks do not have enough cash themselves, they might turn to the central bank for help. It follows that – even in the UK context where the retail savings banks and the non-clearers did not historically leave deposits with the Bank of England – the access of these banking organizations to funding has always been related, if at several removes, to operations conducted by the Bank of England. In a speech on the principles of central banking at the London School of Economics in November 1993, the then Governor of the Bank of England, Sir Edward (later Lord) George, said that the central bank should watch the degree of tightness in the inter-bank market as an early signal of wider liquidity trouble.

In the first 25 years after the Second World War the British clearing banks were subject to almost unremitting restrictions on their balance sheets, for reasons of macroeconomic policy. Most of the restrictions were removed in one fell swoop in September 1971 in reforms known as 'Competition and Credit Control'. (These are discussed in more detail in Section 8 (i).) The clearers' capital was of course initially unchanged, but many new credit opportunities were opened up. Capital moved into the banking industry, particularly into the non-clearing sector. Many businesses were so new that they were labelled 'secondary', 'fringe' or even 'tertiary' banks. As the Chart 1 shows, inter-bank lending boomed at a fantastic rate in the next three years. The clearers' sterling balances with other UK banks (i.e., their inter-bank loans) went up more than 10 times, while their total sterling deposits less than doubled. A high proportion of the on-lending by the secondary banks was directed to the property sector, and was associated with wild rates of property appreciation and much folly. By late 1973 a sharp rise in interest rates threatened to turn boom into bust, which would have bankrupted many of the secondary banks. The Bank of England orchestrated a 'lifeboat' rescue programme of exceptional lending, much of it also from the clearers. The aim – which was achieved with great success – was to keep the secondary banks in existence and prevent a fire-sale liquidation of their assets. The exceptional lending is estimated by Margaret Reid, in her 1982 classic on *The Secondary Banking Crisis*, to have reached £3b. Relative to nominal GDP (which rose over 16 times between 1974 and 2007), the emergency lending was twice as large as the Bank of England's loan to Northern Rock.



5 Different types of banking

Lending between banks, and from banks to financial organizations which on-lend the proceeds of bank loans, may lead to marked functional differentiation between organizations all of which call themselves 'banks'. In the 2007 crisis the term 'bank' was used widely about an extraordinary range of institutions, with a huge diversity of business operations. Can the word 'bank' be given some more definite meaning?

In the account here the key defining feature of 'banks' is that they either take deposits of legal-tender notes over the counter or have deposit liabilities which can be converted into notes after a transfer to another bank (a clearer or a retail savings bank) which does take such deposits. However, writers of dictionaries often regard 'lending' or, more loosely, 'the financing of individuals or companies' as a defining attribute of a bank. Whether an organization that does not take deposits in legal-tender notes can be regarded as a 'bank' is to some extent a matter of usage. The key point to appreciate is that an organization can 'lend' money or 'finance industry' without being involved in retail deposit-taking, money-transmission and clearing. The non-clearing banks described in the last section plainly fell into this category. As was noted there, to the extent that they borrowed from clearing banks, their activities did lead to the creation of new bank deposits and so to requirements for extra cash at the clearing banks.

But a rather different type of specialist financial institution – which also provides credit, but whose liabilities are not money – can be imagined. This type of institution does not borrow at all from the banks and instead finances its own lending by borrowing from non-banks. For example, it may issue bonds and use the money raised thereby to finance loans to third parties. The money raised by the bond issue is transferred from the bondholders' bank deposit to the credit specialist's deposit, so that the total of bank deposits is unchanged. In the first instance the credit specialist has new liabilities to the bondholders and its matching new assets are deposits with the banks. It then uses those deposits to lend to individuals to buy consumer durables (in which case it might be called a hire purchase or consumer credit company), to individuals to buy houses (a specialist mortgage lender) or to lend to companies (when it might be called an industrial bank). (To complicate matters further, hire purchase companies and industrial banks may borrow partly from banks and partly from non-banks. The resulting difficulties of definition are not trivial for the central bank officials who compile monetary data, although they are not fundamental to the present discussion. The monetary implications of their borrowing from banks may be very important, as explained above.)

The lexicon of banking is awkward in another respect. Roughly speaking, companies nowadays raise finance in three main ways,

- by taking out bank loans (i.e., liabilities to banks with, as at least part of the repayment, a principal sum which is fixed in nominal terms),
- by issuing bonds (i.e., liabilities to either banks or non-banks with, again as at least part of the repayment, a principal sum which is fixed in nominal terms), and
- by issuing equities (i.e., liabilities which are residual claims on their assets and income, after other claims have been met).

Bond and equity issues are typically handled by specialist organizations which promise (or 'underwrite') certain financial outcomes to the issuers, such as a high price on the equities or a low interest rate on the bonds, and proceed to sell the newly-issued equities and bonds to third parties. Although these organizations take the securities onto their own 'books' (i.e., so that the securities are part of their assets) only in those unfortunate circumstances when they cannot find third-party buyers, they collect the 'underwriting fees' whether the securities come onto their books or not. The activities and profits of such organizations are very different in character from those of a UK High Street clearing bank. Nevertheless, they are involved in financing companies and so call themselves investment banks. The investment banks seem to value the cachet of the word 'bank', although their core business has nothing to do with retail deposit-taking.

Finally, the phrase 'private banking' has acquired currency even though the operations embraced by it may be unrelated to deposit-taking and lending. The idea of private banking appears to have originated

in Switzerland, where the privacy – indeed, the secrecy – of savers' affairs is and always has been an important part of the financial system's reputation. At any rate, the funds entrusted to private banks (by assumedly wealthy people who value their anonymity) may be left in a bank account or invested in securities. The private banks may or may not at some later date arrange the depositing of funds with a clearing bank and a bank loan for the customer. The essential feature of private banks is that they assume responsibility for the management of a large part, sometimes even all, of their wealthy customers' financial affairs. Private banking is therefore really a specialised form of fund management, not of banking. Anyhow the label has stuck. Fund management companies trying to market their services to rich individuals may set up a 'private bank' subsidiary, headquartered in London or New York, with no particular emphasis on secrecy.

The clarity of newspaper reporting and public policy-making has not been helped by the tendency over the last 20 or 30 years for the removal of restrictions on banking functions to be followed by the growth of 'banking groups'. Such groups might include clearing banking, investment banking and fund management (perhaps dressed up as 'private banking') under one corporate umbrella. As explained later, the regulation of such groups has become problematic. The crisis of 2007 arose – at least partly – because of the uncertainties about how officialdom ought best to relate to and supervise banking groups with a diverse range of businesses.

In short, a wide variety of 'banks', or at any rate of self-styled 'banks' and quasi-banks, is to be found in the modern world. This section has identified eight types of commercial organization which might be labelled 'banks',

- retail savings banks,
- clearing banks,
- non-clearing banks,
- consumer credit companies (and hire purchase companies),
- specialist mortgage lenders,
- industrial banks,
- investment banks, and
- private banks.

It was argued in the previous section the normal play of market forces led to the development of a business relationship between the central bank and one and only one type of bank, the clearing banks. The rationale for this relationship was that the clearing banks concentrated on providing payment and money transmission services to their depositors. They were involved, necessarily and routinely, in the clearing of net balances in legal-tender notes. For convenience nowadays, that clearing takes place across accounts at the bank (the Bank of England in the UK) which issues those notes. All seven of the other types of 'banks' listed here are not involved in this activity. Historically, they were not regarded as having an obvious reason for nurturing a business relationship with the central bank.

The relationships between the eight types of bank are both cooperative and competitive. Their asset and liability structures differ radically from each other, but – because they can come under the common designation 'bank' – there is a tendency, even among specialists in the subject, to regard the same regulatory arrangements as suitable for all of them. Indeed, one conclusion – which could come from invoking the ideal of a 'level playing field' between competitors in a single, apparently well-defined industry – might be that all eight types of bank should have the same sort of relationship with the central bank. It should be evident from the discussion so far that this conclusion is debatable, to say the least.

The previous section closed by noting that, while clearing banks could create bank deposits by a stroke of the pen (i.e., they possessed the widow's cruse in the creation of one type of money), their ability to do so is constrained by their cash holdings and so by their access to the central bank's lending facilities. This section ends with the further observation that, if the clearers have liquidity problems, they are less likely to want to purchase securities issued by retail savings banks and non-clearing banks. Because they have their own liquidity problems, which are likely to be symptomized by a low level of cash relative to

their assets, they risk being caught 'short' at the daily clearing. In such circumstances the ability of retail savings banks and non-clearing banks to finance themselves by selling securities (i.e., in the wholesale markets) is affected by both the clearers' cash positions and their ability to borrow from the central bank. This point has been reached after a long and perhaps rather roundabout route. It is of direct, obvious and fundamental relevance to the Northern Rock affair.

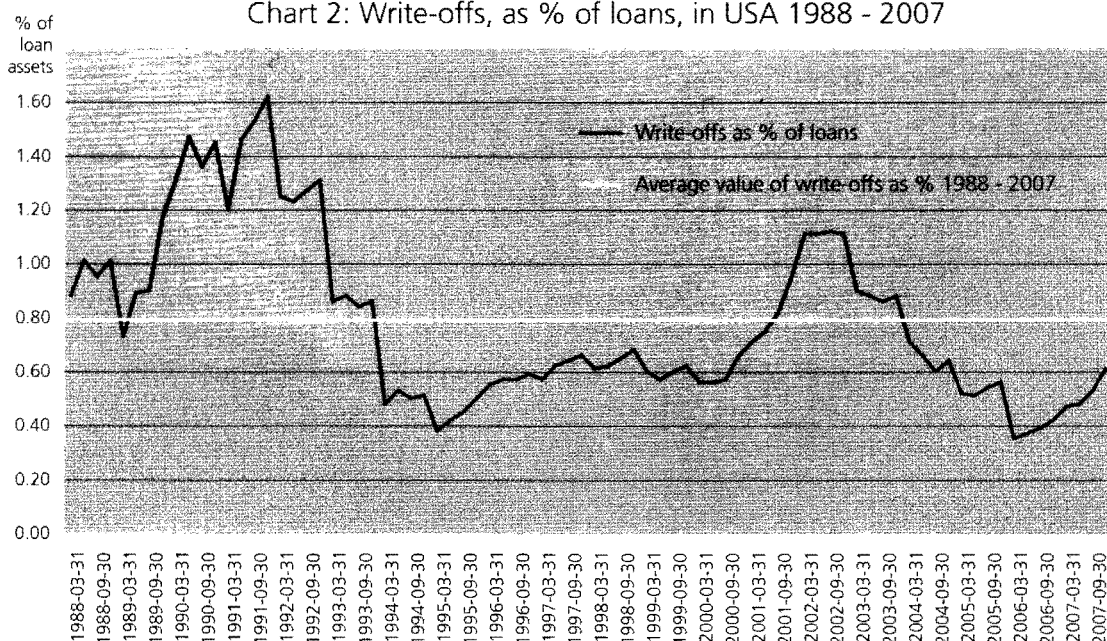
6 The benefits of banking to non-banks

One school of economic thought argues that – since banks' assets and liabilities cancel out – their existence adds nothing to a nation's wealth and is irrelevant to the economy's macroeconomic equilibrium. But this is an extreme position. Most financial historians believe that banking makes a major contribution to the efficiency and growth of the rest of the economy, and a vast literature has been written on the connection between banking and economic development. The focus here is on two aspects of the commercial banks' contribution to wider economic efficiency. These aspects are highlighted to explain certain long-run trends in banks' balance sheet structures and to demonstrate the importance of these trends to the Northern Rock affair. The first aspect is the availability and cost of external finance, and the second aspect is the provision of 'liquidity' to non-banks.

i. The availability and cost of finance

Borrowing from a bank gives the customer extra command over resources. The availability of external finance therefore enables a borrower to control assets larger than those which, strictly speaking, are his, hers or a company's. A mortgage loan is a good illustration, since a first-time buyer can live in a house which may be ten times more valuable than his or her own 'equity' stake. Formally, mortgage finance – which is largely extended by banks – makes possible a more optimal pattern of consumption over time, given an agent's current resources and prospective income stream. The banks charge a rate of interest ('the loan rate'), which is higher than their own cost of funds, for providing this service, while borrowers increase their loans until the expected marginal benefit to them equals the loan rate. (This marginal benefit would consist of marginal imputed rent plus expected house price appreciation in the case of mortgage loans to homeowners, marginal actual rent plus expected house price appreciation for mortgage loans to buy-to-let investors, the marginal profits from the project financed by a bank loan in the case of loans to industrial companies, and so on.) Banks take a charge on the assets acquired, with the value of the collateral usually being higher – sometimes much higher – than the value of the loan. As long as the value of collateral is stable or rising, banks can be confident that loans will be repaid in due course. In most nations write-off (or charge-off) rates on bank loans are in fact commonly under 1 per cent a year and not infrequently under 0.5 per cent a year. (See Chart 2 for write-off rates in US banking.)

Chart 2: Write-offs, as % of loans, in USA 1988 - 2007



The requirement that bank loans be matched by collateral suggests that, at the macroeconomic level, the size of the banking system (relative to national income) ought to be correlated with the capital stock (again relative to national income). Banks' loan rate has four main components,

- the cost of funds to the banks themselves,
- the cost of the banks' infrastructure understood generally (i.e., employment, branch network, computer systems and so on)
- an allowance for the expected rate of write-offs, and
- banks' profit margin.

Plainly, the lower the profit margin for given levels of operational expenditure and cost of bank funds, the lower is the loan rate and the higher are the equilibrium levels of the stock of bank credit, the banking system's collateral and the stock of physical capital. On standard assumptions about an economy's technology, an increase in the ratio of capital to labour is accompanied by a higher marginal productivity of labour and, hence, by a higher wage per worker. Growth in the banking system ought therefore to be associated with higher living standards. That is indeed the long-run pattern in most countries. It follows that the determination of the banks' loan rate is a subject that is relevant, perhaps even quite important, to economic development. The next section will show that, because the existence of a central bank facilitates a reduction in banks' loan rate, central banking makes a fundamental contribution to economic efficiency.

ii. The provision of 'liquidity' to non-banks

What about 'liquidity'? The word 'liquidity' has a multiplicity of meanings, and is one of the most used and misused in monetary economics. Here it can be understood to mean the ease – in terms of predictability of nominal value and low cost – with which non-bank agents can manoeuvre their resources. When a depositor leaves legal-tender cash with a clearing bank, the depositor loses some predictability in the value of his or her asset in one respect. Remember that the bank may be unable to repay the deposit in full because of a capital deficiency, however remote that possibility might seem in modern Britain. Nevertheless, the depositor gains the following,

- greater security, because (as at the start of banking) the bank is a specialist in safe-keeping of 'cash' (i.e., the bank has vaults, security vans and so on),
- greater ease of making large payments, because deposits are scriptural money and payments can be made against them by the writing of instructions (i.e., cheques, direct debits or whatever) rather than the physical transfer of notes (which need to be counted and bundled, which is time-consuming),
- greater ease of moving command of resources geographically, because again payment can be made by the writing of instructions rather than the physical transporting of notes from place to place,
- a permanent record of the transactions in a bank statement, and
- any interest rate on the deposit.

