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The United States mortgage market default that triggered a global financial crisis around the world in 2007 will change the financial landscape drastically. Since that time policy makers have been trying to formulate solutions to the problems that the financial industry and the global economy are facing. This article suggests that market participants need to be aware of the changing dynamic in the financial industry and adapt their strategy and approach accordingly.

To address fully the issues the banking sector is facing, one needs to have a look at the factors behind the crisis. To that end we briefly sum up eight primary reasons that caused the bubble to burst. We then assess the impact of the crisis thus far, before concluding with our policy recommendations.

Causes of the financial crisis
Simply blaming the lack of responsibility among greedy and/or incompetent bankers does not adequately explain the financial crisis. The bubble that burst during the summer of 2007 is the result of excesses and business models that have been built up over two decades. Although this list is not exhaustive the following reasons can be identified as being prime contributors to the credit and liquidity crunch:

- The “shadow banking” system
- Globalisation, leading to highly integrated markets worldwide
- The role of Central Banks, and an environment of very low interest rates
- Financial innovation and securitisation
- Political interference, and the US government-inspired social engineering policy of extending home ownership
- The “black-box” model and poor quality loan origination standards
- The credit rating agencies
- Incompetent management practices

We consider these factors in turn.

The shadow banking system
The “shadow banking” system was a major cause of the crisis. This parallel circuit had been building up slowly over many years. By the late 1990s there were already a wide range of special purpose vehicles (SPV) in use by banks to isolate certain structured credit investments away from their balance sheets. These legal entities were not subject to regulatory supervision or oversight.

In order to explain this system one needs first to look at the classic banking model. Under a conservative approach a bank would attract deposits from cash-rich clients and lend this to clients with a borrowing need, at a certain spread over the rate it would pay on its deposit base. The decision to lend the other client money is usually done after an extensive credit analysis of the borrower. It is important to note that the deposits that are lent on to others are guaranteed by the government, which acts as a lender-of-last-resort (LoLR). This is a simplified version of banking, but this is essentially how banks operated till the mid 1980s.

As debt capital markets in the US and Europe became more mature, other sources of finance became available, for example the commercial paper market began to be used by corporates for even short-term funding. Companies became less dependent on their bankers for financing. This resulted in banks losing sources of revenue, such that they looked beyond the income-driven model and at a distribution-driven model. This evolved into the shadow banking system. Using the securitisation technique, banks would remove a portfolio of loans from their balance sheet and place them into an SPV, which would fund the portfolio not via bank deposits but via the wholesale money market, including the CP market. This created a mismatch between the maturity of the assets and the liabilities, with the former being long-dated and the latter short-dated. This resulted in significant “gap” funding risk for the SPV.

Provided investors in the money market have confidence in the ability of the SPV to rollover and refinance its outstanding debt, there is no issue with this short-term funding model. If an SPV experiences funding difficulties however, distrust enters the market and this triggers a liquidity crunch. This is what happened from the summer of 2007 onwards, when many SPVs began to experience defaults in their underlying structured credit portfolio and simultaneously saw their funding sources (money and interbank market) disappear.

Following the removal of funding sources the SPV managers turned to their parent banks, with whom they had set up back-up liquidity lines. This meant of course that the parent bank was now linked to the long-dated and deteriorating credit-quality assets in the SPVs. As a result these banks were faced to take the multi-trillion outstanding loans they “outsourced” over time back onto their own balance sheets, which jeopardised their solvency ratios.

Globalisation
It is difficult to identify exactly the start-point of globalisation. During the 1980s measures were taken that opened up capital markets and liberalised trade. After the fall of communism and the Berlin Wall in 1989, this movement accelerated. In addition, funds that had been locked-up for defence purposes were freed and invested in emerging markets.

Together with a technological revolution in communications and IT infrastructure, this created global investment opportunities in Latin America, Asia, Central and East Europe. Capital was also able to flow freely. Simultaneously however, imbalances were created. The US in particular started to build up a significant current account deficit, which was financed by the rest of the world. Sovereign wealth funds created by oil-producing countries in the Middle East, and by export-led economies in East Asia, invested their large cash balances in US Treasury securities and certain EU sovereign securities, as well as with Western banks. This cash-rich environment in the West contributed to narrowing credit spreads.

Figure 1 shows the current account position for selected regions.

