Svein Gjedrem: The central bank's instruments

Lecture by Mr Svein Gjedrem, Governor of the Norges Bank (Central Bank of Norway), at the Centre for Monetary Economics (CME)/BI Norwegian School of Management, Oslo, 6 September 2010.

Please note that the text below may differ slightly from the actual presentation. The lecture is based on the assessments presented at the Executive Board's monetary policy meeting on 11 August and Monetary Policy Report 2/10.

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The international financial crisis revealed weaknesses in the financial system and put economic policy to the test. In order to mitigate the effects of the financial crisis, central banks reduced key rates to low levels and increased liquidity supply sharply. In addition, a number of extraordinary measures were implemented.

The economic situation

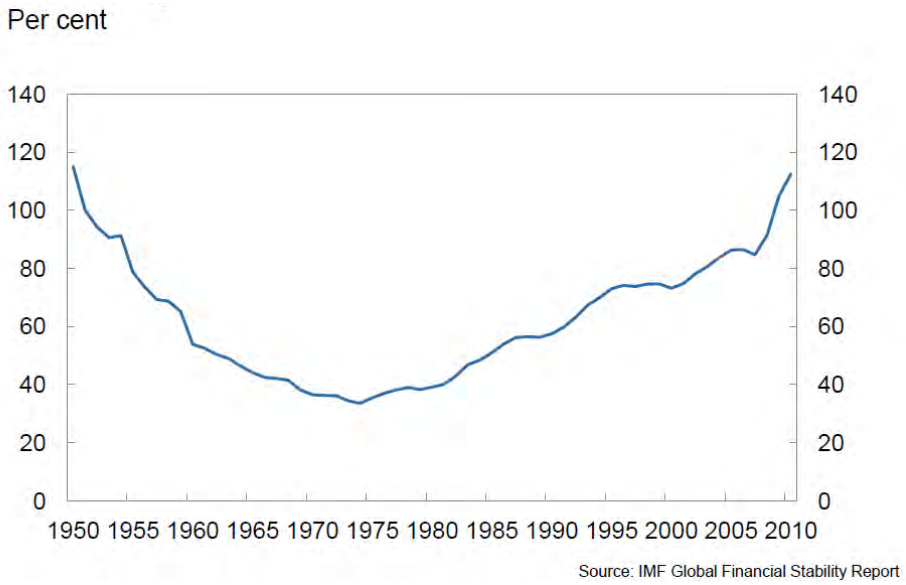
The financial crisis had its origins in an abundant supply of credit, market participants who took increasingly higher risk and a lack of oversight on the part of banks, companies and the authorities. The crisis resulted in a sharp downturn in the world economy. Since the crisis, growth has been vigorous in emerging economies while the recovery in western economies has been moderate. Global economic growth at market prices is now expected to be about 3½ this year, and 4½ per cent in purchasing power parity terms. There have been pressure tendencies in some emerging economies, with higher inflation in India and Brazil and rising asset prices in China. The question is whether continued high growth in parts of Asia can sustain activity in the world economy.

Four conditions are limiting growth in the western world:

1. Debt among households and banks is high.
2. Interest rates cannot be lowered further.
3. Many countries have high public debt levels and several governments are facing a financial crisis.
4. Real exchange rates are strong.

The combination of high household debt and expectations of weak growth is pushing up saving. Low interest rates are not sufficient to boost investment and consumption in an environment of sharply reduced confidence in growth ahead, while both lenders and borrowers are seeking to reduce their debt. Central bank interest rates cannot be lowered further, but it has been communicated that interest rates will be kept low for a long period. Central banks have purchased government securities and private bonds in order to keep long-term interest rates low and are of the view that these quantitative easing measures have been effective.

Sovereign debt to GDP in the G7



As a result of the fiscal policy measures, government debt in major advanced economies is now as high, measured as a percentage of GDP, as in the wake of World War II after a period of debt-financed military spending. The high level of public debt limits the scope for further fiscal impetus to boost economic activity. A lack of confidence in some countries' debt-servicing capacity and ability to boost growth capacity led to a flare-up in financial market turbulence last spring. A number of countries are in a position where they feel compelled to raise taxes and curtail spending.

