

THE FINANCIAL CRISIS: “DIAGNOSIS, PROGNOSIS, AND OPTIONS FOR FURTHER TREATMENT”¹

I discuss the nature of fractional reserve banks in the context of the 2008 financial crisis and I discuss a practical proposal for a new, good bank.

The basic² functions of a bank are outlined. A bank's function is intermediation; namely to take deposits of cash, and in return to promise to repay that cash when required; to allow the transfer of these promises and to lend money to individuals and companies. Banks are subject to two main regulatory constraints: first their assets, weighted according to risk, must amount to only a certain multiple of their regulatory capital (shareholder equity plus some subordinated debt)³; second, they must retain a certain proportion of their total assets as cash or other liquid assets such as government bonds. UK bank balance sheets are measured in the trillion pounds: larger than UK national debt and comparable to a few times UK GDP.

The current financial crisis was initially triggered by bank losses on sub-prime mortgage. These losses have caused a specific slowdown in credit markets. The implication of this slowdown are outlined, as are the dangers of a debt deflation.

Various aspects of the policy response are discussed. A new institution will be(!) outlined: an international, government-backed, 'new good bank'. This new good bank would provide additional low-cost financing during a recession, particularly to 'socially beneficial' projects such as low-carbon energy infrastructure and energy efficiency schemes. The concept of a 'good bank' is independent of, but is synergistic to, proposals for an 'energy refund for a climate club' and for guaranteed carbon and electricity prices (contracts for difference), the two main policy proposals outlined in the paper at the end of the book.

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2 No apology is made for the elementary level of this description: it is essential, for democracy, to be as simple and clear as possible about the current financial system.

3 As measured for regulatory purposes this includes 'tier 1' capital (shareholder equity) and 'tier 2' capital (subordinated debt).

An Introduction To Banking

The Functions of a Bank

The main purpose of a bank is *intermediation*: to *borrow*⁴ money from customers (who in principle could demand their money back at any point⁵) and to *lend* money to customers with a fixed repayment schedule.

The first specific function of a bank is therefore to **accept cash** (banknotes and coins) from customers and, in exchange to **issue promises to pay cash**. The 'promise to pay' is represented by the customer having an increased bank balance. The customer has in fact *loaned* the cash to the bank: the ownership ('title') on the cash has transferred from the customer to the bank.

The offsetting second function of the bank is to **pay out cash in exchange for the erasure of a promise to pay cash**. Depending on the terms of the bank account, the money loaned to the bank can be recalled ('withdrawn') by the customer at any time that the customer wishes.⁶

The third function of a bank is to **cash cheques: in other words, to move promises to pay from one customer to another**. Let's say person A wishes to pay person B a certain amount of money. The straightforward way to settle this transaction would be for person A to give person B some cash (let's say £100). But cash is easily stolen; so instead person A writes person B a cheque for £100. What does that cheque represent?

Lets say first of all that both the individuals use the same bank ('X'). In this case, rather than transferring cash, it is possible for the bank to transfer *promises to pay*. The cheque is a promise from person A to pay person B. When the bank receives the cheque, and assuming that person A has a sufficient bank balance; bank X simply removes £100 from its obligation to pay person A and adds £100 to the obligation to pay person B.

If two banks are involved, the same principles apply. Person A (with bank X) gives person B (with bank Y) a cheque (in exchange for another asset, goods or services). The banks *transfer of promises to pay* from bank X to A to bank Y to B. In addition, to avoid bank Y being worse off, bank X transfers £100 in cash to bank Y.

Fourth, the bank can **create bank balances**, for example, as payment to its employees or shareholders. A deposit is simply an obligation for the bank to pay someone cash on demand.

Fifth, the bank can **lend money to customers**. The bank creates a deposit - a promise for the bank to pay you cash on demand - and an offsetting debt - a promise for you to pay the bank cash (or to remove an equivalent amount of the bank's obligations to pay you cash) .

Investment banks perform the traditional functions of banks and also perform various functions in relation to innovative financing, the structuring of financial derivatives and origination and underwriting of debt and equity issuance. These functions are of necessity hard to distinguish from their standard roles.

4 In the typical system known as 'fractional reserve banking'

5 Except in typical bank panics; for example the 'run on the Rock'.

6 Other bank deposits require a certain amount of time notice before withdrawing cash.

The Bank Balance Sheet

The balance sheet of a bank consists of the *assets* (which are the loans that it has made - they are assets because they will usually be paid back – plus physical assets) and liabilities (which are the deposits that the banks has taken, plus those who have lent the bank money – the bond holders). It is known as a balance sheet, since the assets are equal to the liabilities plus the shareholder equity.

