Where did all the money go? An analysis of the causes and cure of the current global banking crisis

A major cause of the current global financial crisis has been maturity mismatch – too much short-term borrowing in order to finance long-term bank loans. There were serious fundamental problems as well: rapid credit growth and a deterioration in standards of loan assessment, resulting in banks holding many low-quality assets. But these fundamental problems do not explain the depth of the current crisis, which has been greatly amplified by investor panic and withdrawal of these short-term funds.

This chapter is an overview of this argument. Banks have relied on mortgage and other loan-backed securities to finance their loan portfolios, either by selling these securities outright or using them as collateral for short-term borrowing. Other banks have acted as wholesale intermediaries, purchasing the new instruments for trading or investment and financing these holdings using short-term borrowing. Relatively few of these securities were sold to long-term investors.

This short-term wholesale borrowing successfully underpinned the credit boom, until rising losses on US sub-prime lending undermined confidence in the mortgage-backed and other structured securities that were used as collateral for this borrowing. Now banks can no longer ‘rent’ the money they need to lend. Their access to wholesale funding has declined further as the value of the structured credit instruments on bank balance sheets have collapsed, further undermining investor confidence in banks.

Central bank liquidity provision has not solved this problem. Commercial banks have substantially increased their borrowing from central banks, as a substitute for borrowing from money markets or simply to increase their reserves with the central bank, but loans from central banks are strictly rationed through regular auctions (banks cannot invite the central bank to make offers of funds in the same way that they invite money-market participants to offer funds). The result is that bank balance sheets are now extremely liquid (central bank lending means that they have ample reserves available to meet payments obligations), but their access to funding remains limited because of the illiquidity of structured credit markets. This has started a snowball of reduced credit, declining economic activity and worsening prospects for returns on lending. As a result, despite falling interest rates and the extensive financial support of governments and central banks around the world, banks have been reducing their lending as much as possible.

This is not the usual explanation of the crisis. The commonly held interpretation is that the contraction of bank lending is a reaction to a previous unsustainable credit boom, to excessive indebtedness and to the resulting poor quality of bank assets. Yes, there was too much lending and much of it was poorly assessed. But this needs to be put in a proper perspective. Provided we avoid a new great depression, most bank borrowers can service their loans. Even if we do experience an economic slump of that magnitude, the majority of the mortgage-backed securities and other new credit instruments are not at great risk of default. Their valuations have fallen because of problems of funding and illiquidity, not underlying credit losses, because of investor panic, not fundamentals. The collapse of these valuations and the resulting withdrawal of funding is a central part of the credit contraction.

This is good news for policymakers. It is very much easier for them to stem a panic than it is to deal with underlying fundamental credit impairment. To the extent that the problems of the banks are due to lack of trust, confidence and funding, they can be addressed by focusing government and central bank policy on supporting good-quality but undervalued bank assets. This is not the same as the suggestion made by many commentators of financing a ‘bad bank’ to take all the poor-quality assets off bank balance sheets. Purchasing bad assets exposes taxpayers to substantial risk and it is very difficult to work out an appropriate price. Much better first to restore bank balance sheets by supporting good-quality but undervalued assets, because this earns a profit instead of being a burden on taxpayers.

There are several ways of doing this. Central banks can directly purchase senior tranches of structured securities (as Chapter 4 explains, the AAA senior tranches of most of these securities even now are very safe from default). Government can provide insurance against extreme losses, either on loan-backed securities or on loan portfolios. Such support not only directly supports bank balance sheets, it also helps to restore liquidity to the markets for senior structured credit securities, which will in turn reopen bank funding markets.
Purchase and insurance of good-quality assets will not be enough on its own. There was also a lot of poor-quality lending, and the balance sheets of some banks, those that have made the worst lending decisions, are in such a poor state that taxpayers will have to bail them out in order to prevent their collapse. But, provided all banks are given liquidity and funding support, the overall costs to taxpayers will not be large and a major depression will be averted. The key lesson to learn from the crisis is something we should already have been aware of from the stock market crash of 1987, from the Asian crisis and from many other financial panics. Financial markets are inherently unstable, veering from excessive optimism to excessive pessimism. This implies that the more banks rely on short-term wholesale funding, the more protection must be in place to safeguard banks from these excessive changes in market sentiment. Banks have always tended to increase their lending too much in booms and to reduce their lending too much in recessions. Withdrawal of short-term wholesale funding has exaggerated that tendency. Government must replace the lost bank funding in order to avoid an economic collapse, and in future we need either to wean banks off short-term funding or to provide protections that will maintain that funding even when the going gets tough.

**Banks create money by lending**

Banks create money by lending. During the credit boom they lent a great deal and now they are lending less than before. This is why there is now less money for households and companies to spend.

A simple thought experiment illustrates this point. Consider a bank providing a customer with a loan. It does not matter much which bank; this could be Barclays in the United Kingdom, Commerzbank in Germany, BNP Paribas in France, Wells Fargo in the United States or one of many hundreds of other institutions around the world, both large and small.

Suppose, for example, that BNP Paribas is making a loan of €12,000 for a car purchase to M. Jacques Laurent, a customer in Lyon. Once the loan is approved M. Laurent’s account in the Rue de la République branch is credited with the €12,000. At the same time the bank has acquired a new asset, the €12,000 loan to M. Laurent. By this routine act, approving a loan, BNP Paribas has created an additional €12,000 of money that did not exist before.1

All banks make loans in this way every day. The money may not necessarily appear in the customer’s account as it did for M. Laurent; it might be transferred directly to someone else, for example to a retailer or to the seller of a house. But in every case by making a loan a bank creates money.