Exports from India, China and other Asian countries are expanding rapidly. Substantial trade deficits in the western world are partly being financed by an increase in reserves in Asian countries. Real exchange rates in western countries are most likely too strong. This is reflected in pressure tendencies in China and a number of other emerging economies and high unemployment and low inflation in traditional industrialised countries.

In western countries and Japan exchange rates react to news. Pessimism translates into a flight to safe havens. Positive news, however, reduces risk premiums and tends to lead to a strengthening of exchange rates in commodity-based economies where interest rates are somewhat higher. But the nominal exchange rates of many Asian countries remain fixed. Thus, exchange rates are not allowed to fully contribute to reducing trade imbalances, narrowing cost differentials and spreading growth impulses.

Growth in the world economy has an influence on the Norwegian economy. Norway is reaping the benefits of continued high commodity prices and sizeable investments by oil companies. Moreover, we have had economic policy leeway thanks to the credibility associated with solid government finances and firmly anchored inflation expectations. The Norwegian economy is experiencing a mild downturn and inflation is on the low side, while capacity utilisation now seems to have stabilised. The low interest rate level is facilitating the servicing of high household debt and house prices are high. Households in Norway are more confident about the future than households abroad.

Since October last year, the key policy rate has been raised by a total of 0.75 percentage point to 2 per cent. The low interest rate level will in itself contribute to pushing up demand. Inflation expectations are probably stable and real interest rates are very low. At the same time, the krone exchange rate is very strong in real terms. The projections published in the June Monetary Policy Report suggest that the key rate should be held at today's level to around the end of the year and then gradually be raised to a more normal level.

In our Monetary Policy Report we present our own forecasts for the key policy rate ahead. The central banks in New Zealand and Sweden communicate their interest rate expectations in the same way. Some central banks use more qualitative statements, while others do not provide any indication as to future interest rate setting.

Interest rate forecasts as a monetary policy instrument

When preparing our interest rate forecasts, we give weight to the following main criteria:

1. The interest rate should be set with a view to stabilising inflation at target or bringing it back to target after a deviation has occurred.
2. Interest rate developments should at the same time be able to provide a reasonable balance between the path for inflation and the path for overall capacity utilisation in the economy.

   In the assessment, potential effects of asset prices, such as property prices, equity prices and the krone exchange rate, on stability in output, employment and inflation are also taken into account. The following additional criteria are also useful:
3. The interest rate should normally be altered gradually and in line with the Bank's previous response pattern.
4. Interest rate developments should result in acceptable developments in inflation and output also under alternative assumptions concerning the economic situation and the functioning of the economy. It should be possible to explain any substantial and systematic deviations from simple, robust monetary policy rules.

The loss function

$$L_t = (\pi_t - \pi^*)^2 + \lambda(y_t - y_t^*)^2 + \delta(i_t - i_{t-1})^2 + \kappa(i_t - i_t^{enkel})^2$$

Analyses in the June Monetary Policy Report illustrate what the different criteria signify. The interest rate forecast is the interest rate path that satisfies the criteria above to the farthest possible extent. Expressed mathematically, and obviously not exhaustively, the assessment can be represented by a "loss function":