Assets: the bank owns cash (banknotes and coins) that the customers have lent to the bank. It also may own financial assets such as government bonds and fixed assets such as its own buildings. The bank is also owed money by its customers and, since these loan agreements represent a promise to pay the bank money in the future, they are also counted as assets, and in fact represent the majority of the banks total asset value.

Liabilities: the main liability on the bank is to pay back the money deposited by the bank's customers.

Shareholder Equity (net asset value): A bank is started by the investment of some money, known as 'shareholder equity'. Over time, any profit which is not distributed to the shareholders will increase that shareholder capital. Similarly a loss will reduce the banks shareholder equity. The bank's 'shareholder equity' is therefore the net asset value according to accounting rules. This is also known as bank 'capital'.

Insolvency: A company will be considered insolvent if either two conditions hold

- The shareholder equity falls to or below zero
- The company is unable to meet its obligations

Regulatory Constraints on Banks

It seems, from this more detailed picture, that the banks can create an unlimited amount of credit. Is this true?

In fact the banks are constrained in two important ways: a (financial) 'capital' requirement and a 'liquidity' requirement.

The (financial) capital requirement is a requirement on the *net asset value* of the bank. A bank's net asset value is the excess of the accounting value of its assets over the accounting value of its liabilities. Net asset value is often called the 'capital' of the bank. The capital requirement is that the bank should not lend out more than a certain multiple of its capital.

The liquidity requirement is a requirement that the bank has sufficient cash or deposits at the bank of England (monetary base) to cover any withdrawals of money.

Banks have capital requirements (it must not lend more than about 10 times it's net worth) and liquidity requirements (it must not have deposits greater than 20 times the amount of monetary base held).

The Banking Crisis

This section outlines the causes and consequence of the current global banking crisis.

Bank Losses, Capital Shortages and Possible Insolvencies

Causes of the Banking Crisis: US Sub-prime Mortgage Defaults

The initial trigger of the financial crisis was a fall in US house prices. US banks had up till this point been engaging in increasingly risky lending practices, in particular by lending to less and less creditworthy individuals. When house prices began to fall, delinquency rates on mortgages rose, leading to severe losses by the banks.

This risk spread throughout the financial system through risk-transfer financial instruments called Collateralized Debt Obligations (CDOs). CDOs are financial derivatives constructed to insure the original bank against the risk that a number of these mortgage holders will simultaneously default. By constructing and selling 'tranches' of the CDOs, the bank that originates the mortgages is able to pass the risk of default on to the counterpart. The main advantage of these derivatives was that specific risk of default is diversified amongst institutions and so concentrations of risk are avoided. The disadvantages are that the original bank is encouraged to lend to more risky individuals, knowing that it will not pay the price later - that systemic risk to widespread defaults remains and is now spread throughout the system; and that the mathematics of 'tranching' these deals tends to obscure the level of systemic risk.

The Basic Problem: Bank Losses and Capital Shortages

The main consequence of the sub-prime defaults has been large losses taken by banks around the world. In 2007, some banks made very large losses.⁷ Some banks (for example the Royal Bank of Scotland) might have become insolvent were it not for government intervention.

Effects of Bank Losses and Capital Shortages

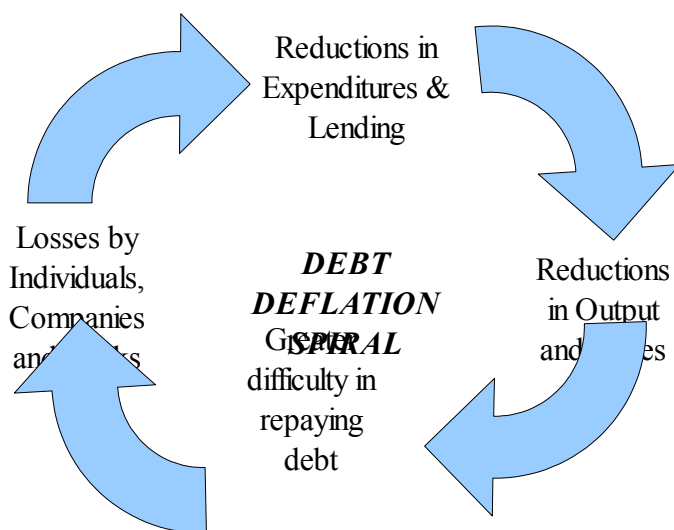
The fall in net asset value and in some cases bank insolvency leads to a number of serious economic effects:

