

Turbulence in credit markets - mortgage financing at home and abroad

Speech by Governor Svein Gjedrem at the annual meeting of the Norwegian Savings Banks Association in Hamar on 11 October 2007.

The text below may differ slightly from the actual presentation. The speech does not contain assessments of the economic situation or the monetary stance.

Financial markets in different countries have become more closely interwoven over the past few years. New participants have appeared and new and more complex products to diversify risk have been introduced — also across national borders. Some of these products were put to the test for the first time during this autumn's turbulence in credit and money markets. Triggered by problems in the subprime mortgage market in the US, the turbulence quickly spread to other parts of the financial markets.

In my remarks today, I will try to describe the driving forces behind these developments and the contagion effects on the Norwegian money and credit markets, with a discussion of the lessons to be drawn.

Turbulence in the financial sector

The US subprime mortgage market has expanded sharply in recent years. These mortgages often have low interest rates at the beginning of the loan term followed by higher interest rates after a period. Subprime mortgages are based on expectations of a rise in house prices. Borrowers can refinance their mortgage when house prices rise and thus maintain their debt-servicing capacity. Alternatively, they can sell their house at a profit.

In 2006, there was a turnaround in the US housing market and the rise in house prices began to slow. This pulled the carpet from under many investments and resulted after a period in rising defaults on mortgages. These developments then triggered widespread turbulence in money and credit markets.

The US mortgage market has gradually developed into a complex structure with a large number of participants. The distance between borrower and investor can be considerable.

The chart shows possible interlinkages in the US subprime market. There is a long chain of intermediaries. On the one side is a borrower who wishes to take out a mortgage in order to buy a house. Between the borrower and the lender is an agent who functions as sales channel. The lender is a financial institution specialising in granting and following up these mortgages. The ABS special purpose vehicle buys the mortgage and packages it with other mortgages. The mortgages are financed by tranching securities. The mezzanine tranches are sold to another special purpose vehicle, which repackages them and issues CDOs. A conduit invests in the senior tranches and obtains its financing by issuing asset-backed commercial paper. The commercial paper is bought by a money market fund, which in turn has received

its capital from savers.

Banks can be involved in all stages of the chain. A bank may have an ownership share in and/or provide credit lines to both the lender and several other types of special purpose vehicles. If problems arise in one of more of the intermediaries, the responsibility easily falls on the bank. US and European banks have also invested in securities issued by special purpose vehicles.

An important part of the process is the packaging of mortgages by special purpose vehicles. The senior tranches have a high rating. The subprime mortgage market has thus gained access to funding from insurance companies and other asset managers that would not otherwise have invested in this market, and credit risk associated with these mortgages has been spread to international financial markets.

Rising defaults on subprime mortgages resulted in a sharp rise in the yield spread between securities backed by this type of loan and US government bonds.

The turmoil quickly spread to other parts of the financial markets.

Uncertainty arose in banks that were directly or indirectly exposed to losses on subprime mortgages. Banks' oversight of their own potential losses was poor. It was also unclear to what extent special purpose vehicles would draw on credit lines. A number of private equity companies had difficulty obtaining financing in bond markets for their leveraged buy-outs. As a result, banks that had guaranteed temporary funding for these companies were left holding these loans for longer than originally planned. For both these reasons, banks did not know how much their balance sheets would grow. This created uncertainty as to their own liquidity requirements.

Banks were also uncertain about the size of potential losses in other banks. Information was not available to indicate which banks were exposed to losses in the US subprime market. In addition, it was difficult to pin down the actual risk associated with subprime-related securities. Banks became highly reluctant to lend to each other, resulting in a marked increase in money market rates.

Several funds began to lose money on securities backed by US mortgages. As a result, customers wanted to redeem their investments. The funds were forced to sell securities in order to meet their customers' demands. Since a number of the securities they held were not easy to trade, the funds were pressured into selling highly rated paper. This led to a fall in prices even for highly rated securities.