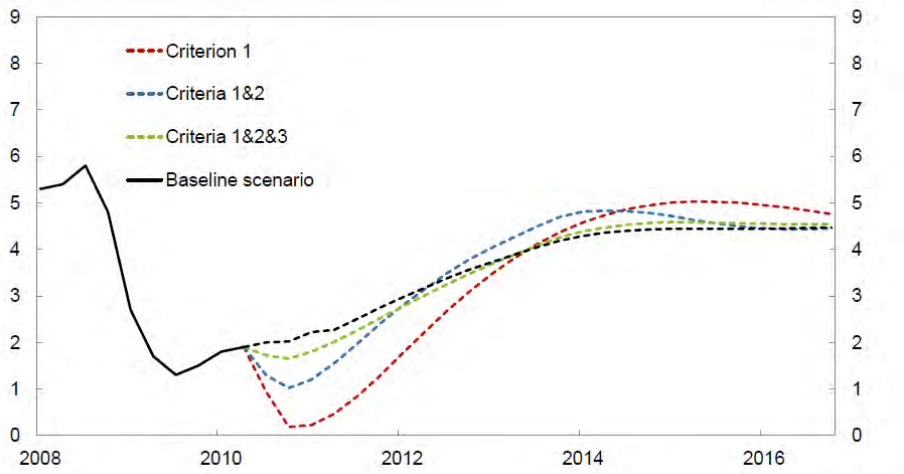
$$L_t = (\pi_t - \pi^*)^2 + \lambda(y_t - y_t^*)^2 + \delta(i_t - i_{t-1})^2 + \kappa(i_t - i_t^{enkel})^2$$

The first term in the equation represents criterion 1, where the loss is higher the more actual inflation π_t deviates from the inflation target π^*. The second term represents criterion 2 and shows that the loss increases with the degree of fluctuation in the level of activity, measured as the gap between actual output y_t and the normal level of output y_t^*. The third term represents the desire for gradual interest rate changes in criterion 3, i.e. that the current interest rate i_t should not deviate too far from the rate in the previous period i_{t-1}. The fourth term represents criterion 4 and can be interpreted to mean that there is also a cost or risk in setting an interest rate i_t that deviates substantially from the interest rate implied by simple monetary policy rules i_t^{simple}. By giving some weight to the consideration that the key rate

should not deviate too far from simple rules, monetary policy may become somewhat more robust.[1]

Key policy rate

Per cent. 2008 Q1 –2016 Q4



Source: Norges Bank

A monetary policy that only takes into account the consideration of bringing inflation rapidly back to target (criterion 1) would imply that the interest rate should rapidly have been reduced to below 1 per cent when we presented the latest Monetary Policy Report. In that case, the interest rate would have had to be raised rapidly again to prevent activity and inflation from becoming too high further ahead. Such a strategy could be consistent with the desire to safeguard against inflation expectations becoming entrenched below the inflation target, but could on the other hand have a substantial impact on output and employment.

Developments become more stable if weight is also given to stabilising output (criteria 1 and 2). This would also imply an interest rate reduction first and then an interest rate increase further ahead. Giving weight to output implies that inflation is brought back to target somewhat later.

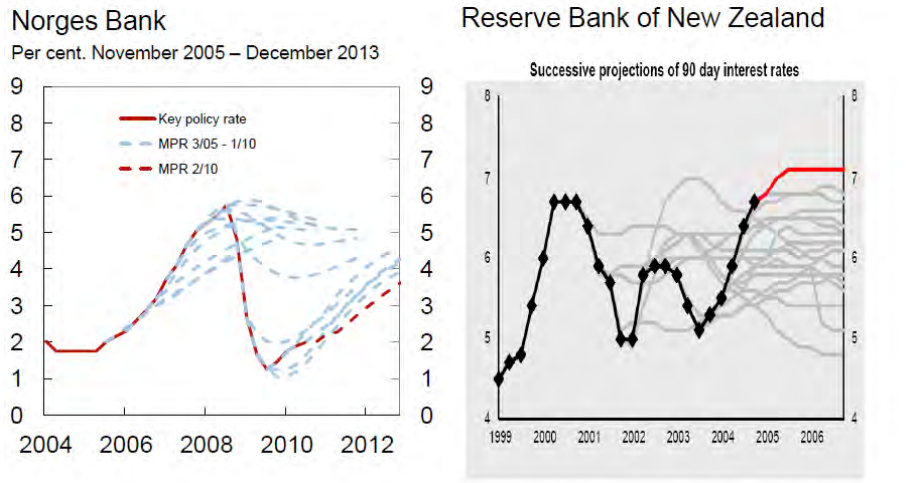
The consideration of a steady interest rate course suggests that small, temporary disturbances should normally not result in abrupt shifts in the interest rate. If this consideration is also given weight in interest rate setting (criteria 1, 2 and 3), the impact on the interest rate will be smaller.