- *New lending is constricted:* The banks lending activities are constrained by their regulatory capital requirements and by prudent self interest (there are costs of financial distress that are to be avoided).
 - *Falls in asset values:* The reduced availability of bank credit affects both individuals and companies adversely. For example, reduced demand for housing may lead to an overall reduction in house prices.
 - *Companies behave conservatively:* The effect on companies of reduced access to lending is that both companies and banks will behave more conservatively. This may lead to some businesses being forced to scale back investment activities and others be put out of business altogether.
- *Confidence in bank deposits shaken:* There is concern that there will not be sufficient funds to pay back depositors, even if all the bank's assets were 'liquidized' (sold, called in, and turned into cash).
 - *Possible bank runs:* This perceived riskiness could cause a 'run' on the bank, where existing depositors withdraw their money *en mass*.
 - *Frozen credit markets:* The bank's perceived riskiness also makes it more difficult for

⁷ In other words it is a crisis about the banks' "balance sheets". The balance sheet of a company represents the company's assets on one side and it's and liabilities on the other. The assets of the company must by definition equal the liabilities plus the shareholder capital (or net asset value).

banks to attract new depositors or new investors, because the bank is inherently more risky.

- *Interbank trust declines:* With the bankruptcy of Lehman Brothers in September 2007, the crisis became much more serious. In effect, banks ceased to trust each other. The effect of this is, in effect, to drastically reduce the amount of trustworthy 'money' in the economy.
- *A large negative shift in 'animal spirits':* The increased uncertainty engendered by the banking crisis has reduced confidence in the global economy. Overall the crisis can be described as a large global monetary and confidence shock significantly reducing global aggregate demand.
 - *Reduction in output and in asset and product prices:* Macroeconomics suggests that a reduction in aggregate demand will reduce both the growth in the economy and the inflation rate. The shock is great enough such that both output and prices may fall in specific countries or globally. Falling output combined with falling prices is known as *deflation*.
- *Potential for a debt-deflationary downward spiral.* The economic crisis also has a serious effect on the balance sheets of banks. The value of liabilities tends to be fixed in nominal terms. The bank has to give the depositors money back, come what may. The value of a bank's assets (the loans it has extended) is determined by the ability of (the bank's) debtors to pay back their debts. The ability to pay back debt depends not only on the *real* growth rate in the economy (when the economy is growing, companies and individuals find it easier to pay back debts), but also on the *inflation rate*. Inflation erodes the value of debt over time⁸. Negative real growth and negative inflation erode the ability to pay back debts and thus can lead to further defaults, further reductions in net asset value of banks and further falls in prices or in output. This vicious circle of a debt-deflation is described in detail for example by Fisher (1939).



⁸ Assuming that other things (and in particular the nominal interest rate) are equal. In principle, one could compare the effect of inflation on debt keeping the *real* interest rate equal; in this case, inflation does not have any effect, because we would be implicitly assume that the interest rate would be pushed up to counteract the inflation rate. However, there is a *nominal* floor on interest rates at zero percent, and, in a deflationary situation, the real interest rate could be constrained in *nominal* terms – making the original comparison valid.

Classification of Recessions

Here a classification of different types of recession is attempted⁹:

The most common recent type of recession (post-war period, 1979-81, 1990-2) could be characterised as *macroeconomic policy recession*, induced by monetary or fiscal policy introduced to fight inflation. Another type of recession is a *business cycle recession* (similar to a 'predator prey' cycle) of stocks and investment overshooting and then retrenching.

The final type of recession is to do with the assets and liabilities (liabilities) of individuals. When people feel suddenly much less wealthy they are likely to cut back on productive activity. A subset of these is when the balance sheets of financial institutions is impaired - when banks take serious losses and are constrained to lend. A final sub-subset of this final type of recession is one when the banks are in such trouble that the government takes full or partial ownership of them. In this case any losses on loans are directly transmitted to the government. An important feature of *balance sheet recessions* is that a proximate cause of them is a drop in the market value of assets, whereas the value of liabilities is unchanged. Certain actors may see extreme shifts or even reversals in their net worth. One way to get out of these recessions is to increase the value of assets through monetary policy (interest rate cuts and printing money to buy financial assets) or fiscal policy (purchase of physical assets). Reducing the nominal value of assets can in these cases make the recession worse.

A worse form of balance sheet recession is a *financial institution balance sheet recession*. In this case, the credit worthiness of financial institutions induces an inability to lend, which reduces asset values and so makes the credit worthiness of the institutions worse. In this case reducing the value of houses can lead to the banks becoming further impaired. Such recessions can lead to *great depressions* if global in scope. If the net worth of the banks becomes negative, banks will need to be taken into state ownership or control, leading to a *financial institution balance sheet recession with government ownership of the banks*. If repossessions are widespread, *a loss of value in houses can be reflected almost directly in losses for the government*.

In 'traditional' forms of recessions, bankruptcies can have a 'cathartic' effect, by removing excess capacity and readjusting prices. In the current recession it should be noted that every financial institutions debt is another financial institution's asset. Bankruptcy of all of the financial institutions is likely to be severely disruptive.