Obviously, the greater security and ease of making payments reduce the depositors' expected transaction costs and increase the future predictability of the value of their assets, regardless of the interest – if any – paid on the deposit. However, many bank customers either simultaneously have both deposits and loans, or have deposits in some periods and loans in others. For such agents one type of bank finance, the overdraft facility, may be particularly valuable. A standard overdraft facility specifies a maximum borrowing figure, but no minimum, and it is not unusual for loan principals to be repaid and re-borrowed several times in a year.

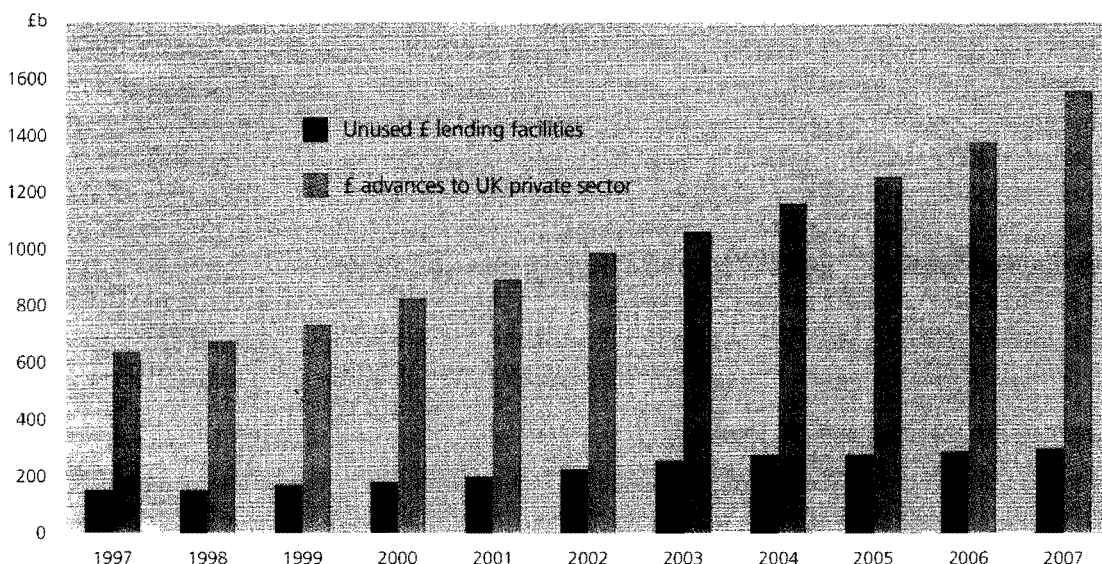
In a modern economy some types of agent – with dealers in financial securities and commodities being the best examples – have large and unpredictable balance sheets. When trading opportunities arise, the drawing-down of the overdraft allows them to own 'books' of securities and commodities (and make a trading turn on them) which are many times larger than their own capital. On the other hand, when business is quiet and their own 'books' are the same as or lower than their capital, they can repay the overdraft and they have no interest charges to cover. So with an overdraft the average size of a dealer's loan is equal to the average size of the book, not its maximum size, in a particular period. The result is a

big saving in interest costs and, almost certainly, a dramatic increase in the return on capital. Dealers are therefore willing to pay a commitment fee for an overdraft (typically expressed as a percentage of the overdraft limit), even if both they and the bank know that – perhaps for an extended period – there will be no loan amount outstanding at all. At first glance the bank is being paid ‘something for nothing’. In fact, the availability of the overdraft flexibility lowers the traders’ expected future costs in manoeuvring their resources and so increases their liquidity. The bank is being paid for providing liquidity to its customers.

The question now arises, ‘which of the seven types of bank identified above is likely to be most competitive in the provision of overdraft facilities?’. The answer emerges quickly. The defining feature of an overdraft is that variations in its size are unpredictable from period to period. The implied variability in the bank’s loan portfolio and assets has to be matched by a similar variability in its deposit liabilities or, in other words, by the ability to create (and sometimes to destroy) money balances ‘by a stroke of the pen’. The discussion above explained that, if certain conditions are met, clearing banks can set up new deposits in exactly this way ‘out of thin air’. (Of course they can cancel them quickly as well.) It follows that clearing banks – the banks which have made a special effort to invest in a branch network and money transmission infrastructure – can collect commitment fees on unused borrowing facilities. Such unused facilities are large relative to their actual balance sheets, as Chart 3 shows.

Chart 3: Unused lending facilities in the UK banking system

Unused facilities, including overdrafts, are typically 20% - 25% of actual loans



Now two points of direct relevance to the Northern Rock affair need to be made. First, the earlier discussion differentiated clearing banks from six other types of ‘bank’, but it noted that clearing banks might extend loan facilities to non-clearing banks and/or purchase their securities. If non-clearing banks are confident that a clearing bank will lend them a certain amount at short notice, the non-clearing bank may extend an overdraft facility to one of its corporate customers and charge a commitment fee on that. So – although only the clearers possess the widow’s cruse – the extending of overdraft facilities and the associated charging of commitment fees may spread more widely through the banking system.

Indeed, clearing banks short of capital may be tempted to set up artificial vehicles (‘conduits’, as they became known around the middle of the current decade), financed largely from non-bank sources by issues of bonds, notes and assorted paper. All being well, these vehicles ought both to make a profit in their own right (by owning bonds, notes, etc., which pay a higher rate of interest than the bonds, notes, etc., which they have issued, and by collecting arrangement fees of various kinds) and to pay the clearers commitment fees for unused credit lines. The purpose of these lines would be to meet the contingency that the conduits had difficulty rolling over their bond and note liabilities. Further, because non-clearing banks (such as Northern Rock) can secure a facility to borrow from a clearer as well as making other borrowing arrangements, they too can establish ‘conduits’ and charge such vehicles commitment fees. Of

course, it is implicit in the successive tiers of credit lines that – if the clearing banks' own ability to create money is impaired – the inter-bank line to the non-clearer may not be renewed. Plainly, the non-clearer then cannot lend to its conduit. The system of credit tiers breaks down.

Secondly, a key sentence above ran, 'if certain conditions are met, clearing banks can set up new deposits "by a stroke of the pen" and "out of thin air"'. What are those conditions? Two are vital and may be reiterated. The first is that the clearing bank must at all times have positive legal-tender cash in its own assets, including its balance at the central bank. If one particular bank expands its assets rapidly and does not increase its cash holding in proportion, its customers are likely regularly to make cash payments to the customers of other banks in excess of the cash payments received by its customers. More concisely, if a clearing bank goes on a solo expansion binge regardless of its cash position, it will frequently be caught 'short' of cash at the clearing. (As was reported in the newspapers at the time, Barclays had a couple of embarrassing 'settlement misses' last summer. They did not reflect larger funding difficulties and were regarded as technical. But they were of the same kind as Northern Rock's [i.e., a liquidity shortfall at a solvent institution], although Barclays' problem was temporary and of much less seriousness than Northern Rock's.)

So for much of the time a clearing bank must expand its cash at roughly the same rate as its assets (i.e., keep its cash/assets ratio stable). If the whole system embarks on an expansion drive, the central bank will have to accommodate the banks by allowing the amount of legal-tender cash to rise. In more vulgar terms, the banks' extension of credit lines between themselves (in order to establish fee-paying entities such as conduits) may risk a sharp decline in cash/asset ratios and, hence, 'a liquidity crisis', unless the central bank is prepared to create cash by the expansion of its own balance sheet. The second condition is that – as ever – banks must allocate capital to the risks arising from the new assets they acquire as a result of money creation. To summarize, a banking system which has large unused commitments to lend may suddenly, for unforeseen reasons, find those commitments being taken up. It must then be very watchful of both its liquidity and solvency.

7. The benefits of central banking to banks

The establishment of central banks helps commercial banks in the two functions reviewed in the last section. So the beneficial effect of central banking may be discussed under the same two headings.

i. The availability and cost of finance

The earlier section on the emergence of central banking explained how some banks became specialised in clearing business and chose to maintain a balance at the safest bank, the banker to the government. Their central bank balances were used to settle debits and credits at the end of a session of clearing, and were pivotal to the day-to-day operation of the payments system. As the use of central bank accounts was convenient to the clearing banks and helped to reduce the cost of settlement, this practice constituted one benefit of central banking.

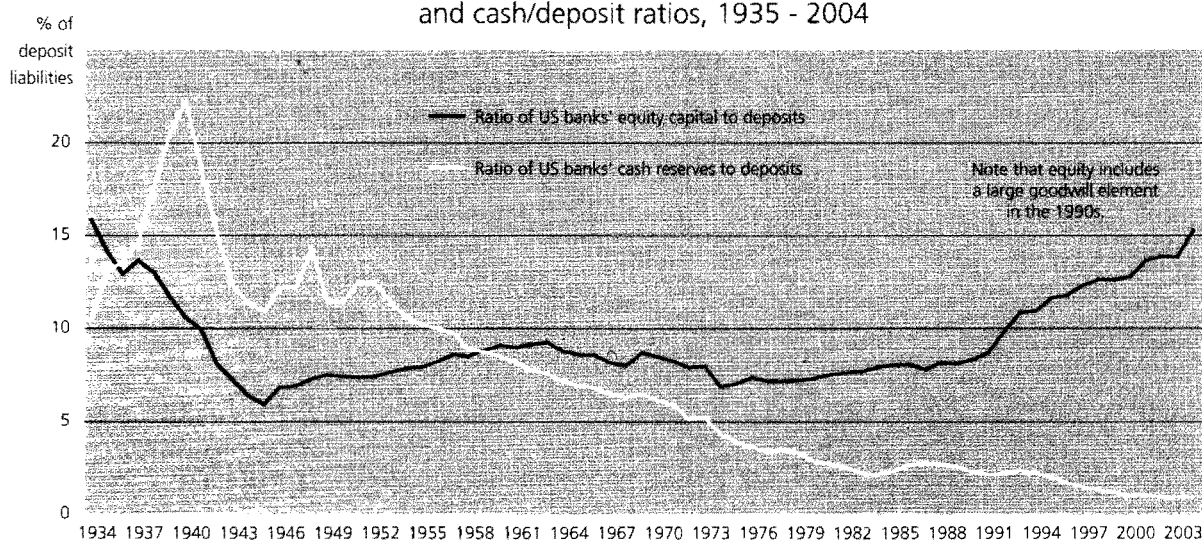
However, a much more important benefit can now be identified. In the discussion of the emergence of banking, it was noted that the early bankers had an incentive to economise on their non-interest-bearing bullion holdings. Precisely the same incentive continues today, except that it is now an incentive to economise on holdings of non-interest-bearing cash mostly in note form. In the absence of a central bank, commercial banks could devise a clearing system between themselves and find ways to minimise the risk that claims on each other would not be met through the failure of one or more participants. They might, for example, set up a clearing-house association and under its aegis appoint inspectors to check each other's balance-sheet condition. This approach was adopted by the New York Clearing House in the late 19th century before the Federal Reserve had been created. But the founding of a central bank delivers another advantage. Unlike the clearing-house association, a central bank has the widow's cruse in legal-tender money. If payments between banks are reluctant in a clearing-house because they distrust each other, the association cannot remedy it by printing more legal-tender cash. By contrast, if payments are tight between clearing banks all holding accounts at a central bank, the central bank can create more notes (or credit sums to the clearers' accounts) and thereby end the shortage.

Banking started, in the late medieval period, with a ratio of the non-interest-bearing 'base' asset to non-equity liabilities of 100 per cent or more. Awareness of customers' payments habits enabled them to calculate the probability of cash withdrawals and so to assess the feasibility of operating with a cash-to-total-assets ratio of well under 100 per cent. By the early 19th century cash ratios in British banking were commonly under 25 per cent. By the early 20th century – following the bank amalgamations of the late 19th century, the spread of branch banking, and the increased sophistication of the clearing system – the cash ratio for the UK clearing banks was down to just above 10 per cent. The USA and most European countries tended to lag the UK in this respect, and commonly still had cash ratios of well over 10 per cent at the start of the 20th century.

One reason for the divergence between the UK and the rest of the industrial world was that British banks had close relations with the Bank of England. In the USA the New York clearinghouse served as the venue for cheque clearing and inter-bank settlement, but the clearinghouse's inability to create legal-tender money prolonged a serious banking crisis in 1907. By contrast, in the UK not only was the Bank of England able to create legal-tender money, but also it had gradually assumed an understood function to help the banks in a crisis ('the lender-of-last-resort role'). Because British banks were protected by a central bank known to have such responsibilities, they operated with low ratios of cash to total assets by the standards of other nations. More generally, in any nation the acceptance by the central bank of a responsibility to keep the commercial banks 'liquid' (i.e., with appropriate access to the central bank's cash) enables these banks to operate with lower cash/asset ratios than would otherwise be the case.

In 1914 the USA followed the lead of the UK and the other major European nations, and created its own central bank, the Federal Reserve. US banks were therefore able to operate on lower cash/asset ratios than before. The consequent reduced cost of banking services to non-banks may have contributed to the prosperity of the Roaring Twenties. After the Second World War macroeconomic stability, improvements in banking technology and ever-closer cooperation between central banks and commercial banks have allowed commercial banks to lower their cash/asset ratios remarkably. In the early years of the 21st century this ratio – which, to repeat, was at least 100 per cent in embryonic banking – was down to under 2 per cent, and sometimes even under 1 per cent, in the advanced nations. (See Chart 4.)

Chart 4: The behaviour of US banks' capital/deposit and cash/deposit ratios, 1935 - 2004



The development of central banking also facilitated a reduction in capital/asset ratios. With the central bank taking responsibility for oversight of the cash in clearing bank balance sheets, a logical sequel was for the central bank to watch the capital positions as well. Every commercial bank would take comfort from the central bank's supervisory activities in its own dealings with other banks. So the pattern of specialisation in the banking system – with an increasingly strict differentiation between a stated-owned, base-money-issuing central bank and privately-owned, deposit-issuing commercial banks – helped the commercial banks to reduce their ratios of both cash to deposits (and so to all balance sheet totals) and capital to assets.

Is there a way of quantifying the effects of the reduction in these two key ratios on banks' profitability and the margins they charge to non-banks? In order to simplify the problem, let banks' assets (A) consist of non-interest-bearing cash (C) and interest-bearing loans (L). So $A = C + L$. Let the ratio of cash to assets be c . Then $L = (1 - c).A$. Banks earn a profit by charging a loan margin (or 'spread', s , stated as a proportion of earning assets) over their cost of funds. So their profits (P) can be expressed with the formula,

$$P = s. (1-c).A,$$

and the rate of return on capital (K) becomes,

$$P/K = s. (1-c).A/K.$$

Further,

$$s = P/K. (1/[1-c]).K/A.$$

So banks' loan margins can be seen to depend on three variables, the rate of return on capital in banking, the inverse of one minus the cash ratio and banks' capital/asset ratio.