Loans are of course also being repaid all the time, reducing the stock of bank money. Customers who have borrowed money make regulator repayments of the outstanding principal. M. Laurent’s €12,000 loan might be repaid over five years, in which case M. Laurent will pay back the principal at an average rate of €200 per month (usually the repayment of the principal is more rapid towards the end of the lending period). Banks therefore need to keep lending to prevent a reduction of money and credit.

**Funding is a key constraint on lending**

One key constraint on bank lending is the prospective return on the loan. In an economic boom, when the prospects for repayment are good, banks are happy to lend money, sometimes even to quite risky borrowers. In a recession banks are much more reluctant to lend, although they may still accept some risk of default if the interest rate on the loan is high enough. What this means is that bankers’ perceptions about the future (or what might also be called confidence or, in Keynes’s phrase, ‘animal spirits’, although he was really thinking about the perceptions of returns on business investment) are a major determinant of the growth of money and credit.

There is also another key constraint on bank lending, one that has been especially important in this crisis. A bank will only offer a loan, such as the five-year loan to M. Laurent, if it is confident that it can also ‘fund’ the loan – that is, keep enough money on deposit in the bank throughout the life of the loan at a cost that justifies making the loan in the first place. Normally, funding is simply a question of cost – banks routinely factor the ‘cost of funding’ into their lending decisions. But in this crisis banks have found themselves in a situation where they cannot be certain about obtaining funding at all.

To get a better understanding of the funding constraint, let’s take this ‘thought experiment’ a little further. Suppose that all the banking in a country were provided by a single monopoly bank (this is not so far from the situation that pertained in the centrally planned economies of the Soviet bloc and communist
China, except that then all the lending decisions were determined by the central plan). In this case the
simultaneous creation of the loan and the deposit is the end of the story. Since there is only a single bank
the money that has been created always remains with the bank. The loan is ‘self-funding’, and the only
limit on this monopoly bank’s willingness to lend is whether it believes the loan offers a high enough
return to justify the risk of credit loss.

This point, that bank lending is ‘self-funding’ remains true at the level of the entire banking
system as a whole, even if many banks compete for deposits. Every loan creates its own deposit and the
deposit must remain somewhere in the banking system. Now, however, individual banks face an
additional constraint on their lending. Not only must their loans offer a high enough return to compensate
for default risk, the individual bank must also be able to attract enough funding in the markets for retail
and wholesale deposits to finance the loan. This funding could be in the form of retail deposits from bank
customers, wholesale money from large institutional investors or ‘interbank’ lending from other banks. If
for any reason customers, investors or other banks are unwilling to provide these funds, the bank will be
unable to fund its lending. Thus when banks compete for funds it is critical for a bank to maintain the
confidence of all those on whom it relies for funding – retail depositors, ‘money market’ investors and
other banks.

What about if banks compete in an open economy, where goods and services are both exported
and purchased from abroad? This does not change matters much; it just means that, at least for countries
that are substantial net borrowers from abroad, the markets for deposits and money involve governments,
banks, and companies from other countries, who end up holding bank deposits or other financial claims
denominated in domestic currency. An example would be, say, a Japanese exporter selling video gaming
consoles in Canada who ends up holding balances of Canadian dollars from the sale of its consoles to
wholesalers around Canada. Once again, for the banking system as a whole all the lending is self-funding.
Loans made to consumers to buy video gaming consoles end up, in part, as non-resident deposits with the
banking sector. But it can be difficult to persuade foreign residents to continuing holding domestic bank
deposits, and so the need to obtain funding imposes a greater discipline on bank loan decisions in
countries where household and corporate savings rates are low and banks raise much of their funding
from foreign residents.

Renting money: how banks have come to depend on short-term wholesale funding

Banks prefer retail funding when they can get it. Retail depositors often complain about banks, but only a
few are prepared to spend much time looking around for better deals. As long as the quality of service is
acceptable, retail customers tend to stick with their existing banks and not investigate whether they might
get a better deal elsewhere. Moreover, retail depositors rarely pay much attention to whether the bank
itself is earning healthy returns on its lending or only just managing to turn a profit. As a result, retail
deposits from established customers – so-called ‘core’ retail deposits – are a relatively inexpensive and
stable source of bank funds.

While existing retail funds are inexpensive, getting in new retail funding is costly and difficult.
Bringing in additional core retail funds requires substantial investment, both in marketing and in the
upgrading of bank channels such as call centres or bank branches and equipment to service the depositors.
As lending has outstripped the supply of deposits in many countries, banks have turned increasingly to
short-term wholesale funding – that is, to renting money from global financial markets.

Banking statistics give some idea of the magnitude of the shift from retail to short-term wholesale
funding. In the United Kingdom the ratio of retail bank deposits to total bank lending fell from just over
100 per cent in 1970 to only 50 per cent by the middle of 2007 – nowadays for every £1 of lending UK
banks ‘rent’ 50p of funding from wholesale financial markets. A similar shift has taken place in most
large developed countries. Retail deposits, as a percentage of total bank lending, fell over the same period
from 102 per cent to 76 per cent in France, from 110 per cent to 61 per cent in Italy and from 136 per cent
to 77 per cent in Australia. Canada also experienced a large decline, from 177 per cent to 112 per cent,
but as this figure for 2007 reveals, their banks still have a relatively large retail deposit base relative to
their total lending.
The increasing reliance of banks on wholesale funding has a macroeconomic dimension. It is the flip side of what are known as the global current-account imbalances, with large amounts of saving in some surplus countries, such as China, Japan and Germany, matching the borrowing in deficit countries such as the United States, the United Kingdom and Spain. Wholesale borrowing by banks plays a key role in channelling this international flow of savings to borrowing households in deficit countries.

Among banks in the largest G8 developed economies, only banks in Japan and in Germany have not experienced a major shift in funding from retail to wholesale sources. The ratios of retail bank deposits to total bank lending in Germany rose from 87 per cent in 1970 to 94 per cent in 2007, and in Japan from 126 per cent to 143 per cent over the same period. It is no coincidence that the three G8 countries whose banks rely least on wholesale funding, Germany, Japan and Canada, are major exporters of manufactured goods or (in the case of Canada) of natural resources. Unlike the other five G8 countries, all three have enjoyed current-account surpluses.