Equity prices fell, and bond markets saw a pronounced rise in credit spreads. In spite of high earnings and a low level of defaults, credit spreads have risen for both US and European corporate bonds with a BBB rating. Credit spreads have also increased for US bonds with speculative-grade ratings, i.e. ratings lower than BBB-, even though there are no signs of more widespread problems in these markets. For emerging markets, credit spreads have increased somewhat, but the impact of the turbulence on these markets seems so far to be moderate. Equity markets have also seen a turnaround and in a number of countries have now regained lost ground.

The market for asset-backed commercial paper has been severely affected. The amount of paper outstanding has fallen markedly, and the share of short-maturity paper has increased. This is in part due to the withdrawal of a number of money market funds from this market. Substantial losses in this type of fund would have resulted in customer flight and funds are therefore having to dispose of their investments in markets that are now considered uncertain.

The current turbulence differs from previous periods of turbulence. The impact on equity markets and emerging economies has been limited. This time, we are dealing with a credit and liquidity squeeze at the core of the financial system. This affects many participants, including large banks.

Subprime mortgages account for more than 6 per cent of the total volume of mortgages in the US. However, the problems in this segment are spreading to other housing market segments. The housing supply increases because of the rise in the number of foreclosures, and housing demand declines as it becomes more difficult for new borrowers to obtain a mortgage. This may lead to a further decline in house prices. The resulting wealth effects may have a dampening impact on household consumption.

Banks' accountants and auditors are now working hard to calculate losses and reductions in earnings. In order to limit the macroeconomic effects it is important that banks put this episode behind them as soon as possible. At the same time, we know – not least from the Nordic countries' experience in the 1980s and 1990s – that the situation is demanding when the value of collateral falls. The most realistic scenario is therefore that it will probably take time for the turbulence to abate.

There are important lessons to be learned here. The turbulence has revealed a number of shortcomings, primarily in the markets themselves, but also in the regulatory and supervisory systems.

First, it became apparent that there are serious shortcomings in the banks' originate-and-distribute model. Banks used to retain mortgages on their balance sheets. They had an incentive to assess the credit risk carefully in order to avoid losses. Now it has become common for banks to grant mortgages and then sell them in capital markets, to investors that have traditionally purchased securities, such as pension funds and life insurance companies, but also to special purpose vehicles established for this purpose. The mortgages have thus been removed from the banks' balance sheets, leaving the banks apparently free of credit risk.

The sale of mortgages via the securities market can diversify risk and make the financial system more stable and robust. However, the risk has proved to be considerably more concentrated than participants themselves or supervisory agencies had believed. At the same time as banks sold mortgages to special purpose vehicles, they established credit lines to these same vehicles. When the special purpose vehicles encountered funding difficulties, they had to draw on their credit lines. This put credit risk back on banks' balance sheets.

Second, there were shortcomings in the regulatory system. Through high credit lines to special purpose vehicles, some banks had large exposures to a single counterparty. Banks

may have used a loophole in the old capital adequacy rules, Basel I, where the risk weight for unused credit lines was zero in banks' capital requirements. If national regulations for large exposures were based on Basel I, this may explain why some of the beleaguered German banks had extended credit lines that were many times larger than their capital. Under the new capital adequacy rules, Basel II, banks are required to set aside capital against all of these credit lines.

Third, there were shortcomings in the US subprime mortgage market. A substantial share of these mortgages was sold through agents, such as estate agents and mortgage brokers. The agents' earnings were based on high lending volumes, and they did not have to bear any risk for losses on these mortgages. Adverse incentives are created when the responsibility for credit assessment and the responsibility for bearing risk are separated. As a result, agents have extended loans to many borrowers who do not have the capacity to service these loans.

Fourth, the question has been raised whether the agencies rating the securities issued by special purpose vehicles are independent enough. Growth in these agencies' earnings in recent years has to a large extent derived from rating these securities. Rating is requested and paid for by banks. High ratings result in sales to more investors. Without high ratings, this market would be far less attractive and the agencies would lose some of their earnings. This may have generated incentive problems. In addition, the agencies, which have specialised in the assessment of corporate bonds, may have lacked the expertise to rate mortgage-backed securities.