When the innovation of central banking allows commercial banks to lower their cash ratios and their capital/asset ratios, the benefit in the first instance flows through to their shareholders. However, if capital flows freely between different activities, and if competition evens up the rate of return both between the banking system and the rest of the economy, and within the banking system between different banks, the rate of return on capital in banking should be similar to the long-run rate of return on capital in the economy as a whole. The main symptom of competition is likely to be a fall in the margins charged on loans, although – as will become apparent later – the collection of fees from the arrangement of new loans can be another important source of revenue. The usual figure cited for the long-run real rate of return on equity in capitalist market economies is 7 per cent a year. In order to keep the length of the discussion under control, let it be assumed that the rate of return on equity and the rate of return on capital are the same thing. Given a 7 per cent annual rate of return assumption, the formula derived above can be used to calculate the effect of reductions in cash/asset and capital/asset ratios on 'loan margins'. The matrix below sets out the answers.

To repeat, banking begins with a cash/assets ratio of at least 100 per cent and a capital/assets of just under 100 per cent. But – as banks become more skilled at economising on both cash and capital – these ratios fall dramatically. In the early years of the 21st century a common pattern in the industrial world is for the cash ratio to be about 1 per cent and the ratio of equity capital to assets to be about 4 per cent. (Note that asset totals include claims on other banks and governments. If such claims were excluded, capital/asset ratios have typically been over 5 per cent even in the last few years of rather daredevil banking.) The table shows that in early banking – when banking and money-lending were hardly distinguishable, with the cash ratio at 80 per cent and the capital almost half of total assets – loan margins had to be over 15 per cent above banks' cost of funds to deliver a 7 per cent return on equity. By contrast, banks have been able – with central bank support – to economise on liquidity and solvency to such a degree that nowadays a 'loan margin' (or so-called 'credit spread') of a mere 0.3 per cent (i.e., 30 basis points) is sufficient to achieve that rate of return.

Does the analysis help in understanding the intense competition in the UK housing finance industry in the opening years of the 21st century? The UK's specialist mortgage banks make profits from their customers also by charging various fees, for example, on loan arrangement, the sale of home and mortgage indemnity insurance, and the sale of life insurance. Since they operate with very low cash/asset and capital/asset ratios, the high level of fee income may enable them to achieve a reasonable rate of return on capital even with a mortgage rate that appears to offer no margin over the cost of funds. This point is of considerable importance in understanding the so-called 'teaser rates' and special mortgage products in the markets in which Northern Rock was competing in 2006 and early 2007. The practices of the mortgage banks were sometimes characterised as 'suicidal' in the financial press. The banks had in fact been able for many years to reconcile low margins on their loans with a satisfactory return on capital and growing profits.

How banks' loan margins vary with their liquidity and solvency ratio

Table shows the reduction in bank's 'loan margin', as cash/asset and capital/asset ratios decline, partly because of the emergence of a distinct central banking function.

P/K	c	K/A	s	
Rate of return on capital	Cash Ratio	Capital/assets ratio	or "Loan margin"	All figures expressed as a %
7	80	45	15.8	
7	60	35	6.1	
7	40	25	2.9	
7	20	15	1.3	
7	5	8	0.6	
7	1	4	0.3	

ii. The provision of 'liquidity' to banks by the central bank

The discussion so far has established that commercial banks – and in particular clearing banks – have a business relationship with the issuer of legal-tender cash, the central bank. This relationship involves both the depositing of cash with the central bank and the occasional borrowing, also of cash, from it. The commercial banks' dependence on the central bank for their supplies of cash gives the central bank immense power over them.

Over time the central bank has come to use this power in two ways. First, the state has typically given the central bank a responsibility for keeping the value of money stable over time (or at any rate of limiting the decline in value to a low and predictable rate, through a regime of 'inflation targets'). The central bank performs the task of maintaining 'monetary stability' by varying the position of the supply schedule of cash (also known as 'base money' or 'high-powered money') to fix short-term interest rates and conducting 'open market operations' with the clearing banks so that these banks are always on the verge of being 'short' of cash. If a clearing bank is short, it has to borrow from the central bank and the central bank can set the rate of interest on the loan directly. In practice, commercial banks do not dispute that the central bank has the whip-hand in setting interest rates. Inter-bank rates are therefore normally close to the central bank's policy rate (termed in different systems 'the rediscount rate', 'the repo rate', 'the Bank rate' and so on). Variations in the policy rate then affect the extension of credit by the commercial banks and, at further removes, the rate of growth of the quantity of money (i.e., bank deposits plus the public's cash holdings) and the rate of inflation. The central bank may sometimes lend to banks as an adjunct to its open market operations, which support its wider monetary policy objectives. Credit operations of this sort – which may be temporary and always have a specified repayment date – have sometimes been mocked as 'lender of first resort' activity.

Secondly, we have seen that a feature of the long-run evolution of financial systems has been the centralisation of banks' cash reserves (apart from vault cash) in the safest bank of all, the central bank. It was also explained that the ability to borrow cash from this very safe bank enabled commercial banks to lower their ratios of non-interest-bearing cash to total assets and to reduce the profit margins on their earning assets. But what is meant more precisely by the phrase 'the ability to borrow cash from the very safe bank, the central bank'?

In some jurisdictions the terms of loans from the central bank have long been explicitly stated in contracts. For example, in the USA the Federal Reserve differentiates between the Fed funds rate (i.e., its 'policy rate') and the discount rate. The Fed funds rate is set by open market operations. If money is lent at close to that rate ('to inject liquidity into the system'), the initiative comes from the Fed itself and the funds are expected to affect the balance between supply and demand in the entire money market. But, if one

particular bank finds itself – idiosyncratically, exceptionally – running low on cash while the rest of the banking system has ample cash, it may borrow from the Fed at discount rate. Discount rate is typically 0.5 per cent or so above Fed funds rate. Because it is above banks' normal cost of funds, the loan is at a so-called 'penalty rate'. As the bank may incur a loss on assets financed by such a loan, the expectation is that it will make every effort to repay the loan as soon as possible.

But the arrangement between the commercial banks and the central bank may be much looser and more informal. The arrangement may be nothing more than an 'implicit contract' that the central bank will extend 'a lender-of-last-resort loan' to a bank with cash problems, with no definite prior understanding of the cost of the facility, the collateral requirements, the maximum size of the loan and so on. In Britain the 20th century passed without any significant 'run on a bank', in marked contrast, for example, to the USA which saw thousands of banks 'close their doors' and fail to make full repayments to depositors in the Great Depression of the early 1930s. Given the apparent success of its approach, the Bank of England has tended to emphasize the 'constructive ambiguity' of its relationship with commercial banks. Throughout the 20th century and, even at the start of the 21st century, it did not have an agreed contractual structure for lender-of-last-resort loans to British banks. The absence of a definite contractual basis for lender-of-last-resort lending was to prove of great importance in the Northern Rock crisis.

Whether the lender-of-last-resort facility is definitely available on well-defined contractual terms or potentially available on an implicit basis, the existence of such a facility is helpful to commercial banks. Most assets have the characteristic that the price achieved is better (i.e., lower for a buyer and higher for a seller), the longer is the period in which the buyer or seller is active in the marketplace. In general, a forced seller in a so-called 'fire sale' will receive less than an opportunistic seller acting for a going concern. Many assets held by banks are very long-term in nature, notably the mortgage loans associated with the purchase of real estate. If banks suffer a run on their cash, they may have to shed assets in a hurry, effectively in fire-sale conditions. Given that most banks are highly-g geared with capital/asset ratios of 5 per cent or less, the liquidation of assets at fire-sale prices (say at 94p. in the £ for mortgage loan assets instead of 100p. in the £, which would be expected in the long run) may result in insolvency. By borrowing cash from the central bank, banks have more time to reorganise their assets. They can avoid the worst damage to their balance sheets, profits and solvency that might otherwise result from a run. In other words, commercial banks' access to the central bank's lender-of-last-resort facilities improves their 'liquidity', in much the same way that, for example, a non-bank commodity trading company's access to an overdraft facility from a commercial bank improves its 'liquidity'. As Sir John Hicks, the winner of the Nobel prize for economics in 1972, noted in one of his later lectures, the social function of liquidity is that it gives agents 'time to think'.

8 The background to the Northern Rock affair

Enough analysis, of a loosely theoretical kind, has been given to explain the patterns of specialisation, and the dynamics of the search for profit, in the banking industry. Five developments need now to be discussed in order to define more precisely the context of the Northern Rock crisis when it broke in the late summer of 2007.

i. The decline in UK banks' holdings of cash and liquid assets in the post-war period

The Bank of England's insouciance towards the precise wording of its lender-of-last-resort obligations did not mean that the Bank of England paid little attention to commercial banks' cash and liquidity in the 20th century. On the contrary, senior executives at the Bank of England monitored banks' balance sheets with great care. Indeed, taking its cue at least partly from academic economists, the Bank often saw ratio-based controls of various kinds as helpful in the task of influencing the size of the banking system's balance sheet and, hence, of the economy at large. For most of the 20th century the two key ratios were those for cash (i.e., vault cash plus cash reserves at the Bank of England) and 'liquid assets' relative to a large balance-sheet number, such as total deposits or assets. The assets deemed to be 'liquid' for control

purposes were those that could be sold, quickly and at minimal cost, to the Bank of England for cash. The precise definition of 'liquid assets' varied over time, but for the banks all such assets had the important advantage that – unlike cash – they were earning assets and had a positive rate of return. Nevertheless, the rate of return was typically much lower than on loans to the private sector.

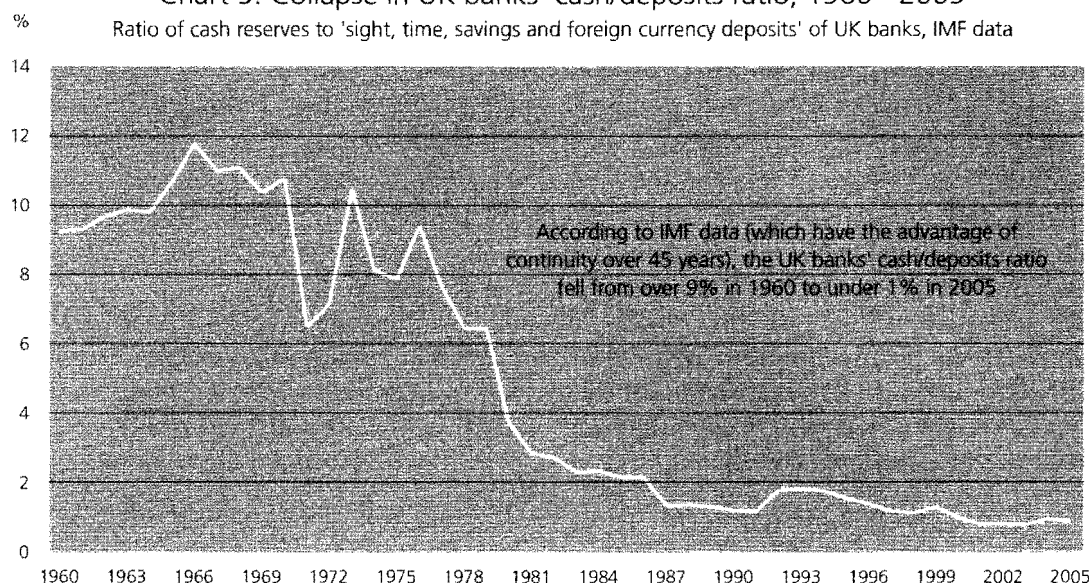
The long-run trend was for the ratios of both cash and liquid assets to fall relative to total assets and liabilities. When Keynes published his *Treatise on Money* in 1930, the UK clearing banks had a ratio of cash to deposits of about 11 per cent, while advances (usually the most profitable chunk of their assets) were 55 to 60 per cent of assets. By the early 1950s the banks and the Bank of England agreed that the cash ratio could fall without endangering depositors' safety, as long as the banks had high ratios of liquid assets to liabilities. The liquidity ratio at this point was just under 40 per cent. Over the next few years the cash ratio came down to 8 per cent, while the official aim was that the liquidity ratio was to be kept at 28 to 32 per cent. Banks also had large holdings of gilt-edged securities (so-called 'investments') and the advances ratio was as low as 30 per cent. These ratio requirements hampered the clearers in competition with non-clearers. As their profits were hit by their compliance with official regulations of various kinds, they pressed for greater balance-sheet freedom.

The official response came with the Competition and Credit Control reforms of 1971. These introduced a 'reserve assets ratio' – set at 12.5 per cent of sterling deposits – for all banks, including non-clearing banks. The assets that might be included in the 'reserve assets' figure were much the same as those that had previously been in the 'liquidity ratio', which obviously implied for the clearers that they could raise their advances (and so their profits) sharply. A cash ratio rule still applied to the clearers (and to the clearers alone), but it was expressed in terms of their balances at the Bank of England and excluded vault cash. Balances at the Bank of England were to be 1.5 per cent of so-called 'eligible liabilities' (i.e., most liabilities other than equity). The exclusion of vault cash from the assessment of liquidity was remarkable by historical standards, since vault cash is of course banks' first line of defence in a run.

In 1981 both the 1.5 per cent bankers' balance ratio requirement and the 12.5 per cent reserve assets ratio were abolished. Instead all banks were to maintain 'special non-operational, non-interest-bearing, accounts' at the Bank of England equal to 0.5 per cent of eligible liabilities. These accounts were seen as serving no purpose in either monetary control or financial supervision, but existed to give the Bank of England funds which it re-invested in interest-bearing assets to generate a profit sufficient to cover its staff costs. The clearers kept a separate balance, over and above this 0.5 per cent, to settle debit and credit balances at the end of each daily clearing, but it was now a very low ratio of their balance sheet totals.

The abolition of the reserve assets ratio did not mean that the Bank of England no longer cared about the degree of maturity transformation that banks were undertaking. In July 1982 a paper on The measurement of liquidity was published by the Bank, setting out how it would define guidelines for banks' liquidity needs and in particular how it would measure a bank's a 'net cumulative mismatched position'. Bank of England officials retained responsibility for the monitoring of commercial banks' liquidity and their 'net cumulative mismatched positions', among other things, until 1998. Given that the commercial banks' balances at the Bank of England were intended exclusively to meet its costs, official oversight of bank liquidity was very much concentrated on non-cash liquid assets rather than cash. The neglect of cash in official banking supervision had now become extreme compared with the UK's banking traditions. (See Chart 5. This neglect was particularly astonishing, given the vocal advocacy in some quarters of 'monetary base control', in which the supply of cash would have been the lynchpin of monetary management. Advocacy of monetary base control continued into the 1990s.)

Chart 5: Collapse in UK banks' cash/deposits ratio, 1960 - 2005



Despite the shift towards the monitoring of liquid assets as the principal defence against a run, the UK banking system's ratio of liquid assets (short-dated gilts, Treasury bills, eligible commercial bills, etc.) to total assets fell heavily between 1981 and 1997. The discount market – the traditional intermediary between the commercial banks and the Bank of England, and the keeper of 'money at call' for British banks for almost 200 years – was defunct by mid-1997. Its demise attracted hardly any comment in the press or official publications, and certainly no comment which recognised that the banking system had lost an important liquidity buffer.