Using loan-backed securities to raise wholesale funding

Wholesale funding is more expensive than retail and increases the risk of banking instability. Wholesale investors lend large sums of money and so will only lend when the interest rate is attractive. Moreover, and for good reason, wholesale funders are sceptical about the ability of bank management to manage their business and avoid major problems. Banks are exposed to many financial, operational and business risks, and they are also, in comparison with other large companies, rather opaque. It is not easy for an outsider to understand their financial statements or to work out exactly how they earn their profits. Serious problems do emerge from time to time, for example the notorious cases of rogue trading perpetrated by Nick Leeson (Barings), John Ruznick (Allied Irish) and Jerome Kerviel (Société Generale). Because of this opaqueness wholesale funding is therefore usually only available for short maturities of up to about three months.

Such short-term wholesale funds are ‘hot money’ that can be withdrawn at the slightest provocation. This is why banks turned to the new structured credit instruments – that is, loans packaged into securities. Banks were effectively using their own loans as collateral for funding. This was rather like a high street shop pledging its own shelf inventory in order to obtain credit.

The analogy is not exact. The banks created pools of loans and bundled them up inside tradable mortgage- or asset-backed securities. The owner of these securities could not seize the bank loans if there was no repayment. What they had instead was a legal claim to the interest and principal payments due on the underlying loan pool. But this still gave the investors some confidence that they would be repaid. This meant that banks could attract and keep wholesale funds by selling or lending these loan-backed securities.

Some mortgage banks such as Countrywide in the United States and Northern Rock in the United Kingdom financed a very high proportion of their lending by selling these loan-backed securities. These are extreme examples, but most banks in countries with high levels of household borrowing also relied on loan-backed securities to obtain the funds for their lending.

Other banks used these securities in a quite different way, as buyers rather than sellers, acquiring large investment portfolios of mortgage-backed and other structured securities. Very often they took a ‘hedge fund’ approach to these investments, financing them using short-term wholesale funds, most often using so-called ‘sale and repurchase agreements’ or repo.

A repo works as follows. The bank that owns a mortgage-backed or other security agrees to sell it on a temporary basis to a ‘hot money’ investor, with an ironclad legal agreement to buy it back at a slightly higher price, say two weeks or one month later. This is, of course, equivalent to borrowing the money for two weeks or one month on a short-term secured basis. Such repo borrowing is now by far and away the most important form of short-term finance in modern financial markets. Banks, erroneously, assumed that repo finance collateralized against mortgage-backed securities would always be available. That proved not to be the case when investors lost confidence in these securities.

Another response to the shortage of bank retail funding has been to bypass altogether the role of banks in holding and funding loans, again using structured credit securities. A pool of loans, bought from banks or brokers, is bundled within a tradable security which can then be sold to banks or investors. This
bypassing of banks has happened to only a small extent with retail loans (US sub-prime mortgage lending has been the main exception), but it has become a very important tool for the funding of corporate credit. Again, most of these securities were purchased by banks and were mostly funded using short-term ‘hot money’.

**Borrowing short and lending long**

This practice, of borrowing short-term wholesale funds to finance portfolios of mortgage-backed and other structured securities, created substantial maturity mismatch. Banks were pursuing a very old banking stratagem, using relatively low-cost but unstable short-term borrowing to hold what turned out to be illiquid long-term securities. They thought they were safe. There appeared to be liquid markets in which these instruments could be bought and sold. As long as the long-term assets were liquid, short-term repo borrowing would always be available to finance them.

Banks and regulators alike failed to recognize the fallacy of composition on which this funding strategy rested. What was safe for an individual bank – borrowing short to hold long-term safe senior marketable structured credit securities – was far from safe for the banking sector as a whole. The ability of one bank to sell always depends on the presence of other banks willing to buy.

This then set in train the crisis that followed, a crisis characterized by what engineers call a ‘positive feedback loop’, when an initial disturbance has an effect which then feeds back, reinforcing the initial disturbance.

Figure 1.1 illustrates the damaging positive feedback that has undermined the world’s banking system. In this figure there are in fact two positive feedback loops, each reinforcing the other. The first positive feedback loop, on the left-hand side of the figure, is between the volume of lending and the levels of consumer expenditure and corporate investment. Lower lending leads to less consumer expenditure and corporate investment – that is, a recession. The recession increases credit impairment (the banker’s shorthand for arrears on payments of loan interest and principal). Rising credit impairment makes bankers more concerned about the risk of default and so less willing to make loans. So bankers reduce lending further, deepening the recession.

The second positive feedback loop is within wholesale funding markets. Rising credit impairment leads to write-downs of the values of mortgage and other loan-backed securities. This write-down of value leads to a withdrawal of short-term repo funding. The withdrawal of repo funding leads to a collapse of trading, with no buyers and no sellers. The collapse of trading volumes leads to further write-downs in the values of the securities and further withdrawal of repo funding. The withdrawal of repo funding leads to a reduction of bank lending. The presence of this second feedback loop is what has made this banking crisis so different from previous crises.