If we also give some weight to the interest rate given by a simple monetary policy rule – the Taylor interest rate rule (criteria 1, 2, 3 and 4), the key policy rate will remain at today's level for a period and then be raised gradually. This results in a further small downward shift in the projections for inflation and the output gap and is consistent with the projections in the previous Monetary Policy Report.

The projections for inflation and economic activity vary from one Report to the next. Hence interest rate prospects will also change. In our Reports we attempt to illustrate which factors have influenced the changes in the interest rate forecast through their effects on the prospects for inflation, output and employment.

[1] A simple rule can function well under alternative models for the economy. The type of uncertainty we want to be robust to will determine what the best rule will be.

Change in interest rate forecast over time

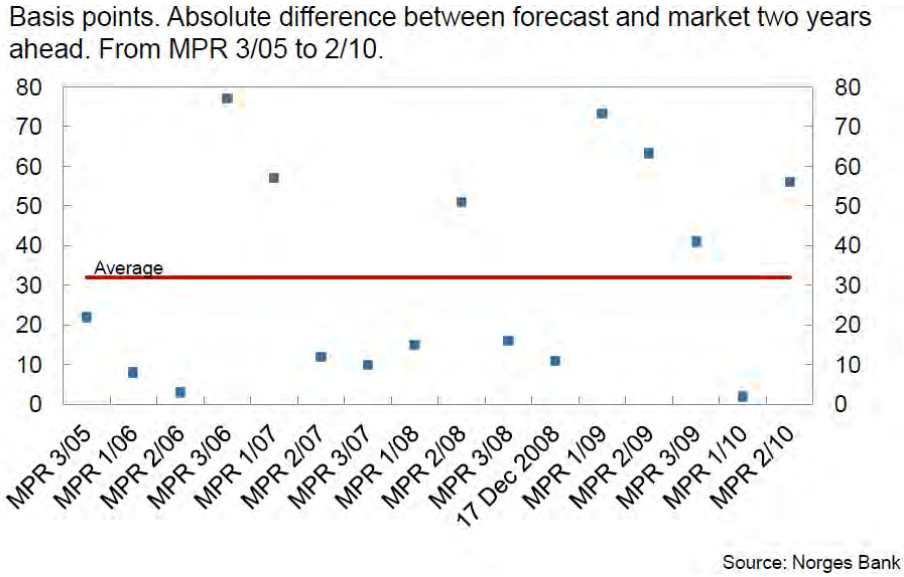


Sources: Norges Bank and Archer (2005)

The interest rate forecast is an expression of a balance between various monetary policy considerations and a response pattern that households, firms and financial institutions can build on. The interest rate forecast is based on our understanding of the functioning of the economy. The uncertainty surrounding the interest rate forecast is highlighted in our fan charts with uncertainty intervals around the interest rate forecasts.

The forecasts have shifted considerably over time. This reflects that the interest rate is an instrument that should react to all news that may influence the inflation outlook.

Publication of interest rate forecasts – how does the market react?



Source: Norges Bank

When we started forecasting the interest rate in 2005, we could refer to the experience of New Zealand[2], which had just experienced pronounced shifts in the interest rate and interest