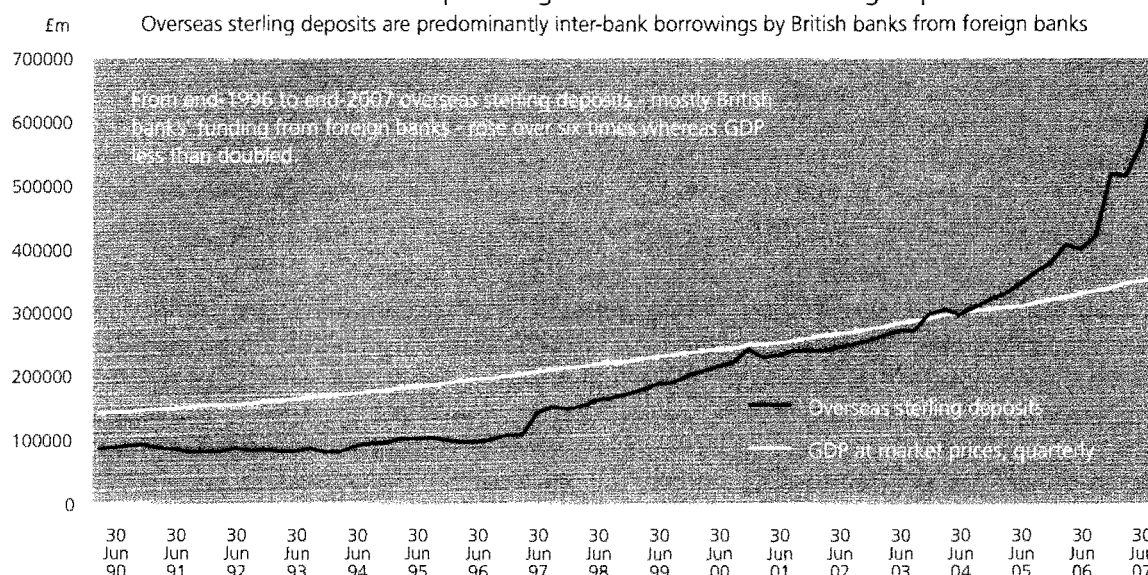
Finally, after the Bank of England has been granted operational independence to set interest rates in May 1997, the job of supervising the UK's commercial banks was moved from the Bank to the newly-established Financial Services Authority. The Bank lost its pre-eminent position in banking regulation and was expected to play second fiddle to the FSA, with the Treasury, the Bank and the FSA together known as 'the Tripartite Authorities'. The FSA has no capital or balance sheet, and it therefore cannot extend a lender-of-last-resort loan. Whether for this reason or perhaps for no reason at all, official supervision of bank liquidity virtually ceased in the UK in the late 1990s.

(The author was able, from the relevant issues of Financial Statistics, to compile data – for the period from end-1981 to mid-1997 – on UK banks' holdings of assets that would for decades have been regarded as 'liquid'. Relative to total sterling liabilities, the ratio of such assets fell from over 10 per cent at end-1981 to about 3 per cent at mid-1997. At any rate, such categories as local authority deposits, gilt holdings [helpfully split by maturity], eligible bills and so on were still being reported at mid-1997, i.e., when the Bank of England lost the job of bank balance sheet oversight. But – when the author tried to repeat the exercise from recent issues of Financial Statistics – the job was difficult, simply because the assets formerly understood to constitute 'liquidity' for banks were either not separately reported or no longer existed. A plausible deduction is that the last decade has been marked by official neglect of an aspect of British banking which was for many decades regarded as fundamental to the system's health.)

Instead the almost exclusive focus of official balance-sheet oversight became solvency. Like love, solvency is a many splendoured thing, since it can be measured by different concepts of capital, and then amended for risk, asset type and so on. Its assessment has given much employment to the bureaucracies of financial regulation. Anyhow, the move in regulatory attention from liquidity to solvency reflected international trends, notably the specification of the Basle rules on capital adequacy which had begun in the late 1980s. From the standpoint of each individual bank, liquidity was increasingly understood as the availability of loans from other banks through agreed 'lines'. Meanwhile a higher proportion of funding took the form of the issuance of (usually short-dated) asset-backed securities in the wholesale markets. This increased

reliance on securities issuance was true of clearing banks, which could in principle create money out of thin air in the way earlier described, and of non-clearing banks, which could not. The British banking system relied, to an ever-greater extent, on financing from banks in other jurisdictions (sometimes the foreign subsidiaries of British-owned banks), a development which could be tracked in the data in the extraordinary growth of 'overseas sterling deposits'. (See Chart 6.) For the system as a whole, of course the inter-bank lines cancelled out and did not constitute assets that could be readily sold to the central bank for cash.

Chart 6: The explosive growth of overseas sterling deposits



Under the terms of the 1998 Bank of England Act and the 2000 Financial Services and Markets Acts banks were expected to keep a non-interest-bearing balance (a 'cash ratio deposit') at the Bank equal to a mere 0.15 per cent of eligible liabilities. By the early years of the 21st century the UK banking system's holdings of both cash and liquid assets were amazingly low by all historical standards. In August 2007 the Treasury published a paper on The Cash Ratio Deposits Scheme: a Consultative Document which said that the scheme's objective was 'funding the Bank of England's policy function'. This document overlooked entirely

- the function of commercial banks' cash reserve at the central bank in their clearing operations,
- the critical role that the relationship between the central bank and the commercial bank plays in preserving the convertibility of deposits into cash at par.

Ironically, the appearance of this document coincided almost exactly with the start of the Northern Rock crisis.

Banking systems are always at risk of a liquidity crisis and, in one not entirely hypothetical sense, they are always 'bust'. In the UK at present banks' sight deposits approach £800b., while their holdings of vault cash are under £7b. Their sight deposits – which in principle can be converted into cash immediately – are therefore over 100 times larger than the cash in the banks' tills and safes. Does this matter? Sophisticates might deny that the apparently remarkable degree of maturity transformation, and the consequent extreme exposure to liquidity risk, is of any importance. They might insist that the priority for banks is to make good loans to credit-worthy borrowers, and to remain profitable and well-capitalised. If a run on banks' cash develops, the central bank can lend to them without limit against their high-quality assets. There ought to be no risk that depositors will be unable to get their cash back. This proposition was to be tested – unhappily to destruction, as far as Northern Rock and its shareholders were concerned – in the weeks and months that followed the Treasury's publication of its consultative document on the cash ratio deposits scheme. As events were to show, the consultative document's failure to note that banks' holdings of cash – and only these holdings – are their first line of defence in a run was almost surreal.

At first glance, the lack of cash and liquidity in British banking since the late 1990s has been and remains perilous. But it needs to be recognised that, with non-earning cash down to a trivial fraction of assets, the dominance of earning assets in banks' balance sheets has improved bank profitability. With the intense competition in credit markets which has characterised the period since the CCC reforms of 1971, margins on bank loans have narrowed. As earlier explained, the reduction in the cost of bank finance made possible by the fall in cash and liquidity ratios is one of the most important social benefits of central banking. The virtual disappearance of cash from UK banks' balance sheets appears dangerous, but in an important respect it has benefited British industry and the public.

ii. Changes in the Bank of England's conduct of 'open market operations'

The narrative in the last section showed that banks in the UK have reduced the ratios of both cash and liquid assets to total assets dramatically over the last 60 years. In the early years of the current decade officialdom seemed remarkably complacent about this development. However, that does not mean the subject has been totally neglected by either the Bank of England or the commercial banks themselves. In fact, the relationship between the Bank of England and the UK's banks has seen a major upheaval in the last decade.

As this study has shown, an obvious functional justification existed for banks of a particular kind (i.e., those making payments in cash for their customers or 'clearing banks' in UK terminology) holding deposits at the central bank. The Bank of England set interest rates, and so organised monetary policy, mostly by purchases and sales of securities with the banks in order to affect the size of the clearers' deposits. Everyone involved in these transactions (i.e., 'open market operations') knew that the clearers had an ambivalent attitude towards their cash reserves. On the one hand, the reserves did not pay an interest rate and so were an unprofitable asset to hold, and, on the other, at all times the reserves had to be kept at a positive level in order that the banks could both repay depositors with cash and meet their commitments at the daily clearing. Cash reserves had to be minimised, but still somehow maintained at a positive figure.

In the last decade two developments have radically altered the context of open market operations in the UK, as elsewhere. The first is that improvements in information technology have enabled banking systems to revolutionise their settlement procedures. For many decades clearing was carried out only once a day, at the apparent 'close' of business in the clearing house, with a great deal of checking and re-checking continuing for some hours afterwards. (The need to tot up sums after hours is the explanation for the long-established pattern on the British High Street for banks to close before retailers.) But by the mid-1990s computers had become clever enough for the settlement of large amounts to take place in real time, at an acceptably low cost. In April 1996 the UK clearing banks adopted a new system for settling sterling payments, of 'real time gross settlement', which operated continuously during the day. This greatly diminished the possibility of the other clearing banks suffering a loss if one of them (for any reason) had a massive loss and could not meet its clearing obligation at the end of the day. It therefore reduced yet further the size of the requirement for a working balance at the Bank of England.

Secondly, as will be familiar from the rest of this account, banks are constantly trying to raise the proportion of their earning assets to their total assets. In the 1990s European central banks wanted to streamline the purchases and sale of government debt and, in cooperation with banks and market-makers, they developed so-called 'repurchase markets'. These enabled holders of government debt to make a small fee for lending government securities, but they also strengthened contacts between the central bank and a range of other players in financial markets. Moreover, the introduction of the euro gave Europe's bankers an opportunity to renegotiate their relationship with their national central banks. Instead of their cash reserves earning no interest (as had been the previous norm), the European System of Central Banks agreed to pay interest on these reserves. The level of the reserves would rise and fall in the conduct of repurchase transactions of various kinds (i.e., 'open market operations'), but in any event commercial banks would not be penalised for working closely with the ECB and the national central banks.

The UK did not adopt the new European single currency and, initially, the Bank of England did not copy the ECB's arrangements in the eurozone. But in May 2006 it did begin to pay interest on that part of

banks' cash reserves that took part in a new voluntary scheme. Under the terms of the scheme, which is now in force, a target level of reserve balances is maintained for the duration of a 'reserve maintenance period'. Member banks themselves choose the size of the target balance, subject to a maximum which has (until very recently) been £1b. or 2 per cent of eligible liabilities. If balances are kept 1 per cent either side of the target during the maintenance period, they are paid the Bank's repo rate. Penalties apply outside that range.

The historical pattern – in which banks' cash balance at the Bank of England reflected the tension between safety (i.e., always to have a positive balance to cover cash payment obligations) and profit (i.e., to minimize non-earning assets) – was easy enough to understand. But – for the author of this paper, at least – the rationale of the Bank's present cash reserve scheme, which has been labelled a 'corridor system', is far from obvious. It is true that the penalties in the scheme do enable the Bank of England to signal and enforce its wishes about 'the Bank rate' and may have reduced volatility in the money markets. But, arguably, this apparent clarity has been bought at a high price in terms of the structural efficiency of the money markets. (The Bank has just decided – as this paper is being completed [May 2008] – to allow banks to hold cash reserves up to a maximum of £2b. or 5 per cent of eligible liabilities. The question might be asked, 'is the paralysis in the UK's money markets since summer 2007 to be blamed, even partly, on the corridor system of setting Bank rate introduced in 2006?'.)

iii. The Bank of England's changing position in the UK's financial markets and the state sector

Earlier in this study a strong conclusion was drawn, that 'logically the central bank is [banker] to one and only one type of bank, the clearing banks'. The interconnectedness of central banking and clearing banking stems from a basic feature of clearing, that it is completed by transfers across reserve accounts (themselves convertible into legal-tender notes) at the central bank. However, towards the end of the 20th century the traditional closeness of the relationship between the central bank and clearing banks was challenged.

As was also earlier discussed, the designation 'bank' has been attached to financial organizations which have almost nothing to do with the taking of cash deposits and clearing. Capital can of course be deployed in either clearing banking or in one of the other forms of banking. The liberalisation of financial markets in the 1980s resulted in a global boom in investment banking, as the American 'bulge-bracket firms' (Goldman Sachs, Lehman and so on) and some European counterparts 'globalised' their operations. Several US banking groups – notably Citibank and J. P. Morgan – wanted to combine traditional commercial banking (in which clearing was key) with investment banking, partly because they wanted to offer a full range of financing options to corporate clients (i.e., the ability to underwrite securities issues as well as to extend bank loans). The big UK banking groups – in the 1980s still operating under names which had been familiar for decades (Barclays, Midland, Lloyds) – decided, with the Bank of England's strong if discreet approval, to compete head on with the foreign banking groups. They developed capital market activities and securities underwriting operations, with the full gamut of associated businesses, including fund management and private banking.

So in the early 1990s the British clearing banks were both benefiting from their relationship with the Bank of England in deposit-taking and clearing, and competing with foreign-owned investment banks (most conspicuously, the American investment banks) in capital markets. The foreign investment banks felt themselves at a disadvantage, because the clearers could use their balance-sheet muscle in more than one aspect of corporate finance (i.e., bank lending as well as securities underwriting), and made their concerns known to the government and the Bank of England. In turn the Bank of England – which had long been interested in the safe settlement of clearing business across its accounts – began to worry about the possibility that other major types of clearing business could go wrong. These included clearing in stock exchange transactions, foreign exchange, commodities and derivatives. Participants in these markets included a wide range of players, but the foreign-owned investment banks were prominent.

In the leading industrial countries the investment banks therefore sought to open accounts with the central bank. Initially the Bank of England resisted these overtures. Since its prime objective in financial

stability was to maintain the convertibility of deposits into cash, it could not see why it should conduct business on a routine basis with organizations that did not take such deposits. In January 1997 the Governor of the Bank of England, Sir Edward (now Lord) George, made a speech ('Are banks still special?') on the topic to a seminar in Washington, DC, which – in effect – opposed the extension of central bank operations to investment banks. But, when the newly-elected Labour government decided in May 1997 to grant the Bank its independence in the setting of interest rates, it also proposed to establish a new body – eventually to be known as the Financial Services Authority – which would take over banking supervision from the Bank of England. The present Governor of the Bank of England, Mr. Mervyn King, has confirmed in a recent speech that it was the increasingly protean character of 'banking' that justified the switch in responsibilities from the Bank to the FSA in 1997. Today the names of investment banks – which take no retail deposits in the form of cash in the UK – appear in the list of institutions lodging deposits with the Bank of England's 'reserve accounts' and entitled to draw on its 'standing facilities'. (As far as the author is aware, the investment banks have not so far used the standing facilities.)

The loss of responsibility for banking supervision – which became effective in 1998 – was part of a larger 'turf war' over the position of the Bank of England not just in the financial markets, but also in the state sector. The Bank of England and the Treasury have long been both partners and rivals, but there is no doubt that the granting of operational independence on interest rates to the Bank was a major blow to the Treasury's self-esteem. Whether for reasons of departmental jealousy or perhaps for the more laudable objective of keeping control of public expenditure, the Treasury has for many years now tried to limit the Bank's size (and so the numbers, incomes and perks of its staff, which have long been resented in the Treasury). As noted above, under the terms of the 1998 Bank of England Act and the 2000 Financial Services and Markets Acts, banks have to maintain a non-interest-bearing balance at the Bank equal to a mere 0.15 per cent of eligible liabilities. Obviously, the lower this ratio, the smaller is the Bank's income (which arises mostly from the interest on these balances) and the more pinched are its expenses. A sense of perspective comes from noting that in the early 20th century British banks often kept 4 or 5 per cent of their assets at the Bank of England. Plainly, the Bank is much smaller relative to the rest of the banking system than was the case several decades ago. It also follows that – in the event of a crisis, in which it must act as banker to the banking system – its ability to take risks against its own capital is much more limited than was once the case. Indeed, in the event of a big crisis requiring a large expansion of its assets, and so a great deal of extra risk, it must seek the approval of its single shareholder, the government, by means of discussions with the Treasury.