Future Prognosis

Without intervention: a self perpetuating crisis? The effects of the credit crunch may be self-perpetuating, and large losses cannot be ruled out in the absence of a strong policy response:

- House prices are linked to the availability of funds and the interest rate. House prices are also affected by expectations of future change ('momentum'). Major further losses on mortgages are possible if house prices fall and the economy enters a major recession.
- Major bank losses on corporate lending are possible if the recession is serious and the nominal growth rate is low or negative. Major bank losses on international lending are possible, but assumed to be largely out of our control.

The Banks' Problem or the Government's Problem? Once bank losses have eaten through bank capital they must inevitably fall on the depositors or the government. In order to prevent a run on the banks, it is likely that **the government would have to guarantee deposits, in which case the losses of the banks (after the shareholders and unsecured creditors have lost their investments) would fall mostly on the taxpayer.**

⁹ The terminology here is the authors and may be non-standard

Discussion: Lessons & Principles

Five Principles of an Effective and Equitable Solution

Principles 1 & 2: Get out alive but also ensure the crisis does not reoccur. It is clear that the current financial and economic crisis is very serious. In dealing with an emergency of any type; there are two main objectives. Firstly, 'get out of the crisis alive'; Secondly, 'ensure that the crisis doesn't happen again'. It may in principle that the short term solutions are different (or indeed even opposite) to the long term solutions. In any case, we need to consider each part separately. Policies should not be rejected if they satisfy only one of the criteria. My focus immediately is getting out alive; however, we should also now be thinking about long-term cures.

Principle 3: Where possible, transactions between the government and banks should be *fair*. Banks should not be subsidized, nor unfairly taxed. A fair exchange does not increase net worth except at the expense of the other party. Institutions with negative net worth cannot be turned into institutions with positive net worth except by a capital infusion or a pure subsidy. Government efforts to support near-insolvent banks are likely to be ineffective if they do not increase the bank's net worth. The government is correct to invest in banks.

Principle 4: Depositors money should, if possible, be protected (in the following of procedures or other actions of the state). If people cannot trust that they put their money in the bank it is safe, this would have three consequences: Firstly, the losses on 'safe' money would continue to ripple through the system leading to a series of domino effects on other banks. Secondly, a lack of confidence could cause a run on the banks, and the banks do not have sufficient money in order to continue. Thirdly, one of the pillars of trust in our society would collapse. Protecting trust requires that the interests of depositors should be protected. Depositors should be given their money back.

Principle 5: In cases of fraud, due procedure should be followed. If fraud has occurred institutions should be reorganised and taken under control of the regulators. Normal procedure (i.e. the rule of law) should be followed. Insolvent banks should be wound down using standard procedures, restructuring the unsecured creditors. Whether the banks are solvent or not is in principle a market decision, not a government one. General procedures written in law should be used, without the influence of special cases. If banks are insolvent they to be brought into government ownership (100% government owned) and the top level of management replaced. Junior bondholders of banks should be swapped for equity. Unsecured creditors should be converted to equity in a process of 'restructuring'. The remaining rump bank would amount to an essentially a high-risk high-return investment fund.

Four Lessons from the Preceding Analysis

Lesson 1: Supporting the existing banks is a good short-term palliative. It has prevented the banks from immediately going bankrupt, and has therefore (temporarily) protected depositors money. The short term crisis in confidence has led to a seizing up of the financial markets, and a breakdown in trust between the banks, so that they are reluctant to lend to one another. The measures to support the banks have been successful at preventing the immediate collapse of the financial system (runs on the banks etc.). The underlying profitability of the banks may help them to rebuild their capital positions. However, in the long run, further market power with a few banks will lead to even further 'financialization' of the economy.

Lesson 2: Supporting the existing banks may be an inefficient, ineffective and inequitable way to promote new lending or to support the economy generally in the long run. Anything other than direct subsidies or recapitalisations will not change the net asset value of the bank. A bank with uncertain assets will hoard cash and is unlikely to be trusted by potential depositors.

Lesson 3: The future outlook for the banks depends largely on the macroeconomic climate.

The balance sheets of some banks *may* recover *if* nominal growth in global GDP is positive. Most banks make a healthy profit before bad loans. If these profits are retained, then over time their balance sheets will recover, so long as the factors leading to bad loans are not repeated.

Nevertheless, insolvent banks *may* also continue to lose money, especially if nominal growth in global GDP is low or negative. In general organisations with negative net worth are likely to lose further money over time, because the value of their assets is negative and because the bank is unlikely to be able to arrange good terms with other market participants.