Source: IMF World Economic Outlook, April 2008

From the end of the 1990s onwards the US consumer went on a spending spree, buying goods produced cheaply in Asia, and energy from the oil-exporting countries. As the value of goods purchased was higher than their disposable income, they funded the purchase via home equity loans and/or mortgage refinancing. These loans in turn were placed with investors worldwide via the repackaging technique of securitisation. The cash-rich export-growth countries, together with the hedge fund industry, essentially flooded the financial markets with liquidity to such an extent that long-term interest rates were pushed down significantly. According to a McKinsey study, in the US bond market long term interest rates were pushed down by an estimated 130 bp.1
In essence, the “export-and-save” countries of East Asia, plus the oil-exporting country sovereign wealth funds, placed large amounts of US dollars with Western banks. This environment of excess cash had to be placed somewhere by these banks, and in an era of tight credit spreads the demand for yield meant that much new investment was in high-risk/higher-return assets.

This phenomenon is an interest rate conundrum, which brings us to our next contributory factor: the central banks.

Central banks
It may come as a surprise to observers, but central banks also bear some of the responsibility for the crisis. This is a controversial academic discussion and in some ways mirrors the debate between those who support the Chicago school of economics led by Milton Friedman and those who adhere to a neo-Keynesian approach.

The major argument centres on the concept of inflation targeting. The US Federal Reserve does not have an explicit inflation target, but does consider an inflation level of 2% as a guide. The Bank of England, European Central Bank and Bank of Japan have explicit inflation targets of 2%. A crucial factor in this debate is that the Fed also has a mandate to support economic growth, although under the last term of Alan Greenspan’s chairmanship inflation versus deflation became a primary concern. The Fed is alone amongst central banks in having a growth as well as inflation target.

Achieving an inflation target or boosting economic growth is done via control of the money supply. Unfortunately a central bank has little influence on the M1-M2-M3 numbers. For instance, the Fed ceased monitoring the money supply from 2000 onwards. Nevertheless in times of economic slowdown a central bank will lower interest rates to stimulate the demand side. Historically, central banks tend to overshoot their rate policy due to the focus on inflation. The key issue is one of timing: it is important to remove monetary policy stimuli in good time, in order to prevent the economy from overheating. Unfortunately this did not happen after 2003.

As Figure 2 shows, the Fed started to cut rates aggressively after the burst of the dotcom bubble and following 9/11. With Japan’s experience in mind, it appears that the Fed was concerned about the risk of deflation in the aftermath of these two events. However the downward pressure on consumer prices was a result of the forces of technological innovation and globalisation.

In hindsight the Federal Reserve was too late removing its stimuli in time to prevent the economy from overheating. Mr Greenspan at that time was puzzled by the fact that long term interest rates remained exceptionally low when the Fed started hiking rates again from 2004. This was partly due to the large amount of capital flooding the USD market from the export-growth countries and sovereign wealth funds.

Critical however, the Fed did not address, due to their mismiming, the build up of the US housing market bubble. As interest rates stayed exceptionally low between 2001 and 2004, this led to the origination of low-rate mortgages amongst a sector of the population that couldn’t otherwise afford to purchase a house. When the Fed started to hike rates from 2004 these buyers saw the monthly payments on their mortgages triple and even quadruple; this led many to default on their mortgage payments to the lender, which had to foreclose on the property. This sums up briefly the drama of the sub-prime mortgage crisis.

Apart from the bad track record central banks have in their timing of monetary policy, and we must state that it is an art rather than a science, another possible criticism is that central banks have shown themselves to be unable to target the build up of an asset bubble. This has happened because of the lack of asset price developments in the price indices that central banks follow. For instance, the BoJ failed to acknowledge the build up of an asset bubble in its economy during the late 1980s. This triggered the “Lost Decade” in Japan, with deflation hampering a sustained economic recovery. Greenspan gave a misleading sign to the market when he implied that should an asset bubble be detected, the central bank would not do anything about it: the Fed would only deal with the fallout of the asset bubble. This was subsequently referred to as the Greenspan Doctrine or “Greenspan put”.

The Greenspan doctrine was nothing new. He only reiterated one of the major reasons why central banks were initially founded: to safeguard financial stability. The US central bank was formed in 1907 following a similar financial crisis to the Great Credit Crisis of 2007-2008. In the build up to that crisis excessive credit expansion had been responsible for a run on the banking system. To prevent a repeat crisis of that proportion the US government created the Federal Reserve System, which later became the Federal Reserve Bank as we know it today. Its main objective was to act as a lender-of-last-resort (LoLR). If a private bank faced a run on its deposits, the central bank would intervene to rescue the deposit holders.