In summer 2007, after a decade of so-called 'operational independence' (i.e., the freedom to set interest rates without reference to politicians), the Bank of England basked in glory. It had delivered on-target inflation, by successful interest-rate setting, to a degree that no one would have imagined possible 15 years earlier. But in truth, as a central bank with the job of serving as banker to the banking system, it was a diminished institution. The Treasury had cut it back in size dramatically compared with only 20 or 30 years earlier, while the FSA was responsible for oversight of banks' balance sheets and financial supervision more generally. The Northern Rock crisis was to prove a severe test of the Bank's ability to make a lender-of-last-resort loan in the new circumstances.

iv. The growth of wholesale funding

The USA's banking system has been hampered since the Great Depression of the early 1930s by tighter regulations than that in other industrial countries. Restrictions on inter-state banking, which reduce the diversity of loan portfolios and increase risk, are one example. (They were relaxed in the 1990s.) As a result credit business has often tended to flow through capital markets, in the form of bonds, commercial paper and various kinds of 'note' (i.e., securities), instead of via the banks. In the 1980s one particular type of credit business – home mortgages – was 'securitised' in so-called 'collateralised mortgage obligations' (or CMOs). CMOs arose from packages of a few hundred (or even a few thousand) home mortgages, brought together in one vehicle with a total value of perhaps \$100m. to \$1,000m., which would issue interest-bearing paper ('obligations') in units of, say, \$100,000. The value and credit-worthiness of CMOs depended largely on the 'collateral', in this case the houses which had been mortgaged, ultimately, to the CMO holders. CMOs, unlike individual mortgages in a bank loan portfolio, could be easily bought and sold.

Over time the idea of backing a security issue by a pool of assets was developed in a number of directions. Asset backing other than houses – such as hire purchase or auto sale receivables – could be exploited. The securities became ‘collateralised debt obligations’ (CDOs) or ‘asset backed securities’ (ABS), and not just CMOs. Further, the vehicle could have just one type of liability or it could issue paper with different degrees of ‘seniority’ in the event of default (i.e., the safest paper would have first claim on assets if the vehicles’ total liabilities exceeded total assets). Given that the first claim should lie at the top of the pile in terms of the credit-worthiness, and given also that the vehicle’s liabilities would typically be exceeded in value by the assets which served as collateral, the safest paper ought to be given a triple-A rating by the ratings agencies, and even the second and third safest paper ought to receive decent ratings (BBB, etc.). The ratings agencies welcomed the extra business arising from such ‘structured finance’ and did indeed rate ABS issues in the way expected. The issuance, underwriting and trading of ABS and CDO paper was one source of the rapidly growing profits of investment banks around the world, but particularly in the USA, in the two decades from the mid-1980s.

The British housing finance market had never had to cope with a cataclysmic macroeconomic upheaval like the USA’s Great Depression. In the 1980s and 1990s it remained predominantly in the private sector and operated with relatively light regulation. Following the CCC reforms in 1971, but more particularly after liberalisation measures under the Thatcher government in the early 1980s, banks competed fiercely in the mortgage market with the mutually-owned building societies. Because of their mutual status, the building societies’ loyalty was to their owners, the depositors, not to outside shareholders. So they were prevented from having significant liabilities other than those to their depositors and, unlike the banks, they were unable to make big issues of securities in the wholesale markets.

Partly because of these restrictions, which hindered growth, many of the UK’s building societies wanted to demutualise in the late 1980s and 1990s. Another incentive to demutualisation was that most quoted banks had market capitalisations which were a multiple of their book value, implying a windfall profit for depositors if building societies could be converted into PLCs. A wave of demutualisations transformed such organizations as Abbey National, Halifax, Cheltenham & Gloucester, Bradford & Bingley, Alliance & Leicester and Northern Rock into profit-maximising, shareholder-owned entities. Sometimes they were absorbed by clearing bank groups, which diversified and enhanced their funding options; sometimes – as in the case of Bradford & Bingley, Alliance & Leicester and Northern Rock – they retained their independence. Particularly outside the regions in which they had been established (and, as noted earlier, whose names they still kept), these three businesses had difficulty competing with the clearers for retail funds. Their growth ambitions depended instead on accessing the wholesale markets. So organizations which had been founded in Victorian times as small-scale mutual ventures with a strong attachment to a locality in the UK were, in the early years of the 21st century, large borrowers in the cross-border inter-bank market and major issuers of paper to the international market in asset backed securities. Indeed, they often borrowed in foreign currencies, and switched the proceeds of dollar- and euro-denominated loans back into sterling, in order to finance their assets which were predominantly UK home mortgages.

Northern Rock was particularly aggressive in the development of the new business model. It was demutualised in 1998, with assets of under £20b. and ‘reserves’ (as they were called while it was a mutual) of £800m. The stock market accorded the business a market capitalisation of about £21½b., implying a large windfall to depositors (who became the first shareholders). (As is evident, the market capitalisation was – immediately – three times reserves.) Northern Rock’s market value declined in 1999, but from late 2000 until early 2007 it was a stock market darling, with the share price rising from just under £3 to a peak of £12.50. If Granite, its securitisation vehicle, is included, assets soared to over £100b. But the original deposit base in the North-East of England could not support this rate of balance sheet growth. Northern Rock therefore became heavily dependent on wholesale funding.

Whereas its wholesale funding has been negligible at demutualisation, by mid-2007 its stock of funding was £104,863m. split between,

- retail £24,350m.,
- non-retail £26,710m.,
- securitisations £45,698m., and
- covered bonds £8,105m.

In other words, retail deposits – which had dominated in late 1998 – fell to less than a quarter of non-equity liabilities. The flow of new funding in the first half of 2007 was even more skewed. The net flow of funding was £12,069m., but only £1,734m. (or 14.4 per cent) came in the form of retail deposits. Northern Rock was particularly active in tapping the international market in asset-backed securities, with its 2007 interim report noting, 'Diversification of our investor base continued with 73 per cent of the securitised bonds issued in US dollars or euros, and a small amount (2 per cent) in Canadian dollars.' Because wholesale money was generally cheaper than retail, Northern Rock's funding strategy helped it to undercut rivals in the mortgage market. It also benefited from a low cost base, partly due to its location in the depressed North East, and an apparently successful system of assessing borrowers' credit risk. (Whether this system was as good as it seemed will be tested over the next few years.)

Like other UK banking groups, Northern Rock lowered its capital/asset ratio in the early years of the 21st century. In the first half of 2007 it achieved profits of over £300m., according to its management and auditors, and it was able to add to capital. But its capital in mid-2007 of about £2¹/₄b. was up almost three times on its 1998 level, whereas its assets had grown more than five times. (Note, however, that it did not need to hold capital at the usual regulatory rate, relative to assets, for the mortgages booked at Granite.) At mid-2007 it had a cushion of available-for-sale securities to meet a funding shortfall, but – again like other British banks – it operated on a very low ratio of vault cash to deposits. Because it had demutualised in 1998, and so was a bank and not a building society, it kept a 'cash ratio deposit' at the Bank of England (i.e., the prescribed non-interest-bearing 0.15 per cent of eligible liabilities), in just the same way as all other UK regulated banks. Whether the lodging of this deposit entitled Northern Rock to a lender-of-last-resort loan was untested and hence unknown. Nevertheless, practice and custom argued that – if Northern Rock were indeed 'a bank' like other UK banks – it should seek assistance from its banker, the Bank of England, if it got into serious liquidity trouble.

v. 'Financialisation' in the early years of the 21st century

An ugly neologism – 'financialisation' – has been invented to denote certain trends in the American economic scene, and so in practice the international economic scene, in the opening years of the 21st century. The term seems to have first been used by Professor Ron Dore of the Centre for Economic Performance at the London School of Economics. In his words, financialisation is 'the increasing dominance of the finance industry in the sum total of economic activity...[and] of financial assets among total assets'.

One cause of financialisation is that purely financial transactions – where an organization which itself depends on borrowed funds makes a loan to another organization – grow relative to transactions where one of the parties is a non-financial agent or organization. To illustrate, alternative structures of assets and liabilities can be described. Consider economy A, where all the individuals who constitute the private sector have an income of – say – of £100b., and hold deposits of £50b. with clearing banks and those clearing banks lend the £50b. to the corporate sector. In this economy, for simplicity, the corporate sector and the clearing banks are the only employers, and value added is created only in companies and the banks. There are no other financial assets, all houses and commercial real estate (worth, say, £300b.) are owned outright, and the government is ignored. The ratio of financial assets to national income (or 'the financial interrelations ratio', as the American economist, Raymond Goldsmith, called it) is £50b. divided by £100b., or 0.5, in this economy. Now consider economy B where again private sector individuals have a combined income of £100b., but the clearing banks have no particular expertise in assessing corporate credits and lend £50b. to 'industrial banks' (as they were termed earlier) and the industrial banks on-lend

to companies. Because there is £50b. of lending between the clearing and industrial banks, the financial interrelations ratio has doubled and stands at one.

Or imagine another economy, economy C. This economy resembles economy A in that it has a corporate sector reliant on £50b. of bank loans. But, unlike economy A, it also has a well-developed housing finance industry, so that mortgages on the £300b. of real estate amount to £150b. We can conjecture that this £150b. is provided partly (say, £75b.) by finance from specialist mortgage banks which take deposits from individuals, and partly (£75b.) from the clearing banks whose deposits from individuals have now climbed to £125b. Here the financial interrelations ratio has reached two (i.e., £150b. plus the original £50b. of industrial loans, divided by £100b.). Further, we could propose that the specialist mortgage banks are so much better at credit appraisal (or whatever) than the clearing banks that the clearing banks cease to extend mortgage finance, but instead lend £75b. to the specialist mortgage banks whose assets now represent all home loans. If so, in economy D, the financial interrelations ratio has risen to 2.75. (The clearers' deposits are £125b., as before, but the clearers have £75b. of claims on the specialist mortgage banks and individuals still have their £75b. of deposits at the specialist mortgage banks, so total financial assets are £275b.)

More generally, we can distinguish between,

- i. financial transactions where one of the parties is a non-financial agent or organization, which may be termed 'ultimate' financial transactions (because either the lender or borrower is ultimately outside the financial system),
- ii. financial transactions where both parties are financial organizations and intermediate on behalf of the ultimate borrowers and lenders, and which may be termed 'intermediating' financial transactions.

Whereas the commercial rationale for ultimate financial transactions is easily explicable in terms of, for example, the production and resulting return on capital of a borrowing non-financial company, it may seem odd that a meaningful return can be achieved on intermediating financial transactions. As no tangible 'output' can be identified, they appear barren, incestuous and pointless. However, differences in motive, circumstance and knowledge between agents may allow profits to be earned on intermediating financial transactions. For instance, as discussed at an earlier point in this paper, inter-bank loans transfer funds from capital-poor to capital-rich banks. Another example might be a loan from a private bank (with large deposits from a wealthy clientele, but only a small team of credit analysts) to an industrial bank (without access to deposits, but having a deep understanding of the investment opportunities in certain industries). A drawback of intermediating financial transactions is that, because both parties to them are typically sophisticated and well-informed market participants, the profit margin is very narrow. In inter-bank lending the margin over inter-bank rate is often zero or a mere 0.1 or 0.2 per cent a year. The activity may still be worthwhile (i.e., cover staff costs, rent and so on, and pay a profit) if it is conducted in enough volume. Intermediating financial transactions therefore take place mostly in wholesale markets.

Superficially, non-banks should not be interested in wholesale money market products as investments because the returns are so meagre. However, investors in assets of high credit-worthiness and very low 'spreads' may be able to earn a respectable return by means of leverage. Fund management entrepreneurs may create an investment company to acquire very high-quality, AAA-rated asset-backed securities with a return only 0.3 per cent above the inter-bank rate, but geared up, say 15 times. Its non-bank investors put \$500m. into the fund, which borrows \$7½b. and holds \$8b. of ABS assets. Suppose that the yield on AAA-rated asset-backed securities is 4.5 per cent. All being well, the effect of the gearing is to double the return since the investors receive not only the 4.5 per cent on their \$500m. but also the 0.3 per cent on the \$7½b. of borrowing. Again all being well, the investors may not resent the fund management entrepreneurs deducting fees equal to a large chunk of the extra return, which would make everyone happy. Clearly, the loan of \$7½b. from banks to the fund management company is an intermediating financial transaction. It is very large relative to the ultimate financial transaction (the \$500m. of investment from non-bank investors) on which the whole activity depends. If the 15-times leverage in this case seems outlandish, the debt characteristics of Carlyle Capital Corporation may be highlighted. Listed in Amsterdam in July 2007, the original investors put up \$600m., but Carlyle Capital Corporation geared up over 30 times and at the peak had assets of over \$20b.

The earlier analysis of the determinants of banks' loan margins showed that such margins could be very low and yet still deliver satisfactory returns on capital, if banks had lowered their cash/deposit and capital/asset ratios drastically relative to the levels in early banking. It has also been shown that, in the final decades of the 20th century, British banks cut back on holdings of cash and liquid assets to a remarkable extent. Similar patterns were also found in other industrial nations, including the USA. The introduction of the euro in 1999 gave the process an important boost, because the European Central Bank and the European System of Central Banks proved far more efficient in dealing with banks' clearing and cash management needs than the previous national banks. While not much space has been devoted here to banks' capital/asset ratios, a major downward trend in these ratios has been another feature of the post-war period across the industrial world. As noted above, by the late 20th century a cash ratio of 1 per cent and a ratio of equity capital to assets of 4 per cent were commonplace in the banking systems of the advanced countries. (The capital/asset ratio was often 'window-dressed', in various ways, to appear rather higher and so to comply with the Basle rules.) The table on p.17 showed that – with such ratios – a bank could deliver a 7 per cent return on shareholders' equity, even with a loan margin of a mere 0.3 per cent.

The narrowing of loan margins had two effects. First, it gave extra stimulus to intermediating financial transactions where, as demonstrated a few paragraphs ago, leverage is often essential to the delivery of a good investment return. So in the last 40 years, but particularly in the last decade, bank lending to financial institutions has – across the industrial world – risen much more rapidly than bank lending to households and companies. One salient pattern was lending by commercial banks to investment banks in order to facilitate both investment banks' underwriting activities and the holding of securities in their trading books. Further, knowing that they had inexpensive credit lines in place from the commercial banks, the investment banks in turn extended credit to favoured clients. Favoured clients were those – such as the 'hedge funds' – which placed a high volume of business. The executives and staff involved in these relationships, which produced commission income as well as being useful counter-parties in securities underwriting, were said to belong to 'prime brokerage' departments.