Lesson 4: Macroeconomic (and, if possible fiscal) policy should, in the short term, be strongly expansionary: Since bank losses and credit constriction are largely self-perpetuating problems, there is an incentive to keep the economy 'afloat' by strongly expansionary macroeconomic policy.

The Role of Keynes and Fisher

The work of John Maynard Keynes is pertinent to getting out of this crisis. Keynes wrote his book *The General Theory of Employment, Interest and Money* in the time of the great depression, publishing it in 1936. Keynes' work is intended to be 'general' in the sense in which it deals with the economy in a number of different conditions. Keynes viewed 'classical' economics as merely a special case; the case, broadly, when the economy is operating under full capacity. The insights of Keynes therefore differ most markedly to those of the classical economists in recessions, and in particular in deep recessions and deflations where both output and prices are declining.

Irving Fisher's work on debt-deflations is also extremely relevant to the current situation.

Fisher described how deflation could make depressions that were originally caused by bank failures even worse.

Three Further Lessons from Keynes and Fisher

Lesson 5 (Debt Deflation): If highly indebted, avoid deflation like the plague. Debts get worse in deflation.

Lesson 6 (Paradox of Thrift): The approach to individuals (if you are in debt, save more) don't apply to the nation as a whole

Lesson 7 (Liquidity Trap): As interest rates approach zero, monetary policy becomes ineffective - Fiscal policy is needed. Avoid Deflation: As deflation kicks in, real interest rates (interest rate minus inflation) rise.

The Current Approach

There have been the following commitments (the banking 'bailout') in the UK

- A Special Lending Facility of £185bn
- Bank recapitalisations of £50bn
- Quantitative easing of approximately £150bn
- Interest rates cuts
- Tax cuts (e.g. VAT)

Considering the words and actions of the UK government, the following objectives can be discerned¹⁰:

1. An expansionary monetary position, increasing the amount and reducing the cost, of new lending to UK businesses and companies
2. Prevent a run on the banks
3. Protect deposits from possible insolvency of the banks

These objectives are laudable¹¹. To these should be added:

4. Protect the long-term fiscal position of the taxpayer.
5. Protect the position of the UK as a whole on the international markets

10 The basic underlying objectives of sound economic management are to ensure a stable inflation rate. Additional points might include smoothing the economic cycle, avoiding 'boom and bust', and to conduct a prudent fiscal policy.

11 Good crisis objectives might be:

- 1) Increase finance to companies and individuals, and increase the amount of 'good' money in the economy*
- 2) Make concrete implicit guarantees of private domestic & other bank deposits
- 3) Avoid the socialization of private losses & risks
- 4) Limit the potential liability of the sovereign / taxpayer

Options for Resolution

Enhanced Liquidity

One function of the authorities generally is to provide liquidity to the markets. I'll call this role 'bigbank'. Bigbank's lending should be to other creditworthy institutions. It should insure the loans it makes against the risk of default where possible, by buying credit default protection in the open market. Bigbank's role is to provide 'bridging loans' to other banks who might have temporary liquidity problems due to speculative attack. Bigbank could (say) have around £100bn of capital. The government providing the initial capitalisation, by buying shares, or by guarantee. So long as the risks on the loans that it makes can be adequately insured, Bigbank can lend many times its' capital. Bigbank can act commercially, by providing loans at rates that account for the inherent (although not the speculation-induced) riskiness of lending (because now-solvent institutions might become insolvent in the future). The main role of Bigbank is to offer liquidity and thus defend solvent institutions against speculative attack.

Insuring Against Systemic Risk

A new organisations could be created to formalise and eventually commercialise the government's role as 'lender of last resort' and 'insurer of last resort' to financial institutions. I'll call this institution 'Biginsure'. Biginsure's role is to be an 'insurer of last resort'. Biginsure will insure Bigbank against its counterpart going bust, if no other insurers can be found. Big insure could also insure against other major risks where at present. the government provides a guarantee (e.g. terrorism, natural disasters). Biginsure would be well capitalised, in order to cover quite large potential risks. Biginsure could grow (e.g. from an initial size of £100bn of government-owned shares to a size of £1tr) by selling shares to the public, so spreading risk broadly.

Dealing With Insolvency of Existing Banks

It seems now that the banks are not solvent; at least they will not be solvent in the foreseeable and credible event of further major losses on their assets (their loan books). What to do with insolvent banks is difficult. Fundamental way to deal with the banks include Bankruptcy, Restructuring, Nationalisation or 'propping them up'?

At one extreme is **full bankruptcy and liquidation of the bank's assets**. If a company is insolvent, generally they are declared bankrupt. The bank would be wiped out and its assets distributed to the creditors. One example of this approach is the bankruptcy and liquidation of Lehman brothers. Bankruptcy has risks; the main one being the huge 'costs of financial distress'. A bank has a lot of offsetting contracts of various kinds. Sorting out this huge complexity of this may lead to lots of money for lawyers.