The principle of the lender-of-last-resort is dual. First of all it provides comfort to deposit holders to not withdraw their money from a bank, even during times of economic uncertainty, as the central bank has effectively underwritten the deposits of any bank under its supervision. However it also encourages deposit holders to place their money at the bank with the highest deposit interest rate.

A high deposit rate is feasible for a bank following an aggressive and higher-risk lending policy. Thus the principle of the lender-of-last-resort is also known as moral hazard. What was initially set up to provide financial stability indirectly contributes to boom and bust cycles. In times of crisis it brings stabilisation to the system. However during the boom period of an economic cycle it helps create loose credit practices, and deteriorating loan origination standards. During such a time, banks that follow risk-averse lending policies will suffer at the street level, as they attract fewer deposits. As a result such banks find it harder to compete in the market.

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Financial innovation and securitisation
It is undeniable that the era of Shadow Banking went-hand in-hand with a rise in financial innovation. The exponential rise in use of financial derivatives by market participants grew to such a level that systemic risk began to pose a significant danger to banks. The collapse of the investment bank Lehman Brothers in September 2008 was to prove a severe shock to the market.

As Figure 3 shows, derivatives volumes expanded greatly from 2001 onwards. Due to the build up of the Shadow Banking System securitisation became a widely-used technique and the use of credit default swaps (CDS) grew substantially as well.
The use of derivatives was not universal however. To put this into perspective, within the US in 2008 97% of all outstanding OTC derivatives were on the books of just five banks, and almost 50% is on the books of only one single counterparty, JP Morgan Chase. The vast majority of US banks have never dealt in a CDS, for risk management or investment reasons.

H Minsky commented in the 1980s that attempts by central banks to constrain reserves would encourage financial innovation and encourage expansion of "non-bank" sources of finance. This in turn would trigger LoLR interventions.

Securitisation was another area that benefitted from innovation. A proven technique first introduce in the US mortgage market in 1979, it offered clear merits to originators and investors. Its use opened up markets and provided an opportunity for investors to access asset classes that they could not otherwise invest in.

Sadly, as it gained acceptance, securitisation turned out to have two Achilles heels. The first was whenever there was a disconnection between the borrower and the lender. As we explained earlier, under the classical approach to banking a bank would undertake credit analysis before deciding to lend money to a client. After writing the loan, which would put its own capital base at risk, the bank would continue to monitor the risk profile of the borrower. If the borrower’s credit standing began to deteriorate during this period, the bank would try to adjust the situation by re-negotiating the deal and reducing the risk characteristics. In the worst case, the bank would reserve capital in case it had to write down the loan partially or as a whole.

Under securitisation, whenever there is any de-coupling (in other words, the originator sells all the securitised notes to third-party investors and retains no exposure to the original assets) this no longer is the case. Once the loan has been packaged into liquid securities and placed among investors, there is no incentive for the originator to follow up the performance of the loan. This creates issues later on if the original assets start to default. The problem is exacerbated when investors are not familiar with the risk characteristics of the asset they have purchased an exposure to, and so begin to suffer unexpected losses arising from ratings downgrades and loss of secondary market liquidity.

Political interference

The political and financial worlds have always lived on a difficult footing. During times of economic uncertainty politicians and regulators enforce a stricter supervision regime for banks. Paradoxically there is a tendency for more lax supervision and regulatory standards during a boom period in the cycle. We say paradoxically because it is during a boom that lending standards drop and more banks start chasing higher returns as credit spreads tighten – in other words, precisely the moment when supervision and oversight should be tightened and bank capital reserves boosted. This paradox had severe consequences during 2004-2007.

The main problem is that both sides do not fully understand how each operates. Occasionally this results in ill-conceived legislation being imposed on the banks. The attempted social engineering during the 1990s under the Clinton Administration is one such example, and one which contributed to the US subprime mortgage crisis. One of President Clinton’s priorities during his first term was to increase home ownership, and widen it amongst certain social classes. In principle this was a noble policy measure; in practice the restrictive way it was imposed on US banks caused considerable damage.

Up until that time banks were in general reasonably conservative in their lending approach, restricting loans to potential obligors that could not provide sufficient guarantees from a collateral or employment perspective. When broken down by ethnic category, Hispanics and African-Americans formed a large proportion of borrowers falling into this restricted category. Via anti-racism and discrimination legislation, the Clinton Administration essentially forced banks to start lending to this group. To avoid damaging litigation claims, banks followed the general direction set in legislation. They also securitised much of these subprime loans, for funding and risk transfer purposes.