Secondly, when banks grant new loans, they make a profit partly from the excess of the loan rate over their own cost of funds (i.e., the margin) while the loan continues and partly from the arrangement fees (i.e., the fees charged to the customer only once at the start of the facility). By the 1990s loan margins were so narrow that banks, and indeed organizations that borrowed from banks as a matter of routine, found it increasingly attractive to arrange loans, and then to package them into securities and sell them on in the ABS and CDO markets. Of course this 'originate and distribute' model for financial business assumed a large, healthy and liquid market for asset-backed securities and collateralised debt obligations. Companies that had a particularly high turnover rate from the 'originate and distribute' model (i.e., that generated introductory fees many times in a year) could report a high return on capital while operating with very narrow credit spreads. It may be unnecessary to add that leveraged bond funds – along the lines of the Carlyle Capital Corporation – were keen buyers of ABS and CDO paper.

Perhaps enough has now been said to explain how and why capitalist economies – and particularly the American economy – experienced financialisation in the closing decades of the 20th century and the opening years of the 21st. The 'increasing dominance of the finance industry in the sum total of economic activity...[and] of financial assets among total assets' was associated with a rise in the proportion of intermediated financial transactions relative to ultimate financial transactions. In the USA the ratio of 'financial sector debt' to 'non-financial sector debt' rose from 0.11 in 1976 to 0.50 in 2007. Market participants became increasingly leveraged, in order to deliver an acceptable investment return on securities carrying very low 'spreads' over inter-bank rates or government bond yields. Behind the frenzy of competition in the wholesale markets, and the shrinkage of credit spreads, were deep-seated developments in the international banking system. Over a period of several decades, banks had run down holdings of cash and liquid assets and economised on capital, enabling them to remain profitable, despite a large fall in loan margins.

To some extent the trends in banks' cash holdings and capital usage had been possible only because of their cordial relationships with the central banks (and other financial regulators in association with central banks). The high degree of 'financialisation' therefore depended on the attitudes of central banks – with their public policy objectives – to profit-oriented commercial banks and a long retinue of related organizations (investment banks, hedge funds, leveraged bond funds and so on). There was an

apparent anomaly here, not least because some of the senior executives in 'the banks' – and indeed in the banking groups which embraced several types of 'bank' – were being paid fantastically high incomes by the standards of civil servants and central bank officials. The Treasury had clipped the incomes, numbers and apparent powers of Bank of England officials almost continuously since it was nationalized in 1946. There is no doubt that many of them were angered to be asked in the summer of 2007 to 'bail out the City', even if in fact they were making a temporary loan to a former building society headquartered in the North-East of England. Attitudes in Great George Street (i.e., the Treasury) were even more hostile.

9 The mishmash of 2006 and 2007: hedge funds, private banks, conduits...

The discussion in Section 5 identified eight different kinds of so-called 'banking'. It also noted that, following various liberalisation measures since the 1970s, 'banking groups' had emerged which combined two, three or more types of banking activity. Mr. Sandy Weill – originally working with American Express, but later under the aegis of Citigroup – was an evangelist for this kind of financial conglomeration, claiming that it made possible greater efficiency in the use of capital as well as many cross-selling opportunities.

In one respect Weill was right. Banks need to allocate capital to the risks on their balance sheet. But suppose that a banking group is active in both mainstream commercial banking (including clearing) and investment banking, and that the risks are about the same in both parts of the business. Does the banking group need to have twice the capital that the commercial and investment banks would need if they operated separately? If the risks in the two businesses are to some degree uncorrelated (and if a large number of hugely important ethical and practical issues are ignored for the moment), the answer is 'no, the capital can be less than twice as high'. The saving on capital is an application of 'modern portfolio theory', but the common sense is that risk is reduced if 'you don't have all your eggs in the same basket'. Indeed, if the banking group moves into yet another field, such as the underwriting of life insurance risks, would its extra capital requirement be as great as that of a newly-formed, but independent life insurance business? Again, the answer is 'no' and for the same reason.

So modern portfolio theory establishes a case for financial conglomeration. Historically, in the era of so-called 'gentleman's capitalism', the City of London was dominated by British institutions ('blue-blooded', 'of the old school') which were anxious to avoid conflicts of interest. But from the 1980s the foreign interlopers wanted to impose their model of conglomeration – and they did so very successfully. The conglomerates had one major advantage. Their efficient use of capital (i.e., risk diversification and a low capital/assets ratio) allowed them to undercut and out-compete the traditional British companies on price. Citibank, Goldman Sachs, Deutsche and their ilk offered narrower dealing spreads in securities, and better prices to the issuers of new securities, as in 'initial public offerings' (i.e., new equity issues), Eurobond issues and so on, than the UK's stockbrokers, stockjobbers and merchant banks. The stockbrokers, stockjobbers and merchant banks were virtually all swallowed up by the larger, better capitalised foreigners. In the long run the only British players who could compete were the UK clearing bank groups, essentially because of their size and ample capital. But the clearers thought they had to become conglomerates, like Citigroup. So by the early 21st century groups like Barclays, RBS, HSBC and so on had commercial banking, investment banking and fund management businesses answerable to the same board and the same shareholders.

The weakness of financial conglomerates is that they are riddled with conflicts of interest. Notoriously, in the late 1990s the big American investment banks put out so-called 'research' which puffed the virtues of worthless dotcom shares and pocketed the underwriting fees on dotcom IPOs. Despite then being heavily fined by US regulators for many examples of dishonesty and even outright fraud, they resisted feeble official efforts for their break-up into simpler, more manageable and less conflict-ridden structures. By the middle of the current decade it was not uncommon for the world's big banking groups – including the groups that had formed around the UK's clearers – to include a private bank, a hedge fund business and a private equity subsidiary, as well as a conventional commercial bank and an investment bank.

Senior executives saw significant commercial synergies from the integration of this wide range of activities. Consider, for example, how much the really determined, bonus-motivated management of a hypothetical banking group – the Modern Banking Group – could make out of an entity that might be called, for the sake of illustration, ‘the \$20b. MBG Geared Bond Fund’. (Any similarities between this structure and the Carlyle Capital Corporation are purely coincidental.) The idea is that the MBG Geared Bond Fund will have

- an initial capital of \$1b., to be subscribed mostly by the clients of the banks’ private banking business (earning initial fees and annual management fees for MBG),
- non-equity liabilities, which are borrowings of \$19b. from MBG’s commercial bank business (taking some loan arrangement fees and net interest margin for MBG),
- assets which are mostly (\$18b.) CDOs and ABS issued by companies with which MBG’s corporate finance department has a cordial relationship (taking underwriting fees for MBG– and possibly some advisory fees, just for the hell of it), but might include notes issued by a conduit (\$2b.) created by MBG, and
- financing from MBG’s private bank, in that the private bank arranged to lend to its clients, perhaps from MBG’s commercial bank, \$800m. or so in order that these customers could purchase units in the new fund (again, taking loan arrangement fees and the net interest margin).

Now any regulator – and indeed anyone with a slight knowledge of financial markets and an iota of common sense – can see that MBG does not have a valid ‘business model’. The multiplicity of income and profit streams in the creation of the MBG Geared Bond Fund depend on the different parts of the group giving business to each other, as if the external customers didn’t count. The ‘originate and distribute’ model tempts financial companies to create bogus vehicles, in order to generate fees. Inside a large banking group with interrelated activities the model can go berserk. (Of course all the bonds held by the fund might be rated AAA or not far off. Any objective outsider ought still to insist that the MBG Geared Bond Fund is contrived and artificial, even if it complied with the law.)

This whole section may be regarded as a spoof. But it is not. Sadly, ‘products’ as artificial and ridiculous as the MBG Geared Bond Fund were being foisted on the customers of the large international banking groups in 2005, 2006 and early 2007. Absurd financial so-called ‘processes’ flourished – if that is the right word – in these groups, because the managements had lost sight of an obvious truth: organizations riddled with conflicts of interest are likely to do things which are not in their customers’ best long-run interests. The mishmash of commercial banking, investment banking, private banking and fund management led to bogus balance-sheet expansion, with intermediating financial transactions growing relative to ultimate financial transactions. The expansionism of the banking conglomerates was therefore an important contributory influence on two salient trends, the ‘financialisation’ described in Section 8 (v), and the frenzy of CDO and ABS issuance.

Credit spreads plunged to ridiculously low levels in 2006 and early 2007, as (among other things) the financial conglomerates lent to wealthy customers in order to invest in structured finance funds that acquired CDOs and ABS which were underwritten by the capital markets division, etc. etc. After central banks had raised interest rates in late 2006, many artificial structures dependent on high leverage (and a low regard for customers’ long-term interests) fell apart. As leverage was unwound, credit spreads soared rapidly. The extreme movements in credit spreads in 2006 and 2007 had only a tenuous connection with objective probabilities of default.

Northern Rock had – by comparison with the banking groups – a very simple business. It lent wholesale money at low margins to members of the British public to help them buy houses. But in the crisis that unfolded from mid-2007 it was bracketed by some journalists with the big groups as another ‘bank’ and shared in the obloquy being directed against the financial system in general. Its business model also made it highly vulnerable to violent and irrational swings in credit spreads.

10 The Northern Rock crisis

The time has come to narrate the events that brought down Northern Rock in August and September 2007, and to describe the turmoil in international money markets which both preceded and followed it.

In the USA financialisation in the opening years of the 21st century was stimulated by an extremely low level of interest rates. To prevent the implosion of the tech bubble of 1998 – 2000 having too much impact on economic activity, the US Federal Reserve slashed interest rates. Fed funds rate came down to 1 per cent in July 2003 and stayed there for almost a year. Mortgage lending, some of it to low-income households with poor credit histories (so-called 'sub-prime lending'), grew rapidly. Unfortunately, the economic recovery from 2003 to 2007 was accompanied by an inordinate surge in house prices and renewed inflationary pressures, and the Federal Reserve was obliged to tighten monetary policy. Fed funds rate was back to 5 per cent by autumn 2006. A high proportion of sub-prime borrowers had difficulty servicing their debts. CMOs based on sub-prime mortgages, and less senior tranches of high-quality CMOs and other asset-backed securities, began to lose value.

The investment banks active in the underwriting of ABS found they could no longer sell their offerings easily and that their inventories of ABS paper were excessive. The market in new ABS issues closed in the spring of 2007. Meanwhile British banking groups – such as RBS and Barclays – themselves had ABS securities as part of their main bank assets, capital market businesses which had underwritten ABS issues and 'conduits' with large ABS holdings. Although their main business was in sterling, they were not immune to the crisis in dollar-denominated CMOs and ABS. By the summer months they were starting to restrict inter-bank lending, in order to have room to expand lending to their conduits if that should become necessary.

Although UK house prices (relative to income) were extremely high by past standards, in early 2007 Northern Rock pursued the same strategy – of rapid expansion and the boosting of its market share – which had served it so well since 1998. In the first half of 2007 its loan assets increased from £86.7b. to £96.7b. or at annual rate of almost 25 per cent. Again in line with the approach adopted since demutualisation, it sought to finance its extra assets from the wholesale markets. Since in the opening months of 2007 a £6.1b. Northern Rock securitisation issue was 'heavily oversubscribed' (see its 2006 Annual Report & Accounts) and the rating agencies improved its credit rating, this may not have seemed foolish to management. Unhappily, the international market in ABS was paralysed by the early summer, which invalidated management's plans to fund asset growth. By mid-August Northern Rock's executives realized that their bank faced a severe funding shortfall and they informed the FSA.

Discussions about how best to resolve the problem took place, involving the FSA, the Bank of England and Northern Rock, with a takeover of Northern Rock apparently being discussed with third parties (said to include Lloyds TSB). According to press reports, a potential acquirer of Northern Rock wanted a credit line from the Bank of England, of perhaps a few tens of billions of pounds, not at a penalty rate, to enable it to fund Northern Rock's assets if wholesale markets remained closed. The Bank refused to make such a facility available. Instead the Tripartite Authorities prepared to make a large lender-of-last-resort loan to Northern Rock. An announcement was imminent on the afternoon of Thursday, 13th September, but was anticipated by a press leak on the BBC. The press announcement, by Mr. Robert Peston, caused panic among Northern Rock's depositors who started to withdraw their cash by various means (from branches, over the website and so on). The run in the four days from Friday 14th September to Monday 17th September took the best part of £10b. from Northern Rock's retail deposits. Along with the shortage of wholesale funding, Northern Rock would have had 'to close its doors' if it had not been for the Bank of England's facility. Indeed, the announcement of the Bank's facility on Friday 14th did not stop the run. Instead a government guarantee on Northern Rock's deposits – announced on Monday 17th – was needed to do the trick.

The Bank of England's loan expanded in the weeks from mid-September to mid-December, when it exceeded £25b. Over these months the vicissitudes of Northern Rock and the official parties newly concerned with its welfare took up a great deal of newspaper space and media airtime, but are of no great relevance to the matters at issue. Eventually in February 2008 Northern Rock was nationalised,

with the Banking (Special Provisions) Act 2008 proposing a compensation mechanism for shareholders which would leave them with only a fraction of the book value of the bank's capital. When Northern Rock's results for 2007 were published, they showed that it roughly broke even before the payment of professional fees, guarantee fees to the government and the penalty rate of interest charged on the Bank of England's loan. Even after meeting these three special items its loss was less than £200m.

So at the end of 2007 – after the first run in the UK since the 19th century and perhaps the most publicised crisis in British banking history – Northern Rock still had positive capital of about £1.7b. On 21st March Mr. Ron Sandler, the chairman appointed by the government, said that the credit quality of the loan book was 'looking fine' and intimated that the full repayment of the Bank's loan could be envisaged within three or four years. The implication of Northern Rock's 2007 results and Mr. Sandler's statement is that the Northern Rock crisis was indeed all about liquidity. It was solvent (in the sense of having positive shareholders' funds) before the crisis broke last summer, during the crisis period of September to October, and subsequently. The Northern Rock crisis was emphatically a crisis of illiquidity, not insolvency.

Now – according to the analysis developed in the opening sections of this study – no solvent bank should in modern circumstances be brought down by a lack of liquidity. It was shown there that the clearing banks can create money in the form of deposits at zero cost, as long as they have adequate capital and cash (i.e., notes and central bank cash reserves), and that the central bank can create money in the form of legal-tender notes or 'cash' again at zero cost. On the face of it, it ought to be inconceivable that a bank like Northern Rock – solvent, profitable and well-regulated in early 2007, and with negligible loan losses and shareholders' funds of about £2b. at mid-2007 – could be brought down by a run on its deposits. What had gone wrong? Or, to divide the question into two,

- 'why had it become necessary in a fiat-money system – a system in which it is costless to create money – for Northern Rock to obtain a government guarantee so that it could continue to operate?' and
- 'what conjunction of circumstances had led to so many misjudgements being made in an area of public policy – the interaction between commercial banks, the central bank and the state – in which the UK had historically excelled?'

On the first question, the earlier discussion showed that a bank, even a non-clearing bank, could in principle create money by issuing deposit liabilities against itself and promising to convert these either into cash or into deposits at a clearing bank, where they could in turn be converted into cash. As it happened, Northern Rock had made efforts to help its customers in their money-handling. In the opening years of the 21st century it belonged to APACS (the Association of Payments and Clearing Systems) and it did maintain cash reserves at the Bank of England. However, it did not belong to the Cheque and Credit Clearing Company, and so was not 'a clearing bank' (or even 'a settlement bank', as the Bank of England now calls banks involved in cheque clearing business). As the run itself showed, it could not replace the loss of retail deposits by issuing liabilities to other non-bank agents.