Somewhat in the middle is **restructuring** of the existing banks. The bank's bondholders would see their debt swapped for equity. This is an important solution that doesn't seem to have been tried sufficiently.

At the other extreme is **nationalisation** with full reimbursement of those who have deposited money. The issue with this is that the banks may have very large credit risks, and the UK sovereign may not be able to bear all of these risks.

A final option is '**prop up**', by implicit subsidies, recapitalisations and increases in monopoly power. This has largely been the route taken by the UK and US. This route has important advantages. The dangers of this approach include increased financialization and regulatory capture.

Discussion

The most straightforward way to solve the current crisis is bank nationalisation. There are a few reasons why the government might not want to take this path, one of which is the large overseas assets and liability of UK-based banks. The sovereign has limited fiscal credibility; the key to avoiding future hyperinflation is not biting off more than it can chew. It should focus on the UK and on creating a 'good bank' to promote future lending.

The recapitalization of UK banks seems to have been a good plan. The systemic collapse of the banking system was forestalled. Of course, most of that money went into a black hole. But the government did end up by owning large parts of the banks' equity, which might be worth a lot in the future if the banks recover. £37 billion for pure upside on say £2trillion of assets isn't too bad a deal. And having an equity stake is clearly not the same as guaranteeing the banks liabilities for free. Limited liability still applies.

However, the government obviously has certain responsibilities in the UK banking system - it needs to guarantee the deposits of UK savers, and it needs the banks to lend enough to keep the economy going.

To summarise, the UK government has two clear requirements, both UK based

- a) 'Get lending going again' to UK individuals and companies
- b) Guarantee the deposits of UK individuals, charities and (probably) companies

Separate Good Assets From Bad?

After nationalisation, often it is proposed to separate those of the banks assets (which are the loans that it has written) into those which are from creditworthy institutions (good assets) and those which are from borrowers who are financially distressed and therefore may be unable to pay back their loans (bad assets). The bank in other words is separated into a 'good bank' and a 'bad bank'. Both the good bank and the bad bank would then be owned by the government, but the good bank could be re-privatised and the bad assets in the bad bank could be sold off once the economy recovers. This is the often quoted 'Swedish Model'. The important principle of good-bank/bad-bank is that of separation between the old bad assets and the new lending. Bad banks are equity investments. They contain assets but no lending capability. They contain the assets of the loans which are not capable of being paid back. The advantage of the government buying the 'good bank' first, is that systemically important assets (UK depositors, interbank lending) can be transferred into the public sector first.

Recapitalizing the Banking System by Creating Good Banks

There are broadly three objectives to recapitalizing the banking system:

- 1) Increase finance to companies and individuals, and increase the amount of 'good' money in the economy
- 2) Make concrete implicit guarantees of private domestic & other bank deposits
- 3) Limit the potential liability of the sovereign / taxpayer; and avoid the socialization of private losses & risks

These objectives can be achieved by a transaction that involves:

- a) Buying the branch networks of the major UK banks (needed to 'get lending going')
- b) At the same time, taking on the liabilities of the domestic depositors
- c) Taking on the 'good' assets in the corporate lending and mortgage book

The old banks would be left with more cash (from being able to sell some of their tangible assets). This would leave a de leveraged, cash-rich rump (including in effect an overseas lending unit) which might die slowly.

HBOS would be a good example. The government should take on the branch network, and the brand and the domestic depositors (liabilities), and the good parts of the domestic mortgage book (assets); but none of the 'toxic debt'. This would then be a 'good bank'. The government could then progressively sell stakes in the 'good bank' to private investors. The main risk for this plan, would be that if only some of the branch networks were bought, there might be a run on the other, privately owned banks.

There would still remain the question of what to do with the remaining 'bad bank'. Few might lend to it; but in any case few are lending to the big banks now anyway. Bankruptcy is one option, but it usually involves plenty of money for lawyers.

New lending must be separated from existing lending. Current government thinking suggests that we need a government-backed good bank much more than we need a government-owned bad bank. And taking on the bad assets is socialising private risks - not a good idea. Better to create the good bank first, including both high-street and capital-markets elements. Use the good bank to get lending going and to 'look to the future'. The remaining bad bank would be cash rich with a more volatile and non-domestic balance sheet and fewer tangible assets. It would have in effect a skeleton team remaining. If insolvent it would wind itself up naturally.

Appendix A: Definitions of Financial and Economic Terms

Cash: Notes and coins of currency in general circulation.

Money: Item used as a unit of exchange. Typically includes cash and other assets.