Fannie Mae and Freddie Mac, the two government-sponsored enterprises (GSEs), were the perfect tools to employ in further expanding this policy measure. These two institutions were encouraged to buy mortgages originated with low- and moderate-income borrowers. This encouragement included quota targets. Again, the GSEs also used securitisation techniques to offload outstanding loans of inferior credit quality; in their case, the implicit government guarantee assisted them as they aggressively expanded their exposure to low-interest-quality mortgages.

The "black-box" model and poor quality loan origination standards

Deterioration in loan-origination standards is a common phenomenon during a bull market. Banks chase yield and this means extending loans to people who may not have met required criteria in an earlier period. While this in itself is a problem, as it extends the risk profile of a bank to assets that will be the first to default as soon as the bull market peters out, it is exacerbated by the black-box model, in which lending officers input parameters to a computer, which them makes the decision for them.

As this can be done over the internet or telephone, there is no need to meet with the customer. The removal of this human interaction increases the risk of originating debts that will turn bad.

The feature of the US sub-prime crisis was products such as “negative-amortising” mortgages, “self-certified” mortgages, the 125% loan-to-value mortgage, and other such products. Done on a large scale, the origination of such assets contributed significantly to the creation of the crisis.

Credit rating agencies

The credit rating agencies (CRAs) are an integral part of finance and hence the banking and shadow banking chain. Without CRAs the whole securitisation wave, and the collateralised debt obligation (CDO) business in particular, could not have risen to the heights they did. Thus they contributed to the build up, although they themselves were not the main cause of the crisis.

The only criticism that one could make of the CRAs was in the assumptions made in their rating models. Chief amongst this, and which was shared by investors and bankers alike, was to assess credit risk on the assumption that house prices could not drop on average on a national level. This had never happened in history and the assumption was made this would not happen in the future either. In effect, the assumption was being made that house prices would always rise. Certainly in hindsight, and even amongst certain commentators at the time, this was an unrealistic and dangerous assumption to make.

Other assumptions in CRA models, concerning default correlation (and the spurious value of “diversity” in a portfolio) and recovery rates on default were also shown to be wide of the mark in practice.

Incompetent management

Greed contributed to some degree to the crisis. The examples are legion. For instance, small Icelandic banks with a very heavily skewed asset-liability gap profile became the major credit providers of retail chains and local authorities in the United Kingdom. Their unsustainable business model brought Iceland to the verge of bankruptcy and rescue by the IMF. A similar example was the consortium of Fortis-Royal Bank of Scotland-Banco Santander that bid for ABN Amro Bank, and a cash offer, in a deal that valued the bank at over €70 billion. For the Belgian bank Fortis and for RBoS this turned out to be an irrational step that resulted in the break-up of Fortis in a Dutch and French government takeover, and virtual nationalisation of RBoS by the UK government. Another example is the aggressive business expansion of UBS AG into the field of structured credit, motivated by a desire to compete with market leaders, that resulted in its balance sheet growing to many multiples of the Swiss national GDP.

Regulation, market response and a new banking paradigm

Following the collapse of Lehman Brothers in September 2008, governments around the world led by the UK administration began taking more interventionist steps to protect the financial system. Initially this took the form of supplying government guarantees for bank liabilities, and in extreme cases outright nationalisation. The G20 summit in London in April 2009 confirmed that governments around the globe would tackle the problem and take measures to prevent a crisis like this happening again.

Markets will need to enter a period of restructuring to take into account the realities of the impact of the crisis. In this section we comment on the likely form of the new order. Bank liquidity is now recognised as being much more important in the banking paradigm than in the past, when banks and shadow banks assumed that they would always be able to roll over short-term funding, and paid little attention to the need to diversify funding sources.

We discuss recent policy responses and also suggest what the new banking business model will be.
Regulation

A call for stronger regulation is unsurprising as an increase in regulation is the logical consequence of a crisis. At this moment there is only the intention to impose more regulation upon the financial industry but its exact form is not as yet finalised. The most efficient approach would be for the US and EU to coordinate policies, otherwise banks will concentrate operations in the jurisdiction with the least restrictive regime.

Ideally regulation should not be used to punish banks or to impose rules such that they can no longer function efficiently. This will jeopardise the free market principles under which the global economy has benefited. Rather, the focus should be on ensuring that banks do not take excessive risks.