What can be said about the next possible source of funding, other banks? Of course the closure of the international markets in asset backed securities and the paralysis in the wholesale money markets were the proximate cause of Northern Rock's discussions with the FSA and the Bank in August 2007 about its funding problem. But in earlier crises – notably the secondary banking crisis of the mid-1970s – the Bank of England had helped weak, isolated banks with funding problems by persuading (or cajoling) other stronger banks into lending to them. (In the extreme the Bank even provided a guarantee against loss on such loans.) At end-December 2006 Northern Rock's inter-bank borrowings were only £2.1b., a tiny figure compared with the whole UK sterling inter-bank market. (Footings in the sterling inter-bank market were about £250b. at end-September 2007, while overseas sterling deposits [most of which were issued to foreign banks] stood at about £500b. for most of 2007.)

It is difficult to understand why the Bank of England did not – as it had on a number of previous similar occasions (most recently, the secondary banking crisis of the mid-1970s and the Third World debt crisis of the 1980s) – encourage the UK's larger banks to extend temporary lines to Northern Rock. Northern Rock's funding shortfall in mid-August arose because it had a securitisation falling due in September and it knew it could not place the securities. The author has been unable to verify the exact size of this issue, but the figure could not have been much more than £5b. (Admittedly, more securitisation issues may

have been needed later in the autumn.) Precedent suggests that inter-bank lines of £10b. - £15b. could easily have been arranged for Northern Rock, possibly at a decent margin (of 0.3 per cent, 0.4 per cent or so) over the inter-bank rate to tempt the recalcitrants. With a term of perhaps three to six months, there would have been an adequate interval for a bidder (or bidders) to emerge and/or for the arrangement of a major capital injection into Northern Rock. Gossip from the inter-bank market would have been sufficient for the senior managements of other banks to realise that Northern Rock was in play.

In their evidence to the Treasury Committee of the House of Common, the Bank's Governor and the Deputy Governor responsible for Financial Stability, Sir John Gieve, claimed that UK banks were over-extended in the summer of 2007 and that 'a private sector solution' could not be made to work. Given the ease with which the Bank had dealt with inter-bank liquidity problems in previous decades, the modest scale of Northern Rock's funding problem relative to the size of the UK banking system, and the rapid growth of UK banks' balance sheets which was ongoing even in late 2007, these claims seem surprising and implausible. When a number of banks – not just Northern Rock – approached the Bank in August 2007 for an easing of collateral rules in the use of its standing facilities, the Bank had been awkward and reluctant. The Bank's Governor emphasized the dangers of 'moral hazard' in the relaxation of rules for lender-of-last-resort assistance. The discussions may have led to bad blood between the Bank's top officials and senior executives in the banking system. The consequent tensions may help to clarify why the expansion of UK inter-bank lines to Northern Rock – the natural and simple palliative to its relatively minor funding shortfall – did not happen.

It was explained in the opening sections of this study that a clearing bank – with adequate capital and cash – could create money, via an inter-bank line, 'by a stroke of the pen'. There is no doubt that the UK clearing banks could have granted Northern Rock a large enough inter-bank line last summer to have dealt with its immediate cash problem. Various other transactions (asset sales, takeovers of subsidiaries, takeovers of the entire bank, bond issues, capital injections) could then have been arranged to put the bank on a sustainable long-term basis. That should have been the end of the matter. The blunt truth is that the Bank of England failed to act promptly and efficiently as an 'honest broker' to the UK banking system, as it had done in numerous earlier problem episodes. Whether the 'honest brokerage' function lay instead with the Financial Services Authority was and remains unclear. At any rate, the job was botched.

When eventually a support announcement was made, the facility was offered in effect under duress and the press leak damaged confidence. Northern Rock's retail depositors suspected – wrongly, but understandably – that their bank was insolvent. The run (i.e., the depositors' conversion of deposits into cash or deposits in other banks) caused by far the largest hole in the balance sheet. A comparison of Northern Rock's balance sheet at end-December 2006 and end-December 2007 shows that 'customer accounts' dropped from £26.9b. to £11.6b., i.e., £15.3b. The size of the loan from the Bank of England, which had been nil at end-December 2006 and was £28.5b. at end-December 2007, can be 'explained' arithmetically by the following movements in the year,

	£b
• increase in Northern Rock's assets	8.8
• decrease in 'customer accounts'	15.3
• decrease in other liabilities	4.4

The dominant role of the run in the undermining of Northern Rock's balance sheet is evident. In the end the Bank did provide the lender-of-last-resort loan to meet the change in depositors' attitudes towards Northern Rock, i.e., it did use its power to create legal-tender money at zero cost. But it did so reluctantly and without conviction. A government guarantee was necessary to halt the cash drain.

Given that Northern Rock was able in 2007 to cover the costs to it of the crisis from operating profits, and seems likely to repay the Bank of England loan in a reasonable time-scale, the conclusion must be that the Northern Rock crisis was unnecessary. The arrangement of a lender-of-last-resort facility from the Bank itself, or the coordination of a loan facility with other banks (with the Bank acting as sponsor and 'lead manager'), ought to have been straightforward. Serious errors of judgement appear to have made by key figures at various stages in the proceedings. But the actions and decisions of particular individuals need always to be set in context. The larger causes of the Northern Rock affair are to be related to the five developments discussed in Section 8. Northern Rock's management made mistakes, and various officials

and politicians blundered. Nevertheless, Northern Rock was a victim of circumstances in that

1. it had been extreme (although not unique) in financing its expansion in the opening years of the 21st century almost exclusively from wholesale sources and was therefore badly hit when the wholesale markets (in inter-bank lines, commercial paper, CDOs) closed in the spring and summer of 2007, because of

i. the sub-prime crisis in the USA, and

ii. the reversal of the 'financialisation' which had characterised the American economy (and some other economies, too) since the 1980s.

2. it was the first significant institution to have difficulty funding its own illiquid assets (mortgages, mostly), after a period of over 50 years in which the British banking system as a whole had economised on holdings of cash and liquidity to such an extent that – sooner or later – a liquidity crisis of some sort was surely inevitable,

3. the Bank of England had altered its method of conducting open market operations as recently as May 2006, and in the summer of 2007 – little more than a year later – there was uncertainty about how a lender-of-last-resort loan (which might have to last for several quarters) was to be arranged,

4. the Bank of England's ability to extend a lender-of-last-resort loan on its own (i.e., without a Treasury indemnity or some other government guarantee) had been weakened over the previous 30 years by a sharp fall in the ratio of its own capital to the UK banking system's assets, liabilities and capital, and by restrictions (mostly coming from the Treasury) on its income and profits, and

5. the conduct of the lender-of-last-resort and related operations was handicapped by the strong resentment, in the British public sector and media, at the high incomes enjoyed by banking executives and, in particular, a feeling that it was unfair that state institutions (the Bank of England and/or the Treasury) should 'bail out' the banks from their own mistakes.

The Northern Rock crisis was unnecessary, but it was 'an accident waiting to happen'.

11 Defining the lender-of-last-resort role

This study opened by asking three questions, which can be restated as,

- 'should a central bank (the bank with a monopoly of the legal-tender note issue and banker to the government) make loans to private-sector agents or only to the government?',
- 'if the central bank should make loans to private-sector agents, should it restrict such loans to banks?', and
- 'on what basis – in terms of price, quantity and duration – should such loans be made?'.

The study has now presented a large body of material relevant to these questions. The answers can be provided in separate sections, although they are inter-related.

i. The bank of issue should make loans to private sector agents

The argument that the bank of issue should not lend to the private sector has a long history, with perhaps its most distinguished representative being Ricardo in his 1824 Plan for a National Bank. But the argument is readily countered by demonstrating the social benefits of banking and central banking. Sections 6 of this study showed, first, that the existence of banks leads to increased economic efficiency and a higher capital/labour ratio, increasing output per head, and, secondly, that banks make available more flexible financing options for non-banks; section 7 proposed that the innovation of central banking enables banks to economise on their cash holdings, to offer more flexible lending facilities and (more debatably) to lower their capital/asset ratios. The effects of central banking on the cost, quality and diversity of the services that banks provide to non-banks are undoubtedly positive. By contrast, the resource cost of central banking in a fiat-money economy is negligible. The average unit size of transactions between central banks and commercial banks is very large, while credit assessment can be high-level and related

to banking companies rather than micro-managed, as at the level of small loans to non-banks. So an institution like a central bank has a small cost (in terms of staff, buildings and so on) and a large public benefit. It is hardly surprising that central banks are found in practically every nation. When and where they are absent, a lobby develops in the banking industry for their introduction. (The booms in financial and related services in the City of London in the 40 years to 1914, in the USA in the 1920s, and across the industrial world in the last 25 years all owed something to improvement in central banking.)

But – in order to deliver its substantial net social benefit – a central bank must be able to lend money to banks. The collapse in the cash/asset ratio in British banking since the 1950s may or may not have gone too far, but it could not have occurred without negotiations between the Bank of England and British banks, and understandings about the Bank's role in relieving cash shortages if they should arise. Similarly, when a bank knows that it belongs to 'a club' to which only respectable members regulated by a central bank or its equivalent can belong, it is prepared to take more risks in lending to other club members and to operate on a lower capital/assets ratio. In the 1950s the typical cash/assets and capital/assets ratios in industrial countries' banking systems were 8 per cent and 12 per cent; today (if the very recent complication of remunerated reserves is disregarded) the corresponding figures are 1 per cent and 4 per cent. If banks' shareholders required a return on equity capital of 7 per cent both then and now, the required loan margin has fallen from almost 1 per cent (100 basis points) to 0.3 per cent (30 basis points).

For all the brickbats thrown at 'bankers', it cannot be denied that recent decades have indeed seen narrower loan margins, finer spreads in securities and commodity trading, greater diversity in financing options, and increasingly capital-intensive production across the industrial world. Cynics about the capitalist system may mock these advantages, but they are real and important. (Is it necessary to recall that communism broke down less than 20 years ago? One of the salient aspects of the transition to market economies in Eastern Europe from 1990 was the development of profit-motivated commercial banks and the separation of such banks from a central bank with functions similar to those of the well-developed central banks in the advanced nations. Mono-banking and central planning were hopelessly inefficient in allocating resources, when compared with the financial systems of market economies.)

More may be at stake in these debates than is commonly realised. The British press has had great fun poking fun at the Tripartite Authorities and ridiculing Northern Rock's management. But the government's apparent determination to nationalize Northern Rock without compensating shareholders at anywhere near book value is unprecedented in an industrial country. Indeed, because the terms of the Banking (Special Provisions) Act 2008 – the law passed to nationalize Northern Rock – were rigged to minimize the level of shareholder compensation, no bank will in future want to borrow on lender-of-last-resort terms from the Bank of England. In January the Treasury Committee of the House of Commons produced a report on the Northern Rock affair, *The run on the Rock*, which was widely praised as the most detailed account so far. But its remarks on the lender-of-last-resort function were deprecating (see p. 86 of vol. I), leaving readers to draw the conclusion that the central bank's last-resort role had been made obsolete. The argument here has been that this is a faulty and dangerous conclusion.

Proposals have been made – notably by Professor Buiter of the London School of Economics – that the lender-of-last-resort role should continue to be separated from banking supervision, despite the shambles of summer and the autumn 2007. It has been said that a central bank can conduct open market operations with the banks to set interest rates and a separate body can make long-term loans to organizations hit by a run or otherwise facing liquidity trouble. But, surely, the people who should decide this matter are those most directly affected, namely those who work in the banking industry. Overwhelmingly, the weight of history and evidence is that routine open market operations and lender-of-last-resort assistance should be conducted by the same institution.

This is not to dispute that the Bank of England could be stripped of its lender-of-last-resort responsibility. In the extreme the note issue prerogative could be taken away from the banking system altogether and switched to the Treasury. The Treasury could issue notes (as it did in the First World War), while the banks could maintain a balance with the government just as they do now with the Bank of England. (Remember that the banks keep this balance for the settlement of differences arising from their customers' instruction to pay in legal-tender notes. It doesn't matter where the notes come from.) These arrangements would not in any way imply that interest rate decisions were politicised, as they were in the UK before 1997.

It would be feasible – perfectly feasible – to combine the continued existence of the Monetary Policy Committee with the disappearance of the Bank of England. Unless its most direct beneficiaries (i.e., the commercial banks) insist that the Bank of England must remain a bank, with the power to lend money, it might as well be wound down and abolished. If the Bank is to be nothing more than a glorified economic research department, its staff might sensibly be relocated to the Treasury and its buildings let out at a commercial rent.

ii. The central bank should make loans only to commercial banks

Section 8 (iii) above explained why investment banks, as well as clearing banks, have wanted a relationship with the Bank of England since the 1990s. But there is a certain amount of other background history that is relevant to the question, ‘should the central bank restrict its loans to banks?’.

When it was founded in 1694 the Bank of England was not a central bank, but a banking corporation intended to make profits. In the 18th century and for most of the 19th century it dealt with a wide range of non-bank counter-parties, not least because there was only a limited number of ‘banks’ with which it could have had business. (Even the notion of a ‘bank’ was ill-defined.) However, by the late 19th century – when numerous joint-stock banks with branch networks and a well-developed cheque clearing system had emerged – it was realised that competition between a bank with a legal monopoly of the note issue and other banks was unfair. In two episodes – in 1844 – 47 and 1857 – the Bank of England’s Banking Department, which had theoretically been divorced from the note issue function by the 1844 Bank Charter Act, tried to expand its balance sheet aggressively. The result had been serious financial crises and strong criticism of the Bank’s behaviour. In the decades following the First World War the then Governor, Montagu Norman, actively tried to reduce the Bank’s non-bank customer list. For most of the period after the Second World War the Bank of England has had meaningful business relationships (apart from those with the UK and foreign governments) only with banks and, until the late 1990s, the discount houses.

So the investment banks’ attempts to leave deposits and obtain borrowing lines from the Bank of England was a clear break from the long-run historical trend. The investment banks’ case was listened to by UK officialdom and it did have substance. The investment banks are large, very active traders and underwriters in securities, whose activities have been central to the London-based boom in international financial services over the last 30 years. Because of the scale and volatility of their securities holdings, the size of their balance sheets is difficult to predict from month to month, and even from day to day, but it typically a very high multiple of capital. The investment banks have benefited hugely from the flexibility of the lending facilities offered to them by London’s (and Scotland’s) banks, which – as this study has demonstrated – have in turn owed much to the high quality of the interaction, historically, between the commercial banks and the central bank in the UK. But the investment banks (mostly American) still have to negotiate the facilities with the UK’s banks and, above all, to pay for them. Given that the commercial banks have started to trade and underwrite securities in a big way, and so are competing with the investment banks, why shouldn’t the investment banks be able to tap credit lines from the central bank?