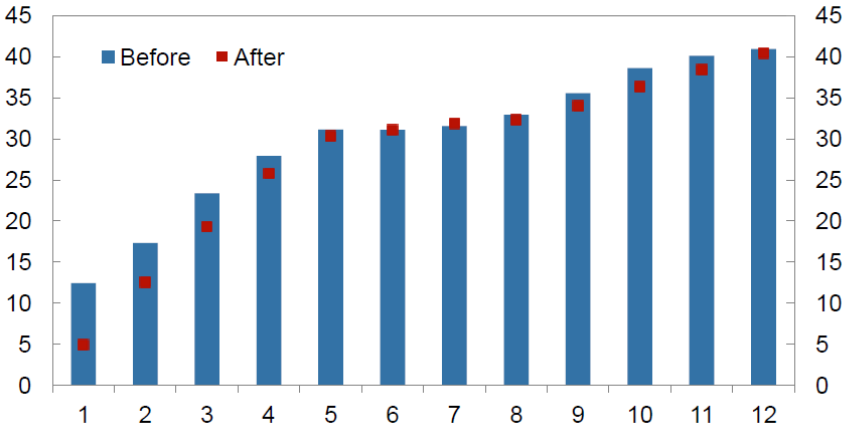
[2] The chart is from Archer, D. (2005): "Central-bank communication and the publication of interest rate projections", presented at Sveriges Riksbank's conference: "Inflation targeting: implementation, communication and effectiveness": http://www.riksbank.com/templates/Page.aspx?id=15814.

rate forecasts. The chart illustrates that we were not able to anticipate the financial crisis in autumn 2008, but have otherwise been on track.

Our latest interest rate forecast suggests that the interest rate will remain low for a long period. But we also note that market participants believe it will take even longer for the interest rate to move up to a more normal level. In autumn 2012 we expect an interest rate of close to 3½ per cent, while market participants expect an interest rate of around 2¾ per cent[3]. The deviation is considerable, but not exceptionally large. Our interest rate forecast seems to have the greatest effect on market interest rates in the year ahead. The difference is greater slightly further out. Differences may indicate that the central bank and market participants at times have divergent views regarding developments in the Norwegian economy.

How does the market react to the publication of the interest rate forecast?

Basis points. Absolute average difference in relation to the new forecast. Number of quarters ahead. From MPR 3/05 to 2/10



Source: Norges Bank

For example, market participants may believe that a higher interest rate level in Norway than in other countries will result in a stronger krone exchange rate because it may be profitable to invest in Norwegian kroner and borrow in other currencies. Our projections are based on the assumption that the exchange rate will over time adjust so that the return on investments in Norwegian kroner will be the same as the return on investments in foreign currency – the so-called uncovered interest rate parity assumption. A positive interest rate differential will then reflect that the krone is expected to depreciate over time. At the same time, we seek to take account of the fact that risk premiums on investments in Norwegian kroner may vary over time.

The interest rate forecasts have been useful – and it is an advantage, not a weakness, that the uncertainty surrounding the forecasts is well known. In 2005 and again in 2009, the key policy rate fell to very low levels. In both cases, our forecasts showed that economic agents would have to expect a higher interest rate level after a period and they illustrated how long it would take for the interest rate to return to its normal level. Moreover, it is our experience that it has become easier to talk about monetary policy when we can speak openly about the future.

[3] The deviation was measured on 23 June after the publication of *Monetary Policy Report 2/10*.

Liquidity instruments

Central bank balance sheet – stylised

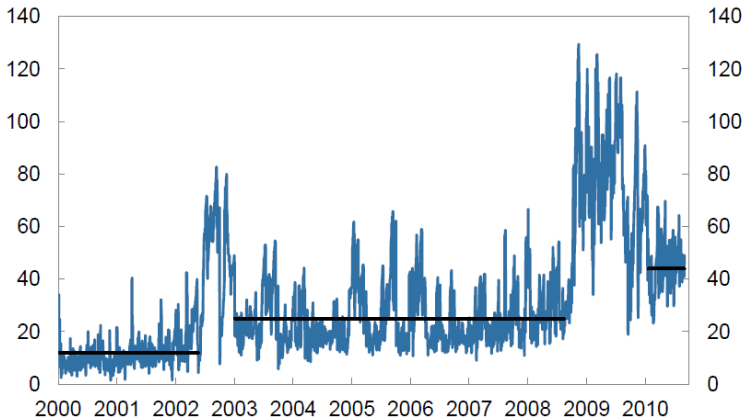
Assets	Liabilities
Foreign exchange reserves	Notes and coins
Lending to banks	Treasury deposits
	Deposits from banks(=central bank liquidity)