The presence of this second positive feedback loop in bank wholesale funding markets has substantially increased bank write-downs. The initial disturbance was increasing credit impairment (arrears) on US sub-prime mortgage lending. Because of the positive feedback loop in wholesale funding markets and the consequent withdrawal of short-term funding, the value of mortgage-backed securities fell by much more than could be justified by the credit impairment. The increasing illiquidity of the markets for mortgage-backed and other structured securities meant that no one had much idea what the market value of these securities was, and accountancy procedures for ‘marking to market’ turned instead to using extremely conservative hypothetical valuations (‘if you were to observe a trade of this security today, then what price might it trade at?’). Valuations fell markedly and investors suffered very large ‘liquidity losses’. Eventually these losses will be recovered, since the valuations of most of these securities have fallen far below even the most pessimistic assessment of eventual repayment from the underlying loan pools. But banks will have to wait a long time for recovery, and in the meantime they have suffered much larger ‘mark to market’ write-downs on US sub-prime mortgage and other loan-backed securities than they ever thought possible.
This wholesale funding loop explains the global nature of the crisis, why the financial crisis and economic downturn is affecting banks in virtually all countries around the world at the same time. Many banks, notably in Germany, invested surplus retail funds in the high-yielding US mortgage-backed securities and the other structured credit products whose value has collapsed because of withdrawal of wholesale funding. Many other banks around the world relied on the issue of mortgage-backed and other loan-backed securities, in order to expand their lending and make up for a shortage of retail funding. Once the markets for these new issues closed, these banks with insufficient retail funds could no longer finance their lending.

This in turn created the global ‘credit crunch’, with banks unable to raise sufficient funding reducing lending, even to many good-quality borrowers who would normally face no difficulty in obtaining bank loans. These problems continued to mount in 2007 and 2008, causing ‘runs’ on banks as doubts about their ability to raise funding increased. At first this was limited to a few institutions. Then, in September and October 2008, as the macroeconomic situation deteriorated, investors began to worry about the possibility that many banks would become insolvent and the run spread to the entire global...
banking system. By late 2008 the only place from which many banks could borrow wholesale funds was their central bank.

**There are other feedback loops**

Figure 1.1, deliberately for the sake of clarity, oversimplifies. There are several other important feedback loops in bank lending, feedbacks referred to collectively as the ‘credit cycle’:

1. Lenders interpret low levels of loan default as an indication that their lending is low-risk, when in fact low defaults are due to the economic expansion and the general availability of credit, making it easier for borrowers to pay interest and also to refinance their lending and so stay current on their loans. As credit expansion and income growth slow, defaults rise, and lenders suddenly realize that their lending is much riskier than they had believed. They thus begin to withdraw credit, refusing or limiting the amount of lending they provide to risky borrowers. This withdrawal of credit then amplifies the initial economic downturn. This is the first positive feedback loop, on the left of Figure 1.1.

2. This basic credit cycle was magnified by a weakening of controls and bank governance during the credit boom. Unscrupulous credit practices – for example offering loans to some US sub-prime mortgage borrowers who were clearly only able to repay this borrowing from capital gains on house price appreciation – became common. The credit cycle was also exaggerated by weaknesses of governance in some institutions, with senior management pursuing growth of earnings and stock valuations without proper regard for risk exposure.

3. A severe shortage of bank capital has amplified the credit cycle downswing. Capital is the difference between the value of bank assets and liabilities. It is the main protection against the threat of insolvency. In the downturn losses mount, reducing bank capital, and a substantial decline in bank capital can force banks to reduce their lending further. This is partly because of bank regulations. Banks are required to have certain minimum levels of capital to support their lending. It is also because banks with low capital are at greater risk of insolvency and struggle to raise funds. This aspect of the credit cycle has been further exaggerated this time by the ‘pro-cyclicality’ of regulatory capital requirements, with the new Basel II measures of required regulatory capital increasing sharply as asset quality deteriorates during the credit downturn, and by the excess leverage of many banks in the upswing, especially investment banks that had come to supply a great deal of the new credit.

4. Yet further amplification of the credit cycle has come from the rise and then subsequent fall in prices of land and housing and financial assets. During the boom high-risk borrowers obtained credit against the expectation that prices would continue to rise further. As prices fall this supply of credit vanishes. Furthermore, asset price falls reduce the value of collateral that borrowers can pledge against their lending, so further reducing the supply and increasing the cost of credit.

5. Similarly, household incomes and corporate revenues rose during the economic upswing, making it easier for them to borrow money, but are now falling during the economic downturn, restricting their access to credit (a mechanism that economists refer to as the ‘financial accelerator’).

6. There is another, more technical, aspect of the credit cycle. Banks, regulators and rating agencies have increasingly been relying on quantitative models to assess their exposure to credit risk. These models are still in their infancy, and, compared with the risks of foreign exchange, government bonds, and equities, there are relatively short runs of data on which these models can be tested. Regrettably, most of these models shared a common weakness. In the data they have used there are relatively few loan defaults and low levels of loan losses, leading the modellers to assume mistakenly that it was very unlikely that many borrowers would default at the same time. The models failed to recognize that in a deep recession such as we are now experiencing, the rate of loan defaults and loan losses can rise sharply, resulting in much bigger losses than these models predict.
These factors have all played a role in the current crisis. The purpose of Figure 1.1 is to highlight a distinguishing feature of the current crisis: the much increased reliance of banks on wholesale funding. This has magnified the other feedbacks and resulted in a much more amplified credit cycle than usual. Banks face funding difficulties in every credit downturn, but the funding difficulties in this credit downturn have been much more severe than in the past.

**Dealing with the aftermath of a credit cycle**

How should policymakers deal with a credit cycle? It is best if financial regulation and monetary policy restrain unsustainable credit growth, so avoiding the possibility of a severe credit contraction. But it is never easy to determine, at the time, whether credit growth is unsustainable or not.

Many have accused the US Federal Reserve, under its then chairman Alan Greenspan, of having encouraged an unsustainable credit boom in the years 2002–7, when interest rates were kept at very low levels following the puncturing of the ‘dot-com’ stock market boom in 2000, the emergence of the accounting scandals at Enron, Worldcom and other giant firms and the 9/11 terrorist attacks on the United States in 2001. With the benefit of hindsight we can see that this policy did reignite another unsustainable asset price bubble, this time in US housing markets, but there was no obvious reason to expect as sharp a credit contraction as we have now experienced.