The trouble with the investment banks’ position is that all non-banks have to pay commitment fees for overdrafts, unused credit lines and so on. As long as competition prevails between the commercial banks, the rate of return on the provision of loan facilities should be whittled down to very low levels. Public policy in this area should concentrate on maintaining and intensifying competition between the commercial banks, not on interfering with the terms of business between different private sector organizations. Admittedly, the appropriateness of combining investment banking and commercial banking in a single banking group can lead to abuses and is open to debate. That message came out clearly from Section 9 on the ‘mishmash’ of 2006 and 2007. Nevertheless, it seems unlikely that the big banking groups – which include, for example, Citibank and J. P. Morgan – would appreciate being forced to hive off one or the other of their two main activities.

As it happens, the Federal Reserve has in recent months lent to an investment bank, Bear Sterns. The reporting of this loan in the newspapers implied that it was an exceptional event, which is unlikely to be repeated in a hurry. The quid pro quo for regular access to central bank credit must be oversight of investment banks’ balance sheets and greater regulation. If the investment banks oppose such oversight and regulation, they must not be surprised if the central banks decline to offer them credit facilities.

Central banks – including the Bank of England – should restrict their lending to commercial banks. It is only commercial banks, with their involvement in retail deposit-taking, money transmission and clearing, which are likely to be prepared to tolerate the balance sheet limitations implied by a close association with the central bank.

iii. On what terms should the central bank make loans available?

As recognised earlier in this study, central banks make two types of loan to banks. The first type of loan is extended as an adjunct to open market operations, is initiated by the central bank and is designed to help in setting interest rates for monetary policy purposes. But what about the second type of loan, the ‘lender-of-last-resort loan’ which arises when a bank – or possibly a group of banks or even the entire banking system – is short of ‘cash’. As was seen at the outset of this study, the central bank is the only bank that can create such ‘cash’. Illiquid commercial banks may seek loans in cash, even though their solvency is strong and their ultimate ability to repay is not in question.

The standard prescription invokes Bagehot’s classic text, *Lombard Street*, published in 1873. Bagehot’s rule is that a lender-of-last-resort loan should be extended at a penal rate (i.e., one that sets out to damage the profitability of the borrowing bank), but in unlimited amounts as long as it is against good collateral (i.e., so that the central bank should not incur losses itself). The charging of a penal rate is deliberately unfriendly and should prevent banks using the lender-of-last-resort facility as a matter of routine. On the other hand, because the central bank is generous in terms of the amount of lending, the banking system should still be able to avoid a ‘fire sale’ of its assets, and so eventually to repay deposits with cash. This study has no quarrel with the gist of the Bagehot rule. However, debates continue about the level of the penalty (i.e. the excess over the policy rate), the quality of the collateral required, the duration of the facility, the facility’s degree of secrecy, and the degree of prior contractual commitment between the parties. These may be considered in turn.

1. The level of the penalty

Banks are inherently highly geared (i.e., they have a very high ratio of assets to capital) and have become more so over time. The earlier discussion demonstrated that banks could deliver a satisfactory rate of return on equity nowadays (with the capital/asset ratio of only 4 per cent and negligible non-earning assets) with a loan margin of under 0.4 per cent. Given that this is how banking is conducted in the modern world, a penalty of 1 per cent (100 basis points) over the inter-bank rate is clearly very damaging to any bank dependent on a lender-of-last-resort loan. Indeed, if the purpose of the exercise is not to harm banks (and so make them insolvent) but to encourage them to repay the loan, 100 basis points – which is the figure specified in the Bank of England’s so-called Red Book for undue use of its ‘standing facilities’ – seems too high. As noted above in Section 7 (ii), the Federal Reserve has usually set its discount rate – the rate relevant to unusual borrowing by banks with cash trouble – at about 0.5% (or 50 basis points) above the policy rate, but more is sometimes charged.

Goodhart has proposed a scheme of tiers, in which banks are charged only slightly above the policy rate for a small loan, but with the penalty rising as the loan increases in size. (The move to a higher rate might be triggered by the loan exceeding a particular multiple of the borrowing bank’s equity.) One objective of the Goodhart proposal is to prevent the stigmatisation of a bank that does borrow from the Bank of England. No final recommendation is offered here, but the Goodhart proposal would increase the flexibility of the central bank’s response to liquidity problems and would surely be a move in the right direction.

2. The quality of the collateral

Traditionally the discount market was the intermediary between the banks as such and the Bank of England, and the Bank had enough capital of its own not to be particularly fussy about the collateral it took in open market operations. This collateral included so-called ‘eligible bills’, where two banks – recognized by the Bank as sufficiently *pukka* for the role – accepted the risk that the agent issuing the bill might fail. The discount houses and eligible bills are no more, and it is clear from the way in which data are collected that little serious thought has been given to the definition of liquid assets over the last decade. (See section 8 (i) above.)

When UK banks approached the Bank of England in August last year for easier access to cash, they

wanted the Bank to accept mortgage and ABS assets as collateral. The Bank refused on two main grounds, that the market in ABS would revive of its own accord and that too liberal rules on collateral would create a problem of 'moral hazard'. (The 'moral hazard' was that banks would acquire foolishly risky and illiquid assets, in the belief they could palm them off on the Bank.) The Bank's decision to refuse help to the system – which was reversed within a few weeks – seems to have led to a major rift with the banks. It cannot be entirely coincidental that the UK's first run on retail deposits since the 19th century followed shortly afterwards.

Actually, it matters little what type of assets are offered as collateral for a central bank loan if

i. when the borrowing bank is undoubtedly solvent, the risk that the collateral may lose value continues to fall on that bank and not the central bank, or

ii. when the borrowing bank is of doubtful solvency, the central bank applies a haircut to the nominal value of the assets pledged, so that the central bank's exposure to risk is negligible.

Indeed, if the risk that the collateral may fall in value remains with the borrowing bank, the introduction of moral hazard into the discussion is unnecessary, to say the least. The Bank of England's awkwardness over collateral last August was a blunder of the first order. Of course some rules are needed, but – once again – the type of assets offered as collateral is not of great importance as long as appropriate repurchase terms and haircuts are applied. Other central banks at present are more pragmatic about collateral than the Bank of England – and, whatever their other difficulties, they have not had a Northern Rock fiasco. (In summer 2007 the large Spanish banks had a similar problem to Northern Rock, with a high proportion of mortgage assets and a heavy reliance on wholesale funding in the last few years. The Bank of Spain extended three-month refinancing facilities last autumn to these banks, to the tune of tens of billions of euros, and has renewed the facilities in some cases three times. The facilities are in effect lender-of-last-resort loans. But there has been no media fuss, no bank has been nationalised, and no row has broken out in public between the central bank and the commercial banks.)

A few years ago the Bank of England scrapped the idea of 'eligibility' on commercial bills and the related clever spreading of risk between banking institutions which it achieved. The justification given was that eligible bills clogged up its computer systems. The true reason – almost certainly – was that bills were regarded as old-fashioned. Did the Bank want to seem 'modern' in Blairite Britain? Dare one point out that 'the bill on London' had a history of holding its value (and paying up) which lasted almost 200 years, a far more illustrious record than the asset-backed securities and ratings agencies of today? Did the Bank of England – ever, at any time – lose money on an eligible bill that it purchased from the British banking system? Why was this excellent arrangement scrapped?

3. The duration of the facility

When Sir Edward (now Lord) George set out the rules for LOLR assistance in November 1993, he said that the Bank wanted a clearly-defined exit, i.e., a date when it could foresee the facility no longer being needed. In practice virtually all LOLR episodes take years to resolve. The final vestiges of the UK's secondary banking crisis of the mid-1970s were still being tidied up in the late 1980s; the Johnson Matthey affair and BCCI, both inglorious episodes in the Bank of England's history, took over a decade before the various parties agreed to call it quits; the government guarantees on bank deposits in Japan in the late 1990s lasted seven years, while in Sweden in the early 1990s they were kept in place for four years; and so on. Yes, the central bank will usually want a clearly-defined exit when a LOLR saga starts. It will almost invariably not get one.

In the Northern Rock case the Treasury over-interpreted its role, and decided that it should check with the European Commission whether the Bank's loan and the government's guarantees amounted to state aid. Under European competition law state aid is limited to six months, unless a compelling social problem of some sort (involving, say, large redundancies) can be adduced. So a February 2008 deadline was set for repayment of the Bank's loan. As all the precedents showed, this was likely to be unrealistic. So it proved. The Commission duly decided in December that the guarantees (although not the lender-of-last-resort loan) were a form of state aid. After Northern Rock had been nationalised, the new management sacked 2,000 of the bank's 6,000 staff. The redundancies – in an area of high unemployment – were necessary

to prevent the government being reprimanded by the Commission for the support it had given to the Northern Rock! (Nothing of this sort has yet happened in Spain, despite the greater over-extension of the banking system and the construction sector.)

If and when the people who govern Britain and run its key institutions (including the Bank of England) recover their full authority to act regardless of the European Commission, the understanding with lender-of-last-resort assistance must be that it lasts as long as is necessary for a sensible and profitable resolution of the borrowing institution's affairs (i.e., in practice, the best return on the borrowing bank's assets). As no significant competition issue can arise if the bank remains in the private sector, the government's job is to discourage the European Commission from meddling in British affairs.

4. The secrecy of the facility

The terms of most significant contracts between businesses are confidential, even if the businesses' reputations are not at stake. When a commercial bank borrows from its central bank on a LOLR basis, its reputation is very much at stake. Indeed, the publication of the mere existence of the loan may jeopardize the success of the transaction, since it symptomizes balance-sheet weakness and may scare off other creditors. It is therefore hardly surprising that in his 1993 statement on the principles of LOLR assistance George said that LOLR loans should be secret, as far as possible. The Bank of England's preference for covert arrangements was reiterated by King in evidence to the Treasury Committee last year.

The difficulty here is that the Bank has to publish its own balance sheet at regular intervals, for all sorts of good reasons. Secrecy may be possible for loans to small institutions, but it is almost certainly unsustainable for loans to large banks. A loan like that to Northern Rock would quickly be spotted. Again, Goodhart's scheme – of several categories of loans, none of which is particularly newsworthy – may be the answer. As noted above, there is another approach, which was adopted in the secondary banking crisis of the mid-1970s and is blessed by other precedents. It is for the central bank to persuade strong, liquid banks to make inter-bank loans to banks with illiquidity problems, with the central bank perhaps offering at least a partial indemnity against loss.

5. The degree of contractual commitment

Undoubtedly one of the problems last summer was the uncertainty about the Bank of England's obligations to the banks. Sure enough, the Bank had issued its Red Book on money market operations, but neither the Bank of England nor its customer banks knew what they were supposed to do in a crisis. Since the banks had lowered their cash/asset ratios to very low levels by historical standards (see section 8 (i) above), this was an extraordinary omission. Of course, the less cash that banks have on their own balance sheets, the more dependent they are on the central bank when things go wrong.

The Bank of England has tended to favour the ambiguity of its relationship with the British banking system, perhaps because that gives its officials greater discretion (and hence more power) in a crisis. The Northern Rock affair demonstrates that the Bank's ambiguity can be highly destructive. When a solvent, profitable and well-regulated bank runs into liquidity trouble again (as is inevitable), its management needs to have an explicit contract drawn up with the Bank of England in advance. The contract must specify how much the Bank can and will lend to it, at what price, against which collateral and so on. The notion of 'constructive ambiguity' is hocus-pocus.

12 Conclusion: the Bank of England must remain a bank

The Northern Rock affair stimulated a large and wide-ranging debate about the structure of British banking. But so far very few of the conclusions drawn about public policy have been compelling.

In his evidence to the Treasury Committee last September King blamed four features of the UK's law and institutions for the Bank's reluctance to make a lender-of-last-resort loan earlier in the summer. Two of his targets were the Takeover Code and the EU's Market Abuse Directive, but his criticisms were less than convincing. The Takeover Code, which dates back to 1968, did not stop the Bank intervening in the secondary banking crisis of the mid-1970s. The exceptional loans necessary to contain that crisis – many of them admittedly from the clearers rather than the Bank itself – were on a larger scale (relative to GDP) than the Northern Rock loan of 2007. Almost as soon as King remarked on the Market Abuse Directive, the European Commissioner responsible for financial supervision – Mr. Charles McCreevey – rejected King's interpretation. More substantively, King made proposals about deposit insurance and insolvency law. According to King, the supposed inadequacies of deposit insurance were responsible for the run and the Bank was hampered in its rescue attempt by the lack of specific laws on bank insolvency. But the Bank of England's historical record in averting runs was magnificent in a country which before 1979 did not have deposit insurance or even a statute defining 'a bank'. In any case – since Northern Rock was not insolvent – it is not clear why King advocated public policy changes which would have made sense only if it were.

The Treasury has published two consultation papers, last October on Banking reform – protecting depositors and in January on Financial stability and depositor protection. They contained little intellectual meat of their own and – to the extent that they said anything – they repeated King's calls for a special resolution regime for 'failing banks'. But this study showed early on that the phrase 'failing banks' is ambiguous. Is the problem one of illiquidity or insolvency? If the problem is illiquidity, the traditional and correct answer is a LOLR facility. Only in the event of insolvency is a special regime of some sort needed. Historically, the Bank of England was in fact able to handle insolvent as well as illiquid institutions, and overall it did the job effectively and well. The setting-up of 'a new regime', with the clutter of extra institutions and bureaucracy, and yet more muddling of responsibilities, is not obviously desirable.

The argument here has been that the 1998 Bank of England Act damaged the interests of financial stability in the UK, by undermining the Bank's power to act independently of the Treasury in a banking crisis. The phrase 'independently of the Treasury' has been chosen advisedly, to emphasize that the power to set interest rates – the operational independence granted in 1998 – does not define the whole of central banking. The Bank of England must be able to serve as lender of last resort to British banks, as noted in hundreds of textbooks and all statements of central bank praxis. Further, the Bank must have the resources (in terms of capital and balance-sheet muscle, as well as staff, experience and expertise) to extend large loans when necessary, and the ability to oversee and regulate bank balance sheets as part of its LOLR role. The arrangements before 1998 worked well; the Northern Rock affair was a fiasco. The Bank should do its banking work as far as possible by itself, without having to confer with the FSA or to seek the Treasury's permission. If it performs its banking function successfully (as it has done for most of its history), the arrangements for deposit insurance and insolvency law will be as irrelevant as they ought to be.

On the other hand, if the Bank of England carries out its banking function badly, it will alienate its core customers, the commercial banks. They can transfer part of their operations elsewhere. Of course UK domestic banking must stay in the UK, however inefficiently the Bank of England carries out its work. But there is a great deal of banking business done in this country which could just as well be done in the Eurozone or elsewhere. The ECB would be delighted if European capitals capture more financial activity and knock the City of London off its perch. If it played its cards badly in another crisis, the Bank might be reduced to a glorified economic research department and wound up, with the staff moving over to Whitehall. This would almost certainly prove a bad idea in the long run for all sorts of constitutional and practical reasons, but it is not infeasible.

More regulation is not the answer. It is easy for the Tripartite Authorities to demand increases in banks'

capital and cash ratios, and that of course has already occurred to some extent. But this study has shown that non-banks benefit from the falls in the cash/asset and capital/asset ratios which have been achieved, with central banks' support and blessing, since banking was first conceived. The challenge is to retain those benefits while maintaining the universal expectation that bank deposits are totally interchangeable with legal-tender notes. That expectation – so long taken for granted in the UK – is the proof of a central bank's success in the delivery of financial stability.