The key policy rate must have a clear impact on market rates if the key rate and the interest rate forecast are to be effective. Norges Bank provides central bank funding to achieve this. We provide loans to banks so that they have sufficient funding to settle their accounts each day. These loans result, in isolation, in higher central bank reserves, i.e. increased deposits from private banks in the central bank. In addition, the central bank reserves are affected by other movements on our balance sheet, such as government account transactions or changes in demand for notes and coin. Norges Bank takes account of changes in banks' liquidity due to these factors when determining the size of our loans to banks in order to maintain the intended level of bank liquidity. Previously, liquidity was also influenced by purchases and sales of foreign exchange to influence the krone exchange rate. This has not occurred for the past 11½ years.

Banks as a group cannot directly influence the level of their liquidity in Norges Bank. The level of banks' liquidity is determined by the central bank's liquidity supply and any changes in other central bank balance sheet variables. Changes in banks' demand for central bank reserves lead instead to changes in market interest rates. For example, banks' demand for more liquidity will be reflected in an increase in money market rates.

Liquidity in the banking system

In billions of NOK. Daily figures. 1 January 2000 – 2 September 2010



Source: Norges Bank

Norges Bank determines market rates by providing sufficient liquidity to ensure that the shortest money market rates fall to a level close to the rate banks receive on their deposits in Norges Bank. Interest rates cannot fall below this "floor" as no bank will want to provide loans at a rate lower than the rate they can obtain from Norges Bank.

Banks' loans from and deposits in Norges Bank have been substantial and increasing over time. Demand for loans was particularly high during the financial crisis. It would appear that banks have grown accustomed to dealing directly with the central bank instead of redistributing liquidity in the interbank market. We are having to supply more liquidity now than previously in order to hold down money market rates close to the floor.

The floor system makes it easy to ensure that money market rates track key rate decisions.

However, the system has proved to have undesirable side-effects. It makes banks passive. The market for short-term unsecured liquidity becomes very limited or disappears. The pricing mechanism – or the rates set in the money market – contains information that will not emerge if a public actor such as the central bank takes the market's place.

Consequently, we now need to set clearer boundaries between the central bank's role as lender of last resort and settlement bank and the role of the market.

In order to stimulate money market activity and reduce demand for central bank reserves, it should be more expensive for banks to hold substantial deposits in the central bank. We are therefore working on changes in our lending and deposit facilities.

There are also other weaknesses in Norway's money market. When setting household and corporate interest rates, banks not only take into account movements in the key rate, but also give weight to the money market rate, i.e. the Norwegian InterBank Offered Rate (NIBOR). In our opinion, there are shortcomings in the way this rate is set. The basis for setting the rate can be made more transparent for the benefit of other participants and it is calculated using information from only six large participants. This group does not include Norway's largest saving banks or any international banks. We will take the initiative for improving the structure for setting NIBOR.

Financial stability

Our interest in stability and efficiency reaches of course beyond the money market itself. We have a broader interest in a robust financial system.

The transition from a bank requesting liquidity to a bank with longer-term funding requirements, and perhaps solvency problems, can be blurred. Like other lenders, Norges Bank has to decide on the collateral it is prepared to accept for the loans it provides and be qualified to evaluate the financial strength of borrowers. As lender of last resort, we must also be able to assess whether problems in individual banks could jeopardise the stability of the financial system as a whole.

The financial crisis has revealed major weaknesses in the financial system. Work is in progress across the board on proposals for revising the regulatory framework and introducing new regulations. It has become increasingly clear that supervision must encompass the financial system as a whole and not be limited to the individual financial institution or the individual financial market. The term used to refer to this supervision of the financial sector is macroprudential policy, which has to be based on analyses of the financial sector as a whole.

The Bank for International Settlements (BIS) defines the objective of macroprudential policy as follows:

> "…The objective of macroprudential policy is to reduce systemic risk by explicitly addressing the interlinkages between, and the common exposures of, all financial institutions, and the procyclicality of the financial system."