Financial authorities around the world have acquired considerable experience in dealing with the aftermath of such credit booms (Chapter 3 looks at some of these episodes). Not every credit cycle leads to widespread bank failure. Often credit booms and the subsequent bust are small enough to be dealt with by banks on their own without extensive intervention by the financial authorities. An example is the pronounced UK credit and house price boom in the late 1980s, followed by a sharp contraction in lending and rising bank loan losses in the early 1990s. A number of UK banks, notably Barclays, lost money, mainly on small business and property lending. But the only bank failures were a few, relatively small specialized institutions that relied on relatively expensive wholesale funding.

Sometimes, however, the financial authorities must intervene in the aftermath of a credit crisis, in order to prevent the failure of banks with substantial retail deposits or an important role in the provision of business credit. As Chapter 3 describes, the financial authorities in Sweden, Norway, Finland and Japan faced just this challenge in the aftermath of their own pronounced credit booms of the late 1980s. The usually accepted blueprint for dealing with such episodes, where bank assets turn out to be of low economic value, is a combination of transfer of the poor-quality assets such as non-performing loans into a ‘bad bank’ accompanied by a recapitalization of those banks that are close to insolvency. The transfer of assets into a bad bank provides time and opportunity to recover as much value as possible from the impaired loans. New capital for recapitalizing banks might sometimes be obtained from private sources, but more often it takes the form of government funds. Once bank balance sheets are repaired then the banks can return to their normal business of lending and taking deposits.

This sounds straightforward, but it is far from being the medicine that cures all banking crises. The key practical problem is valuing the loans or other assets transferred into the proposed bad bank. Shareholder rights must be respected. If a bank remains under private control then its bad assets must be purchased voluntarily (or if there is compulsory purchase then shareholders must be compensated for the difference between the amount paid for the assets and their fair market value).

Ironically, the transfer of assets to such a bad bank is very much easier in the extreme situation when many banks have entirely failed and have to be taken into public ownership in order to continue as going concerns. Shareholder claims are then worthless and, since the government inevitably ends up protecting retail depositors and compensating wholesale creditors generously in order to maintain confidence in the banking system, the taxpayer is the only remaining claimant on the bad assets. Provided that government solvency is not in doubt, valuation of the bad assets is then irrelevant. The taxpayer can wait for recovery of whatever money can be obtained from the bad loans without needing to know a current market value.

**This credit cycle is different**

An important difference today from most previous banking crises, for example those in Scandinavia, is that this credit crisis has taken place at the very peak of the business cycle, resulting in a rapid shift from
credit expansion to credit contraction – that is, the banking crisis has triggered the downturn rather than the downturn triggering the banking crisis. In the Scandinavian crises it was the other way around. External trade shocks and a slowdown of the previous economic boom led to falling output and rising unemployment. Only later did these problems result in high levels of losses on bank loans. By the time the governments of Finland, Norway and Sweden intervened to protect their banking systems, their economies were already beginning to recover, boosted by substantial exchange-rate depreciations.

The current credit contraction has also been surprisingly severe, relative to the size of the preceding credit expansion. This can be explained by the withdrawal of ‘hot money’ – the investor panic underlying the wholesale funding loop shown on the right-hand side of Figure 1.1. This mechanism was more powerful than in most previous credit contractions (although, as Chapter 3 explains, a similar run of ‘hot money’ greatly exaggerated the Asian banking crisis of 1997).

The wholesale funding feedback loop on the right-hand side of the figure also helps to explain why the credit downturn has been more global than any before (banks in almost every country of the globe were exposed to mortgage-backed securities and other structured instruments, as investors, as issuers or often as both).

The global nature of the crisis also made the traditional credit impairment feedback loop on the left-hand side of Figure 1.1 more powerful than usual. When this feedback loop operates in a single region or country it is relatively benign. Bank lending and economic activity in other regions or countries maintains economic activity and loan quality. A single country or region can also always devalue its exchange rate in order to offset a slowdown in domestic demand. When, as now, this feedback loop operates globally, the stabilizing impact of expenditure from other regions and countries is removed and exchange-rate depreciation does not offset a global credit slump.

Because this credit cycle is different, the Scandinavian blueprint – recognition of bad loans and recapitalization – is unlikely to end the banking problems, even if the thorny problems of valuing the bad assets of banks can be overcome. The reason is that the value of bank assets will continue falling until we reach the bottom of the downturn, and that is still many months, if not years, away. Thus without a crystal ball no one can say how much banks are going to lose, and there is no way to decide what to pay for bank assets or how much recapitalization they might need.

This time the problem is the scale of future losses, not the extent of past losses. This suggests that policy must focus on potential future losses rather than already crystallized past losses, and this would seem to requires an insurance approach, capping the amount that banks can lose, not providing upfront capitalization.

**The problem is lack of trust and confidence, not the new loan-backed securities**

Much of the blame for the crisis has been put on the new credit instruments, including the mortgage-backed and other loan-backed securities. These are often described by the rather unhelpful and indiscriminate label ‘toxic assets’, because the unexpected declines in their mark to market valuations have undermined bank balance sheets.

A lot did go wrong with these new products. Banks did not understand them as well as they should have. Some of the restructured credit securities were overly complex and seem to have been created purely for the purpose of confusing traders and investors. If so, they were only too successful. Much of the losses reported by the large banks UBS and Merrill Lynch arose because they held large portfolios of these especially risky ‘restructured’ instruments, originally rated as AAA but which turned out to be unsound.

Structured financial innovations were also used to increase leverage for traders and hedge funds. Traders always want the greatest possible exposure to the upside. Such leverage increases returns when the economy is doing well and maximum leverage is therefore usually seen as a good thing. But this leverage also exacerbates losses when trading positions lose money. Leverage of this kind was the business justification for the various ‘transaction deals’ described later in Chapter 5.