Law: Rules governing conduct enforced by governments.

Legal person: Individuals (natural persons) and companies (who can act as persons under law)

Contract: Obligation between two legal persons under law.

Debt: A contract providing money (from a lender to a borrower) that must be repaid in full, usually with interest.

Principal: The original amount of money lent in a debt contract.

Interest: The additional money repaid in addition to the principle in a debt contract.

Asset: An item of property or right (e.g. to future payments) owned by a person or company

Liability: The debts or other money obligations of a person or company.

Profit: The surplus of a company's operations. Excess of revenues and asset appreciation over costs and asset depreciation

Loss: A negative profit.

Shares/Equity: Ownership rights of a company typically entitling the owner to share in dividends and vote on the direction of the company

Dividends: Profits distributed to shareholders

Retained earnings: Profits not distributed to shareholders.

Shareholder equity: Net asset value (Assets minus Liabilities) of a company (e.g. a bank). *Valuation* of a company's equity can take two main forms:

- *Market valuations:* the amount of the whole company as imputed from the traded price of shares of that company.
- *Accounting (book) value:* the total sum of the contributions of the shareholders plus net retained earnings

Retained Earnings: Profits not paid out as dividends

Goods: Discrete physical objects *valued* by someone.¹²

Bads: Physical states that are *disvalued* by someone.

Capital: Accumulated wealth of an individual, company, or community, used as a fund for carrying on fresh production; wealth in any form used to help in producing more wealth.

¹² Goods can be consumable or non-consumable; perishable or non-perishable. Producing goods requires certain things commonly known as factors of production:

*Production*¹³ Transformation of resources, labour, and other goods into useful goods.¹⁴

Resource: Anything that is useful

Factor of Production: Resource needed in order to produce goods

Labour: Human time and physical effort used in the production of goods and bads.

Land: Area of the surface of Earth (esp. when used in production).

Economic land: Factor which is completely fixed in supply. Radio spectrum is another example of economic land, as is the amount of space in geosynchronous orbit. Land can be occupied for a particular amount of time, but can only in special cases (e.g. inundation) be consumed entirely.

Natural Resource: Other gift from nature. Typical examples are oil, coal, natural gas, and ancient rainforest.¹⁵ These can be entirely used up by transformation. Other gifts from nature include the air, water, forest and soils. The quality of these factors can be changed, by human or other degradation.

Pollution: Reduction in quality of air, water, forests and soils and other natural resources through human activity

*Capital*¹⁶ *goods*: Those that are used to production other goods, e.g. factories, machines and tools (also known as 'physical capital')¹⁷

Investment: Production used to create capital goods¹⁸

Depreciation: Reduction in quality of capital goods over time.

Consumption: Production and use of consumption goods

Consumption goods. Goods that can be used up for human purposes (e.g. food). Some consumption goods are produced but not immediately used up. This is known as 'stock building'.

13 Similarly *income*

14 Production requires land and labour. The quantity and quality of production can be enhanced by the use of capital. Production is a flow. In general production can be consumed (ie used up to maintain health or for enjoyment) or invested.

15 The supply of resources is not totally inelastic, if the price rises, more can be found in more difficult or low-quality areas.

16 The word 'capital' (alone) is often used incorrectly to mean "money and other financial assets which can be used to make more money and financial assets" and so is here avoided.

17 Some (e.g. see Ekins) have expanded the idea of capital to include human capital (e.g. the education of the population) and natural capital (natural resources) and social capital (networks and organisation).

18 For an interesting perspective, please see Costanza's article (1980, *Science*). Costanza adds government and individual consumers to the standard input/output tables (Leontif & Stone). Then the output of society is capital goods.

Appendix B: Further Information on Valuation

Up to now, we have not been able to put different classes of goods together into a single measure. Wealth could include the diverse set of one's car, house, etc; production could include cars, food and televisions, but we never put these things together into one measure. We can attempt to put these things into unified measures by *valuation*.

Valuation typically involves *counting* goods and *pricing* them (pricing means to value things *relative to other things*). Valuation typically requires a basis; one example of a basis¹⁹ that can be used is *monetary value* (another could be *hours of time* or *pints of beer*).