In the first instance the market needs to avoid the build up of another Shadow Banking system. Going forward, we can expect that any institution that takes leveraged positions in financial instruments will be placed under the supervision of the national regulator. In essence any firm or legal entity that acts like a bank or acts as a conduit for a bank will be subject to the regulatory regime.

The Basel II rules, which govern bank regulatory capital and more specifically how much capital must be put aside depending on the type of financial instruments used and the risks they represent, in themselves will not prevent the rise of Shadow Banking activities. Therefore it is key to incorporate a regime that regulates effectively commercial and retail banks in their use of complex structured credit products to manage their ALM books. Banks should not have to turn to their government as a LoLR because they misguidedly speculated with deposit money.

In this respect stricter rules on liquidity management should be imposed as well. During the bull market many banks became too dependent on wholesale funding as a substitute for a healthy deposit base. This made them extremely vulnerable to liquidity shocks, and the government had to intervene as a LoLR. Regulatory limits must be placed on the following:

- the ALM gap ratio;
- the minimum average tenor of funds;
- the percentage of funds in short-tenor maturities;
- the share of funds from one sector or source;
- the loan-to-deposit ratio;
- the liquidity ratio.

Regards bank lending practices, regulators must enforce minimum acceptable origination standards. For instance rules must be set on minimum loan-to-value ratios in retail mortgage lending. This by itself would be an impediment to the potential build up of a real estate bubble. In Germany banks have always been reasonably conservative in their mortgage lending, which explains why their real estate market did not reach the astronomical levels observed in Spain, Ireland or the UK. A 25% deposit ratio would be a healthy indicator.

Government subsidies for the mortgage market – in the form of tax relief on interest payments – must be removed to avoid further market distortions. If a government still wishes to pursue a social housing policy then it needs to cover the remainder of the credit risk so that banks are not pushed in to high-risk lending.

Regulation of hedge funds

In theory if regulation is strict enough such that banks cannot take excessive risks onto their books then there is actually no need to regulate the hedge fund industry. The main justification for this liberal view is that hedge funds do not have recourse to the government as a LoLR in the event of insolvency.

There is a strong argument that Long Term Capital Management ignited a financial crisis in 1998 because of the build up of concentration risk. Ideally however regulators would have discharged their responsibilities properly, and banks such as UBS at the time would never have been allowed to build up such substantial positions with one hedge fund in any case. Apart from not having the safety net of a LoLR, hedge funds will immediately be punished by their clients if they do not show positive performance. Performance is the one and only parameter that they are being assessed from not having the safety net of a LoLR, hedge funds will immediately and banks such as UBS at the time would never have been allowed to

In the current environment it is to be expected that hedge funds should be regulated, as they are part of the financial system. Regulation would also prevent them from imposing draconian withdrawal rules on investors when they are hit with losses. Regulation does not mean that hedge funds have to be subject to the same restrictions as regulated mutual funds on their use of leverage, derivatives, and short-selling. But as large-volume players dealing with commercial banks, and funded by commercial banks, the true implementation of a “know-your-risk” risk management culture requires that they be placed under regulatory supervision.

Preventing boom-and-bust cycles

This will be the most challenging objective if not almost impossible to achieve as boom-and-bust cycles are inherent in a free-market capitalist system. Attempts to at least smooth out the cycles should be focussed on the models central banks are using, as these contribute to a large extent to crises by causing an overshoot in monetary policy. Most importantly central banks should incorporate the development of asset prices in their model to detect the build up of bubbles. Certainly the view of Alan Greenspan, of only dealing with the fallout of a bubble, should be abandoned. On the contrary, central banks should act pro-actively against these developments.

Banks and regulators, recognising that a business cycle is an inherent part of the economic system, need to implement “counter-cyclical” capital and supervision regimes. We discuss this issue below.

Asian and oil-exporting countries

There is no doubt that globalisation and the break-up of trade barriers contributed to a previously unseen period of prosperity over the last twenty years. However, currency manipulation of the exporting countries, and China in particular, contributed to a mounting global imbalance. The excessive savings from China and other exporting countries have funded the US consumer’s deficit spending on a large scale via the purchase of US Treasury securities. This pushed down yields in the developed world, which reduced credit spreads, created a desperate hunger for yield and contributed to excessive risk taking.