Does this mean that all the new credit instruments are all unsound? Not at all. As Chapters 4 and 5 document, most structured securities are safe.
It is often asserted that structured credit products lack transparency. This is not correct either. This view confuses transparency and illiquidity. Structured credit is now very hard either to buy or sell (illiquidity). But most structures are simple and well documented (transparency). There is a wealth of information – on these securities and the performance of the underlying loan pools and credit obligations – for anyone who has access to a Bloomberg screen or similar information service.

Some suggest that the problems of structured credit are due to the failures of ratings agencies, which were paid by issuers for providing ratings and were as a result biased or even corrupted. This accusation does not square well with the facts either. In fact many ratings of structured credit securities stand up fairly well to close scrutiny. Even more than two years after the beginning of the US housing market downturn, there has been little credit impairment on the large majority of the rated structured paper measured by dollar value, the highest grade senior AAA paper issued by the more ‘vanilla’, that is, less complex, structures. Most of this structured paper is still very far from default. As chapters 4 and 5 explain, this is because the safe senior paper has a massive amount of credit protection. Even if as much as 20 or 25 per cent of principal on the underlying loan pool is lost, the senior AAA paper is still fully repaid.

The rating agencies did make serious rating errors on more complex restructured securities and on the lower-grade paper of the vanilla structures. Much of this suspect paper has been subject to substantial downward re-ratings. But this paper accounts for only a small part of the overall market and of overall bank write-downs. The rating agencies also failed to appreciate that their rating methodology for lower-quality mezzanine and junior tranches of credit structures yielded ratings that were much more likely to be downgraded in a recession than were equivalently rated corporate bonds. This was a mistake rather than a misrepresentation, but investors should have been warned beforehand and the failure to do so has weakened investor faith in all structured credit ratings.

Another misleading assertion is that banks were pursuing a flawed new business model, ‘originate and distribute’, in which they no longer retained exposure to loans packaged and sold to investors. It is suggested that there was a major deterioration in loan underwriting standards during the credit boom because banks no longer had incentives to maintain adequate underwriting standards or properly monitor lenders when they did not retain exposure. It is also suggested that this new business model is flawed, so that banks must return to traditional ‘buy and hold’ banking in which all loans are held on a balance sheet and funded out of retail deposits.

This interpretation, with its implication that the development of the new credit instruments and securitization markets must now be reversed, is difficult to sustain. Chapters 4, 5 and 6 provide detailed discussion and illustration of the way in which banks have used these markets and instruments. In most securitizations banks retained a large part of the risk for themselves, so that they continued to have incentives to maintain loan standards.

It is true that in the ‘transaction deals’ described in Chapter 5 banks did not retain very much risk, but in many of these cases they were buying tradable securitized corporate loans or bond exposure subject to pretty rigorous credit assessment by both banks and rating agencies. There was weakening of underwriting standards in some of these transaction deals, especially those used for financing sub-prime mortgage lending, resulting in the infamous NINJA (no income no job no assets) loans, but this was a relatively small problem in the broader context of the global credit boom.

So, contrary to the widespread impression conveyed by many finance and business journalists, most of the senior AAA structured securities are still extremely safe. Provided we avoid a worldwide economic collapse, almost all this better-quality paper will be fully repaid. That is, in fact, the whole point of structuring: to separate the credit risk and manufacture safe, effectively credit-risk-free securities. The central problem is not with the instruments themselves but with the flawed funding strategy, the maturity mismatch where banks have borrowed in the short term to hold long-term securities, and the resulting exposure of banks to the withdrawal of short-term ‘hot money’. Thus a key step in solving the current problem of the banking system is overcoming the problems of confidence and illiquidity that currently prevent banks using these funding tools and are driving the global contraction of bank lending.
Borrowing and saving in the short and the long run

Is a pronounced credit cycle driven by funding problems really the driver of the banking crisis or are there other explanations? Another cause was the high and unsustainable levels of household borrowing in English-speaking and other current-account-deficit economies. It has been clear for some years that an increase of household savings ratios in these countries was unavoidable. Policymakers could not always rely on lower interest rates stimulating higher consumer expenditure in order to maintain growth of output and incomes.

This is correct, but it is a mistake to conclude, as many do, that we need to have rapid reductions of borrowing and increases of saving to deal with the crisis. This suggestion confuses the immediate short-run response to the crisis with the necessary long-run adjustment. Eventually savings ratios – that is, the proportion of household income that is saved in the form of bank deposits or other financial investments – have to rise substantially in the United States, the United Kingdom and other countries, perhaps by about 6 per cent of total household incomes. But household savings ratios do not have to rise by 6 per cent in a single year, and the adjustment does not have to be made entirely through lower consumption; it can also be achieved by increasing incomes.

Rapid reduction of consumption is in any case an ineffective way of increasing household savings ratios. The reason is the ‘paradox of thrift’ highlighted by Keynes in his General Theory of Employment, Interest and Money. If everyone saves more, as many are now doing, then the consequence is a sharp decline in the demand for goods and services and falling incomes and employment. The decline of income may go so far that that the ratio of savings to income, the ‘savings ratio’ actually falls. This paradox of thrift is another example of a ‘fallacy of composition’, rather like the illusion of liquidity in structured credit markets. What is true for an individual household – that saving more will help stabilize their income and borrowing – is not necessarily true for households as a whole. It is in this sense that the work of Keynes remains relevant today. To avoid a collapse of output and incomes we need, in the short term, more rather than less expenditure. This will provide the time for adjustment to higher expenditure in the surplus countries and higher saving in the deficit countries and for the damaging feedback loops in the banking system to be controlled.