Fifth, there have been shortcomings in the supervisory system. As mentioned above, some German banks have taken substantial off-balance-sheet risk. In the US, neither agencies nor lending institutions have been subject to federal supervision, and the various lending institutions and brokers have operated under different regulatory and supervisory regimes with varying intensities of enforcement effort [\(1\)](#).

Both supervisory authorities and banks have underestimated liquidity risk. Special purpose vehicles and banks have invested in long-term assets and taken out short-term loans.

The problems in the US mortgage market and the contagion effects in other financial market segments have had negative consequences for many financial institutions and banks. One US bank has gone bankrupt so far. Several US mortgage institutions have had to close or have been bought by other institutions. In Europe, the bank in greatest difficulty has been taken over and more banks are expected to be taken over by other financial institutions in the period ahead.

Financial market turmoil has had a severe impact on the British bank Northern Rock. This bank, with its low deposit-to-loan ratio, was not able to renew its short-term financing in money markets and was forced to turn to the Bank of England for assistance. When the news broke, many customers rushed to the bank to withdraw their savings. The UK had not experienced such panic-driven withdrawals since 1866. The Financial Services Compensation Scheme was not sufficient to calm the bank's customers. Finally, the Chancellor of the Exchequer announced that the government would guarantee all deposits in addition to the cover already available [\(2\)](#). Only then did the long queues outside the bank's branches

disappear. When the worst was over, Northern Rock share prices had fallen by over 70 per cent.

Compared with the UK and other countries, Norway has a generous deposit-guarantee scheme covering deposits up to NOK 2 million per depositor per bank. Norwegian banks are required to be members of the scheme. Branches of foreign banks in Norway are not required to be members of the scheme, but some have chosen to join it.

Just as important as the amount guaranteed under the scheme is how quickly the deposits can be released. This will partly depend on the amount of capital in the guarantee fund. The rapid release of funds also depends on sound procedures for bank data centres and automated systems.

Central banks can respond in a number of ways to combat the kind of turbulence that several countries have now experienced. One response is to supply short-term liquidity, as a number of central banks have done, including Norges Bank.

Another way to respond is to supply liquidity with a longer maturity. Central banks in the euro area, the US and the UK opted for this response, as a number of banks were finding it difficult to obtain loans with somewhat longer maturity on the market.

A third response is to lower the discount rate. Banks that have miscalculated their liquidity requirements can obtain a loan through the discount window facility. Normally, the discount rate has a fixed premium above the key policy rate [\(3\)](#). On Friday 17 August, the Fed reduced this premium and lowered the discount rate by 0.5 percentage point.

All central bank loans are backed by securities or some other form of collateral. A fourth response is to approve a wider range of collateral. The central banks in the UK and Australia expanded their range of approved collateral during the turbulent period.

A final response is to provide liquidity support on special terms. Central banks can provide this support if a bank faces pressing short-term liquidity problems. The Bank of England approved a liquidity support facility for Northern Rock.

In situations where the need for extraordinary measures arises, central banks must weigh two important considerations against each other. The objective of financial stability in the short term must be weighed against the possibility of encouraging excessive risk-taking in the longer term. When central banks intervene and bail out operators that have taken on too much risk, this may be perceived as insurance against excessive risk-taking - so called moral hazard, which may increase the risk of similar situations arising in the future.

Moral hazard may be related to single institutions that take on too much risk. In these cases, it is manageable. Central bank measures are designed in such a way that shareholders, management and staff, and probably also lenders, suffer substantial losses. The authorities do not issue any form of comprehensive insurance whatsoever.

It is more complicated when banks herd with other banks in taking on excessive risk. This herd behaviour was described by John M. Keynes in 1931:

"A sound banker, alas, is not one who foresees danger and avoids it, but one who, when he is ruined, is ruined in a conventional way along with his fellows, so that no one can really blame him." [\(4\)](#)

Note that a banker's reputation might thus be intact, although not her job or assets. The management of the Nordic banking crisis also showed that it is possible to respond in order to reduce moral hazard, i.e. reduce the risk of a repetition of the herd behaviour that led to the crisis.