Valuation can be made by *an individual*, by *the market* (see below), by *accounting rules*, or by *society* (in some non-market or market-adjusted way). Each of these three valuations will produce different values for items. *Private values* are those which are given on goods by an individual person and which presumably drive that person's behaviour. *Market values*²⁰ are the prices seen in the market; presumably, the price that is simultaneously that willing to be paid for an additional item and that at which an additional item could be produced. *Accounting (or book) values* are those at which an asset is measured according to certain rules. For example, in business the accounting value could equal the amount paid for an asset, depreciated according to certain rules; or the amount for which this asset could be sold. It may be good practice for *society* to put a value on the various assets, so as to understand whether a *net profit* is being made in any activity.²¹

It is important to distinguish between a change in the quantity or quality of a set of goods and services from a change in the prices used to value something. A change in nominal market value of a bunch of goods could be caused by:

1. Change in the value of money relative to goods (overall²² price-inflation/disinflation)
2. Change in relative prices of a fixed bunch relative to other goods (change in relative prices)
3. Change in the real quantity/quality of this bunch of goods (change in quantity or quality)

Up to now, we have spoken only about the valuation of goods and services. Goods and services are valued according to some basis, usually money. Present and future rights and obligations can also be valued. The valuation of future financial flows is usually achieved using 'discounted cash flow' analysis, which assumes that money can be lent or borrowed at certain rates of interest.

The overall value²³ of the assets of an individual, company, country or planet can then be assessed by one of the methods above (typically market or accounting prices), giving an 'value of assets'. The value of liabilities can also be assessed in financial terms giving 'value of liabilities'. The two values put side by side is called a 'balance sheet', and the value of assets minus the value of liabilities is called the 'net asset value' or 'net worth'.²⁴

19 The technical word is '*numéraire*'

20 Also known as 'exchange value'

21 One implicit assumption is that valuations are separable: ie the value of my cat plus that of my mouse are equal to the value of the two put together. This may not always be the case; we may have to value interactions. The most important example of this is so called 'social capital'.

22 Typical measures of price inflation e.g. 'retail price inflation' 'GDP deflater' may be inappropriate here. The traditional meaning of the word inflation is 'quantity of money' but this is also not appropriate to this context, since all prices can change due to shifts in *expectations* rather than in a change in the *quantity of money*. This would not increase total wealth, but it would increase the value of all goods relative to the stock of money.

23 Either according to accounting rules, or according to market prices.

24 For a financial institution, the net worth of an institution is that which allows it to make further loans and therefore profits. Since the financial institution deals in money and claims over money (rather than goods); capital is sometimes defined as that which allows it to make more money. For the perplexed: Financial Capital (for a bank or other financial institution) = Net Asset Value

Appendix C: The Balance Sheet of The UK Government and The Major UK-based Banks

The UK Government

Gross government debt is a stock of how much the government owes the private sector.

- The value of gross public debt is about three quarters of a trillion pounds (£774bn); the net debt about £600bn) http://www.hm-treasury.gov.uk/psf_statistics.htm
- Pensions liabilities could be added to this (maybe about £530bn). <http://www.telegraph.co.uk/finance/2944530/National-debt-may-soar-above-andpound1,000bn.html>
- PFI liabilities are around £60bn (capital value)-£180bn (total repayment)
- So it seems that roughly speaking, the UK public debt is around £600+£530+£100 or £1.2trillion. This is a stock. (UK GDP (a flow) is about £1.5 trillion. <http://www.statistics.gov.uk/STATBASE/tsdataset.asp?vlnk=574&More=N&All=Y> .

Therefore the total UK public liabilities are about 80% of the flow of income into the British economy. To make the stock and flow comparable if we paid a 5% interest rate, interest payments would be around 4% of GDP.)

The Major UK-based Banks

Now let's compare with the balance sheets of the banks

Lloyds TSB - <http://finance.yahoo.com/q/bs?s=LYG&annual> Assets of £706bn, Liabilities of £681bn. (net assets of £25bn).

HBOS- <http://www.hbosplc.com/investors/results/sfs/2004/balancesheet.htm> Assets £442bn, Liabilities of £370bn

Barclays -

<http://www.investor.barclays.co.uk/results/2005/annualreport/annualreview2005/summaryconsolidatedbalancesheet.htm> Assets £924bn; Liabilities £900bn.

RBS - <http://finance.yahoo.com/q/bs?s=RBS&annual> Assets of \$3.8tr Liabilities \$3.7tr (this has jumped from assets of \$1.7tr liabilities of \$1.6tr at the end of 2006).

Summary

As can be shown by the table below, the liabilities of the banks are large in comparison to the UK existing public debt (£700bn). It is risky for the government to write the banks an unlimited cheque. In the next section I will outline a proposed solution that does not involve unlimited liability for the government.

Public Liabilities	Gross Bank Liabilities (in brackets, the loss incurred for a 10% fall in asset values due to bad debt)
UK Gross Public Debt £770bn	Lloyds TSB £680bn (£71bn)
Public Pensions £530bn	HBOS £370bn (£44bn)
PFI £100bn	Barclays £900bn (£92bn)
	RBS \$3.7tr (\$380bn)
Total Gross Public Debt £1400bn	