Fiscal stimulus: an appropriate temporary response

The US and other governments are now turning to fiscal stimulus, reducing taxes and increasing government spending, in order to combat the global recession. This is an appropriate temporary response to large-scale falls in consumer and other private spending. Fiscal policy already responds to such spending declines through so called ‘automatic stabilizers’, the increased government borrowing that occurs when falls of spending and employment result in lower tax receipts and higher expenditure on social security. This increased government expenditure and reduction of taxes help to protect private-sector incomes from the decline of private expenditure. Additional discretionary fiscal stimulus packages, with further tax cuts or government spending increases, may be useful to further offset declining private expenditure.

Measures to reduce the rate of foreclosures can slow down the rate of house price falls. Now, when there is substantial overcapacity in the construction industry, is an opportunity for programmes of public ally financed social housing construction. The taxpayer will get much better value for money than at times when there is no spare capacity.

But fiscal stimulus is not a panacea. Governments, just like households finances, cannot borrow on a large scale indefinitely (as economists say, they are subject to long-run balance sheet constraints). A fiscal stimulus, whether automatic or discretionary, has only a temporary impact on expenditure and incomes, an impact that is subsequently reversed when, as must eventually happen, taxes are raised or temporary programmes of government expenditure ended. There are some permanent government expenditure programmes that are different – for example, spending on infrastructure or on education that has a large positive impact on future output and income and so largely pays for itself. Such programmes can be sustained for a long time, but these types of expenditure cannot be easily used to counter a temporary economic downturn; they take a great deal of time to get right and if they are worth doing at all then they should be taking place already.
Since the impact of a fiscal stimulus is temporary it is not, on its own, a sufficient policy response to a severe economic downturn. An analogy is often made between the impact of a fiscal stimulus on an economy and the effect of passengers getting out and pushing a car with a flat battery in order to start the engine. A number of politicians, including the incoming US president Barack Obama, have described the purpose of a fiscal stimulus to ‘jump-start’ the economy. But such a jump-start is only effective if the increased spending created by the fiscal stimulus is self-sustaining and continues once the original stimulus is withdrawn. So a fiscal stimulus must be followed up by further policy measures to fix banks and credit markets and so ensure that there is long-term sustainable growth of output and expenditure.

**Restoring faith in banks and restarting bank lending**
What has led the recent global economic boom to change so rapidly into global economic bust? This question is central. Politicians and journalists, just like bankers and investors, are affected by the herd instinct. Now, in the face of a big shock – the biggest economic shock of our lifetimes – they are all running in the same direction at the same time. Without pausing to consider the facts carefully, they assert that the global economic boom was a pure credit bubble, an unwise and unsustainable extension of mortgage and consumer credit by a grossly mismanaged banking system interested only in short-term profit. Yes, many loans will not be repaid, but this does not mean that all the new credit instruments were unsound, that all the lending was unwise and that all the debt must now be unwound. On the contrary government must now do all that it can to maintain credit availability, through purchase and insurance of undervalued assets and generous bank recapitalization.

There is also a great deal of understandable anger about high bank salaries and bank bonuses. There are really two separate issues here, although they are often confused. One is a concern that bank compensation packages have offered too great a reward for high returns without any offsetting penalty for poor returns, thus encouraging traders, loan officers and senior executives to take unnecessary risks. The other issue is more atavistic; jealousy of high levels of remuneration and anger that such highly paid people should have led the world economy into such a severe economic downturn. This jealousy is creating an extraordinarily damaging political dynamic, with politicians of all stripes opposing the provision of financial support to the banking system essential for limiting the scale of the economic downturn.

Shareholders and regulators have been aware of the incentive problems in bank payment and bonus packages for years. They arise not just in credit trading but in equities, corporate finance, retail savings products and all other areas of bank activities. Thus there were already steps being taken, even before the crisis, to ensure that bonuses were deferred or paid in the form of stock with restrictions on sale. If there is an underlying incentive problem that has not yet been adequately addressed it is in the asset management industry, where compensation depends entirely on short-term portfolio performance. The consequence is excessive focus on quarterly earnings, which are most easily increased in a rising market simply by increasing leverage.

The overall level of banking salaries and bonuses is a sensitive issue, and the industry has done little to respond to public concern. But it must be recognized that, while concern about bankers’ remuneration is understandable and legitimate, it is a longer-term issue that is best considered carefully and at length once we have recovered from the crisis.

We must all hope that politicians and policymakers will come round to a more constructive answer than simply attacking the banks. There was nothing fundamentally wrong with most of the new credit instruments and, while there were many errors of credit assessment, much of the lending during the boom was sound. Many previous episodes of financial instability – the stock market crash of 1987, the Asian crisis of 1997, the collapse of LTCM in 1998 – illustrate the excessive overreaction of short-term ‘hot money’ to bad news. A similar market overreaction is behind the current economic downturn. Banks relied on unstable short-term wholesale money to finance their holdings of the new credit instruments, ‘hot money’ which is no longer available because of the fear of extreme loss. The consequence has been a collapse in confidence, among both investors and banks themselves, in all forms of credit exposure.

What is required in this situation is leadership. In a midst of blind panic, in which no one will put money in many banks (except retail depositors backed by government deposit insurance) and when banks
avoid any lending that appears to be associated with the slightest risk, government must take the lead and provide the long-term money that private investors are too frightened to supply. This is not money thrown away.

This is using the vast potential resources of the state to support good-quality but severely undervalued bank assets, either by outright purchase or insurance guarantees, and where necessary recapitalizing insolvent institutions to prevent a further knock-on impact on customers and financial markets.

One goal must be to break into the feedback loop between the valuation of structured credit products and short-term wholesale funding illustrated in Figure 1.1. This can be done by the government underwriting extreme risks, providing ‘disaster insurance’ on the now illiquid senior tranches of structured credit products. This way, although it will take time, liquidity can be restored to the markets for these securities and the outflow of short-term wholesale funding can be restored.