Expectations of a slowdown as a result of falling house prices in the US have resulted in some increase in credit premia in Norway as well. Equity prices on the Oslo Stock Exchange fell during the turbulence, but have recently picked up again somewhat.

The spread of market turbulence to Norwegian financial institutions is a pure contagion effect. Surveys by Kredittilsynet (Financial Supervisory Authority of Norway) show that Norwegian banks are not directly exposed to losses related to the US subprime market. And no Norwegian banks operate in the same way as the British bank Northern Rock, with its extensive debt-financing in money markets.

Contagion occurred because a substantial share of Norwegian banks obtain financing abroad. The eurodollar market has been a frequently used source of financing for Norwegian banks. This is both because Norwegian banks have substantial dollar lending and because this market is used as a source of NOK, i.e. banks borrow in dollars and then swap them for NOK.

In the early 1990s, a market was established for pure krone liquidity, called the NIDR (Norwegian Interbank Deposit Rate) market, but this market has few participants and low liquidity.

Since the beginning of August, the eurodollar market has not functioned well. This has affected the Norwegian money market. The difference between the money market rate and the expected key policy rate has widened considerably, although less than in major markets abroad. This has resulted in a rise in banks' borrowing costs – at least for a period. This might have an impact on banks' profitability.

Turnover time for deposits and loans in the interbank market has also increased and loan terms have decreased.

Norwegian banks and mortgage companies are now also entitled to issue mortgage-backed bonds. The rules for covered bonds entered into force on 1 June 2007. Norwegian covered bonds are very different from US CDOs backed by subprime mortgages. The regulations ensure that Norwegian covered bonds are a more transparent and substantially more secure investment alternative. Norwegian mortgages have a maximum loan-to-value ratio of 75 per cent. In addition, all holders of covered bonds have the same claim over the cover pool.

A number of conclusions can be drawn from the turmoil in credit and money markets. Problems in markets far beyond Norway's borders may have an impact on Norwegian banks

even if the banks are not directly involved. As a result of the globalisation of financial markets and new and complex instruments, turbulence spreads quickly.

Banks extend long-term loans. They should therefore be cautious about basing borrowing growth on short-term financing. They should ensure access to a solid local deposit base or long-term bond issues for any expansion.

When times are good, it may be difficult to perceive and assess risk. New products that are wholly dependent on favourable economic developments are not viable. New products must be robust to slowdowns and unforeseen events.

The housing market in Norway and the financial position of households

The recent turbulence originated in the US housing market. I will now turn to developments in the housing market and household saving and investment decisions in Norway.

Growth in household credit has been high for a long period, accompanying the sharp rise in house prices. The increase in housing wealth has amplified the demand for loans.

The annual rise in house prices in Norway has been positive since 1992. In real terms, prices have almost trebled, making this the second longest period of rising real house prices since 1819. The rise in house prices accelerated through 2006, and the market showed signs of increased risk-taking and even a state of euphoria.

Periods of sharply rising house prices have occurred previously.

House prices have risen in many countries. Up to 2006 the US experienced the longest period of an uninterrupted rise in house prices. This period lasted for nine years, while the rise in house prices in Norway has lasted for 14 years. Furthermore, the total increase in real house prices in the US through the last period of expansion was far lower than in Norway. House prices have generally risen more in Norway than in the US in periods of expansion.

Developments in house prices reflect periods of expansion – often long – that are followed by a contraction. In periods when house prices have fallen in Norway, they have declined at a faster pace than during downturns in the US. It is only to be expected that fluctuations in Norway are much wider than in the US, with its many large local markets. In addition, the extensive use of adjustable-rate mortgages in Norway might be one of the reasons why movements in house prices are more pronounced here than in other countries.