New rules regulating the financial sector have now been adopted in the US. A new council, the Financial Stability Oversight Council, will be established to monitor risk in the US financial system. The Council can propose stricter regulation of systemically important financial corporations, approve any proposals from the Federal Reserve to break up large banks and require that systemically important financial institutions other than banks are subjected to supervision.

In the UK, a proposal has been made to assign responsibility for supervision and regulation of the financial sector to a subsidiary of the Bank of England (the Prudential Regulation Authority). A Financial Policy Committee, similar to the Bank's Monetary Policy Committee, will also be established within the Bank.

In the EU, the European Systemic Risk Board (ESRB) will be established and will probably be chaired by the president of the European Central Bank (ECB).

We can distinguish between two approaches to the design of instruments to safeguard financial stability. One is to make the financial system more robust by, for example, reducing interdependency among financial corporations. The other is to curb procyclical behaviour in financial corporations.

Limitations on loan-to-value and loan-to-income ratios, which are applied in Norway, are examples of rules that can have a stabilising effect. Minimum capital requirements for financial institutions and liquidity and funding structure requirements are other examples of rules that will make high credit growth more expensive for financial institutions, and thereby for customers. Rules to ensure that shareholders and creditors bear the cost if banks suffer substantial losses or have to be wound up will have a similar effect.

Financial vulnerability can build up more quickly in periods of expansion, partly because financial institutions then have a stronger inclination to take risk. This implies that regulations should be countercyclical, having the strongest effect when the risk of a buildup of imbalances is greatest.

It is important that the rules function as automatic stabilisers in the economy. Discretionary use of instruments is considerably more demanding.

But it may nevertheless be advisable to introduce such instruments, such as capital requirements that vary over time with the rise in debt and asset prices.

The Basel Committee, which assesses new rules for financial institutions and which includes members from major countries, has proposed the introduction of a time-varying capital buffer requirement over and above the minimum capital requirement. Financial corporations with a capital buffer judged to be insufficient would be subject to restrictions on dividends and other payments to shareholders and employees.

In order to dampen shocks in a country and mitigate the contagion effects on other countries, close collaboration between a financial corporation's home country and the host country in which it operates is necessary. In its latest annual report, the BIS writes the following:

> "Close cooperation between home and host authorities will be inevitable. And some responsibility will have to shift to host authorities for deciding on the settings that apply to exposures in their jurisdictions and for advising home authorities of local financial conditions."

Norwegian banks are part of a common Nordic banking market. The rapid expansion of foreign banks in the Norwegian market in the growth period from 2004 to 2008 was trimmed back during and after the crisis. I am afraid it must be said that they have amplified fluctuations in Norway. However, we assume that the decline in their market share is due to the impact of the international crisis, which has generally been more severe for foreign banks than for Norwegian banks.

Under the Basel Committee proposal, the time-varying capital buffer requirement will apply to all banks operating in a country, including branches of foreign banks. Home country authorities will enforce the buffer requirement imposed by host country authorities. This means that Norwegian supervisory authorities, for example, can impose a supplementary capital requirement in periods of high credit growth in Norway. The requirement will apply to Norwegian, Swedish, Danish and other banks that provide loans to Norwegian households and businesses. This really is a step in the right direction. However, the host country's authority could have been strengthened further.

One of the Basel rule's major weaknesses is low and differing risk weights for residential mortgages. The risk estimate in the models used is too low for this type of loan. As a result, the effective capital requirement may be far too low, falling below 0.3 per cent of the loan. Host country rules should apply in these cases and the host country should settle the matter. Distortion of competition may easily be the result if similar loans extended in the same market by foreign and domestic banks have different risk weights.

Allow me to conclude. The downturn in Norway was not self-inflicted – it was triggered by external shocks. But the financial crisis has also increased awareness here in Norway of how dependent sound economic developments are on financial stability. A better redistribution of liquidity in the interbank market and new macroprudential instruments are both important for a smoothly functioning financial system.

Thank you for your attention.