As the downturn of the credit cycle has intensified, especially the feedback lower lending → credit impairment → lower lending, then banks themselves as well as wholesale investors are becoming increasingly fearful of extreme losses. Banks are becoming unwilling to lend, not because of lack of funding but simply because almost all loans look too risky in such a difficult economic environment. To restart bank lending in this environment it is likely that there will have to be extensive bank recapitalization and disaster insurance will have to be taken further, applied to pools of assets that remain on bank balance sheets as well as to securitized pools of loans, and to new lending as well as to existing loans.

Does this approach not risk the loss of huge sums of taxpayer’s money? No, not as long as the main focus is on guaranteeing only the good assets. There is a possibility of very large ‘hidden’ exposures that are not revealed in bank accounting statements, but because they are hidden if they emerge they will not be covered. For those assets that are insured, most of the risk is still carried by the banks and their shareholders; taxpayer money covers only an extreme loss. But once the situation is stabilized and banks can begin the slow and painful process of rebuilding investor trust, then there will be economic recovery, disaster will be avoided and taxpayers will not have a large bill to pay.

Is this really the correct direction for policymaking – giving money to the bankers of Wall Street who caused the crisis in the first place? Is it not better to spend the money on Main Street instead, so directly helping the victims of the crisis? This sentiment and the desire to punish are perfectly understandable. But this is not the best way to fix our current economic problems. Yes, it was a mistake to finance the structured securities using short-term funding. Mistakes of credit assessment were made. But government cannot take over the job of banks and make all the crucial commercial decisions about who gets credit and who does not. It is time to move on, to make it clear that government stands behind the banks so that they can begin the long and painful process of rebuilding the trust of customers and investors once again.

Further reading
Two recent papers, written for economists but fairly accessible, refer to the same feedbacks as Figure 1.1. One is Marcus Brunnermeier’s superb review of the crisis, ‘Deciphering the liquidity and credit crunch 2007–08’, which he continues to update as the crisis has evolved (the latest version can be found on his homepage, at www.princeton.edu/~markus/). This paper contains many more academic references, including his own influential work with Lasse Pederson.

The other is a recent conference presentation by Rick Mishkin of Columbia University, former Federal Reserve Governor and author of a market-leading money and banking textbook, which also emphasizes the role of these feedbacks and the importance of using monetary policy to offset them: ‘Is monetary policy effective during financial crises?’ (www.aeaweb.org/annual_mtg_papers/2009/author_papers.php?author_ID=6461). Note that my own account of money creation is different from that presented in the textbooks including that of Mishkin, being much closer to the endogenous bank-credit views of Nikki Kaldor.

Another notably prescient account of the crisis is Nouriel Roubini’s written testimony to the House of Representatives Financial Services committee of February 2008, ‘The current US recession and...
the risks of financial crisis’, at www.house.gov/apps/list/hearing/financialsvcs_dem/roubini022608.pdf (Roubini continues to write a great deal about the crisis, but most of his analysis is only for subscribers to his webservice Roubini Global Economics Monitor). Roubini, even though he identifies illiquidity problems as lying at the heart of the crisis, is much more pessimistic than others about the ability of policymakers to deal with these problems of funding and illiquidity.

Professor Phil Davis of Brunel University provides a thorough review of different theories of liquidity and its role in financial crises in his paper ‘Liquidity, financial crises and the lender of last resort – how much of a departure is the sub-prime crisis?’ (www.brunel.ac.uk/9379/efwps/RBApapersemifinal.doc), with copious references to the academic literature. Note that he uses an extremely broad definition of ‘lender of last resort’, using the term to refer to all forms of public provision of credit to financial institutions, not in its original meaning of the central bank providing means of payment to commercial banks.

My own policy recommendations for government-backed insurance against extreme systemic risks have been developed in co-operation with Laurence Kotlikoff of Boston University and Perry Mehrling of Barnard College, Columbia University. A detailed statement is Mehrling and Milne, ‘The government’s responsibility as credit insurer of last resort and how it can be fulfilled’, and can be found on my school web pages, www.cass.city.ac.uk/cbs/activities/bankingcrisis.html. A shorter statement is Kotlikoff–Mehrling–Milne, http://blogs.ft.com/wolfforum/2008/10/recapitalising-the-banks-is-not-enough/#more-227, and see also other postings by Kotlikoff and Mehrling on the Economists’ Forum.

Others have developed closely related policy proposals, notably Luigi Spaventi and Avinash Persaud. Spaventi, now at the University of Rome and formerly Italian Treasury Minister and head of the Italian securities regulator CONSOB, has put down his views in ‘Avoiding disorderly deleveraging’, www.cepr.org/pubs/PolicyInsights/CEPR_Policy_Insight_022.asp. This provides an overview of the crisis similar to that of Brunnermeier and of this book, and then discusses both standard policy responses (monetary policy, recapitalization) and his own proposal for a new ‘Brady plan’ (this was the successful response to the 1980s crisis of banking lending in Latin America, sponsored by US Treasury Secretary Nicholas Brady and described in Chapter 3) to take illiquid assets of bank balance sheets in exchange for treasury securities. This is a very similar idea to Kotlikoff–Mehrling–Milne.


1 This account of money creation, which is essentially the same as that of Kaldor, is radically different from the ‘money multiplier’ described in all the money and banking textbooks, according to which bank money is a multiple of bank reserves. Chapter 9 explains why that textbook description, appropriate to in a world of commodity money standards such as the nineteenth-century gold and silver standards, no longer applies when, as today, money is ‘fiat money’, backed ultimately by the power of the state.

2 I am here assuming a pure floating exchange rate, so that neither government nor the central bank finances these net exports out of foreign-exchange reserves, giving foreign residents foreign currency in exchange for domestic currency.