In recent months, there have been signs of an impending turnaround in the housing market in Norway. The rise in house prices has slowed. The housing supply has increased considerably this year and in September reached its highest level since November 2002. In the last three months, prices have fallen when the figures are adjusted for normal seasonal variations. There is none the less no definitive evidence that we are approaching a more long-term decline. Demand for housing in Norway has also been supported by strong economic growth and a marked rise in the number of households.

Intensified competition for market shares has put pressure on banks' lending margins. In recent years, mortgage borrowing rates have not always risen to the same extent as Norges Bank's key policy rate.

The introduction of new capital adequacy requirements (Basel II) has also influenced banks' lending margins. Under Basel II, risk weights on lending are required to reflect differences in risk to a greater extent. Risk weights for mortgages, for example, have been sharply reduced. This will lead to a considerable reduction in capital adequacy requirements for Norwegian banks. The new rules were introduced in Norway in 2007, but it is likely that many banks began to adjust to the effects even before the rules were introduced. This has resulted in a fall in banks' interest margins.

Banks' average lending margin on new mortgages is estimated at -0.05 percentage point at the beginning of October. As mentioned above, the money market rate is clearly higher than the key policy rate as a result of the problems in the interbank market. With normal interest rate formation in money markets, given our key policy rate, the average lending margin would have been ½ percentage point.

Norges Bank's estimates show how low lending margins on fully secured mortgages could fall when banks have a required return on the equity underlying the mortgages of 15 per cent. Lending margins are determined by expected loan losses, the loan's administrative costs, the share of the loan financed by the bank's equity capital, and the required return on equity. In the estimates, it is assumed that expected loan losses and administrative costs will be 0.3 per cent of the lending volume. The method banks choose to calculate capital adequacy will affect the share of lending that is financed by equity capital.

Under Basel I, the average lending margin on fully secured mortgages is estimated to be 0.9 percentage point. Using the standardised approach under Basel II, banks will be able to operate with an average margin on fully secured mortgages of 0.8 percentage point. Banks using the internal rating-based advanced approach under Basel II, will be able to make the largest reduction in their lending margins. As an illustration, we have assumed that the share of equity capital is 1.5 per cent. The average lending margin on fully secured mortgages could then be 0.5 percentage point. In conclusion, we should be able to say that the decline in lending margins has probably come to an end.

It will come as no surprise if lending margins rise somewhat ahead. It is now likely that a number of banks are not achieving a satisfactory return on new loans. Banks may have compensated for this by having low deposit rates. However, as mentioned above, there has been a marked rise in borrowing costs. Even if some of the increase should be reversed, competition for ordinary deposits will have to intensify ahead – also in view of the greater uncertainty experienced by many banks with regard to funding in the money market.

A number of features of household behaviour make households more vulnerable to economic disturbances. Household debt has grown more than income since 1999. Both the debt burden and the interest burden have increased markedly and are expected to continue to rise somewhat in the years ahead.

Most household loans are adjustable-rate loans. This is perhaps not so surprising. In the post-war period up to the late 1980s, the Norwegian State Housing Bank played a key role in mortgage financing, and banks' lending rates were regulated. The interest rate for house purchases was politically determined, and – for a period that was perhaps surprisingly long – borrowers were confident that their best interests were being safeguarded. The question of whether borrowers should choose an adjustable or fixed borrowing rate – in order to be able to safeguard their own interests to a greater extent – became more relevant after the credit market liberalisation of the 1980s. However, in almost the entire period since then, the nominal interest rate level has exhibited a falling tendency, first as a result of a decline in inflation expectations, then after 2000 due to a decline in real interest rates. Borrowers who chose a fixed-rate loan have therefore not benefited from falling interest rates during the fixed rate period. There are few success stories to be heard from borrowers who chose fixed-rate loans. This will probably change ahead.

The share of mortgages with a high loan-to-value ratio has increased in recent years, particularly among young borrowers. In addition, more households are choosing interest-only mortgages. The opportunity to postpone paying the principal can act as a buffer when servicing the debt becomes more demanding. For many households, this buffer has already been used.