In 2005, then-Fed Governor Ben Bernanke mentioned the term “global savings glut” to explain why countries such as the US, France, Australia and UK had seen rising current account deficits. He noted that these countries witnessed significant housing appreciation, while other developing countries - such as Germany and Japan - did not. This issue still has not been addressed and should be on top of the agenda of a G20 summit.

The existing model of “export-and-save” of the exporting countries has hitherto been balanced by the “borrow-and-spend” of the US, UK and other Western countries. As the latter deleverages and reduces its demand, this will need to be balanced on the other side. Emerging markets must be incentivised to stimulate internal demand and make their economies less dependent on export.

Conclusions and recommendations

The financial crash of 2007-2008 was the result of the interaction of several different factors, some of which had been building for many years. While market corrections and crashes are nothing new, indeed they are an inherent part of the capitalist system, it behoves governments, regulators and market participants to take the appropriate steps in response to ensure that the impact of the next correction is minimised.

It is not universally agreed that one result of the financial crisis has been to generate a paradigm shift in the way the banking business model is structured. Only time will tell whether it has. However there is no doubt that banks will need to modify their strategies and structures in response to the events of 2007-2008.

In the first instance, banks and regulators, recognising that a business cycle is an inherent part of the economic system, need to implement “counter-cyclical” capital and supervision regimes. In other words, capital should be built up during a bull market to, when it is easier to raise, to counter for the impact of a bear market. One approach here would be to raise “contingent capital”, for example debt that can be converted to equity when required. A trigger could be when the equity value falls to a specified point. Regulators must also stress supervisory oversight even during a bull market, when it tends to be relaxed.
Banks must look to running a strategy that is sustainable over the business cycle. This will mean lower return on capital targets, which shareholders will need to accept. A long-run average of 10%-12% is more realistic than the recent 18%-22% that was targeted by the large banks.

The liquidity crisis that arose in 2007 and again in 2008 post-Lehmanns means that banks will need to manage liquidity risk much more closely. Other measures that need to be implemented include:

- the leverage ratio: a limit may be imposed by regulators in any case, but bank Boards should be wary of running up leverage ratios that approach 30 or 40 times the capital base. This is simply unsustainable once the market turns and affects investor confidence;
- liquidity risk management: liquidity is the "water of life" in banking. Again this area may well be subject to regulatory limits but banks must approach liquidity risk with greater rigour. This will involve (i) a more diversified funding base, with no more than 10% of funds from one source (ii) a longer average tenor of liabilities, to reduce the asset-liability gap and (iii) a liquidity reserve of instantly-convertible assets;
- lending policies: a review of origination standards so that they are no longer cyclical and remain robust throughout the business cycle;
- know your risk: this also means know one's counterparty risk. However it also implies a return to a bank's core business.

The final issue concerns the "too big to fail" bank. A bank that is relying on the LoLR cannot be allowed to effectively hold a country hostage to its own fortune. To prevent any significant future impact, governments should seek to limit the size of banks whose balance sheet value begins to approach the GDP of its home country. While this is against the culture of free markets, it is important nevertheless because it recognises that banks are part of society: as such they must not be allowed to endanger the well-being of society, which is what happens when they fail. A bank that is bigger than its own country is too much of a risk to society, which is why, if a bank becomes too big to fail, a government should make it smaller.

1. Often the back-up liquidity line from the parent bank or a 3rd party bank was a requirement of the credit rating agency, in order to obtain the investment-grade rating.
3. Alan Greenspan speech on 19th Dec 2002, Economic Club of New York: "Asset bubbles cannot be detected and monetary policy ought not to be in any case used to offset them. The collapse of bubbles can be detected, however, and monetary policy ought to be used to offset the fallout."
4. This occurred in the Northern Rock case where deposit holders made the correct assessment that the Bank of England would bail out the bank if the credit portfolio created substantial losses. Due to the more aggressive credit portfolio of Northern Rock, the bank was able to pay out a higher rate on their clients' deposit accounts.
5. Source: Comptroller of the Currency (OCC), Third Quarter 2008
7. Of course both Fortis and RBS also had large quantities of other poor-quality assets on their balance sheet, but the ABN Amro takeover is now seen for the macho top-of-the-market hubris transaction that it undoubtedly was.
8. This was the experience of Northern Rock and Bradford & Bingley in the United Kingdom.
9. Note that the United Kingdom had removed such subsidies some years earlier – but this in itself did not prevent the rise of a real-estate bubble.
10. Speech by Ben Bernanke at the Homer Jones Lecture, The Global Saving Glut and the US current account deficit, March 2005, St Louis, Missouri, USA