The increase in household borrowing has not been matched by a similar increase in investments in financial assets. The household saving ratio has been on the decline since 2002 and was very low, probably negative, in 2006. Household saving also seems to be negative this year. This means that in addition to financing housing investments by raising loans, borrowers are also financing some of their consumption – often a new car or boat – by increasing their (net) debt.

Norway has a substantial current account surplus. If oil prices remain high, this might also be the situation in the years ahead.

Most of the current account surplus is matched by capital outflows from the state to the Government Pension Fund – Global. Adjusted for these outflows, the surplus has been between NOK 0 and 70 billion in recent years. It is also likely that oil companies invest substantial foreign exchange earnings abroad. In the chart, the term basic balance has been used for the current account adjusted for the estimated capital outflows from the state and oil companies. The basic balance has been negative in the past few years and is estimated to fall close to minus NOK 150 billion this year and next.

The large basic balance deficit reflects a substantial saving deficit among mainland industries and households combined.

Developments in banks' balance sheets and sources of liquidity are influenced by these flows. The saving deficit is to a great extent financed by raising capital abroad, often through banks. Access to and pricing of this funding is influenced by the recent turbulence in international money markets.

The situation has similarities with the situation in the mid-1980s. Then, as now, there was a large saving deficit in the private sector of the mainland economy, while high petroleum

revenues laid the basis for a current account surplus. Norges Bank built up foreign exchange reserves while banks financed household and corporate saving deficits, partly by raising loans abroad. With the decline in oil prices, confidence in the Norwegian economy faltered, capital flowed out of the country and out of banks' balance sheets. Norges Bank had to step in as lender to the banks.

The developments that followed the decline in oil prices in 1986 will not be repeated. In 1986, confidence in the Norwegian economy faltered while inflation was high and rising. Monetary policy measures had to be applied – through a resolute fixed exchange rate regime from summer 1986 – to restore confidence in the national and international value of the Norwegian krone, i.e. to reduce inflation.

The Norwegian economy is on a much stronger footing now than it was in 1986. None the less, fluctuations in household saving and corporate saving and investment could pose challenges for both monetary policy and our banks.

The outlook ahead

The past 15 years have been a golden era for the Norwegian economy. It must also have been a privilege to be in a position to engage in banking activities in Norway in this period.

Selling loans has been easy, there have been virtually no losses, and deposits and borrowing have been stable. Banks have in addition been particularly adept at making use of new technologies and being more cost-effective. The combination has led to favourable results.

Lending growth will probably have to be reduced and losses may rise. More emphasis will have to be given to keeping costs in check and to risk and asset-liability management. Perhaps banks will spend more of their resources on attracting deposits and a little less on selling loans.

In any event: Keep an eye on your earnings.

Thank you for your attention.

Footnotes

(1) Ben S. Bernanke: "Subprime mortgage lending and mitigating foreclosures." Remarks before the Committee on Financial Services, US House of Representatives, Washington DC, 20 September 2007. BIS Review 104/2007.

(2) On Monday 17 September, HM Treasury issued the following statement: "I can announce today that following discussions with the Governor and the Chairman of the FSA, should it be necessary we, with the Bank of England, would put in place arrangements that would guarantee all the existing deposits in Northern Rock during the current instability in the financial markets". On Thursday 20 September, HM Treasury specified the accounts that were covered by the guarantee issued on 17 September. The guarantee covers all accounts existing at midnight on Wednesday 19 September and all accounts in Northern Rock re-opened in the future by those who closed them between Thursday 13 September and Wednesday 19 September, inclusive. The guarantee covers future interest payments, movements of funds between existing accounts, and new deposits into existing accounts.

HM Treasury also stated that it would cover existing and renewed wholesale deposits and existing and renewed wholesale borrowing which was not collateralised.

(3) In Norway, the premium is one percentage point.

(4) John. M. Keynes (1931): "The Consequences to the Banks of the Collapse of Money Values", *Essays in Persuasion*, and Wolf, Martin (2007): "Life Could Yet Follow Death for the Idea of Securitisation", *Financial Times*, 3 October 2007