Øystein Olsen: Financial imbalances – how can they be counteracted?

Speech by Mr Øystein Olsen, Governor of Norges Bank (Central Bank of Norway), at the Centre for Monetary Economics (CME) / BI Norwegian Business School, Oslo, 30 September 2014.

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Accompanying slides can be found on the Central Bank of Norway's website: http://www.norges-bank.no/pages/101441/Speech20140930_CME_Charts.pdf

First, let me thank the Centre for Monetary Economics (CME) for taking the initiative for this annual event. This is an interesting arena for Norges Bank. The CME is an important meeting place for researchers and economists in banking and finance and provides a valuable forum to discuss the Norwegian and global economy and, not least, monetary policy. As usual, I look forward to your comments after my presentation.

Chart: Inflation and GDP among our trading partners

The after-effects of the financial crisis and the imbalances that developed in the lead-up to the crisis are still bearing down on the global economy. In many advanced economies, inflation is close to zero and economic activity remains below the pre-crisis level. In their efforts to put economies back on their feet, leading central banks have reached the limits of monetary policy. Policy rates have been low – close to zero – for almost six years. In addition, central banks have engaged in quantitative easing to keep long-term rates at a low level.

The medicine has been necessary. Growth in many advanced economies is now gradually picking up. The US and UK economies in particular are on the road to recovery. But the picture is mixed and in some countries – especially in Europe – economic growth is fragile. The road to recovery may seem long.

With several years of low interest rates, investors' search for yield has become demanding. Demand for risky assets is increasing and risk premiums have reverted to the low levels observed in the years preceding the financial crisis. Low interest rates, reduced risk premiums and higher asset prices are providing easier access to capital for businesses and banks. Households are also benefitting from the low interest rate level. But the combination of cheap and ample liquidity may also be a source of new asset price bubbles. This may pose a challenge as funding costs gradually normalise.

Against this background, central banks, researchers and international organisations are now discussing the interaction between monetary policy and financial stability. The basis of the discussion is the lessons learned from the financial crisis. Experience has shown how costly a financial crisis can be. Low and stable inflation was not sufficient to prevent imbalances in the financial system. It is now generally agreed that monetary policy must take into consideration the risk of a build-up of financial imbalances. As the financial crisis clearly demonstrated, the financial system cannot be left to its own devices. The regulatory framework for financial institutions has therefore been changed. New regulations are being introduced in an increasing number of countries and new tools are being deployed. New institutions are being established to ensure coordination across countries, markets and instruments.

A clearer macro dimension has been integrated into banking regulation, based on the recognition that the financial system as a whole can be vulnerable even if individual institutions seem to be solid. Systemic risk entails a risk that the entire financial system could become unstable or, at worst, collapse, with substantial negative consequences for the real economy. The aim of the new regulations is to guard against systemic risk.

As the new regulatory regime has been introduced, another dimension has been added to the discussion. The question being asked is whether the new instruments relieve monetary policy of taking financial stability into account. Experience of the new regulatory regime is still limited, and we have little knowledge about the effectiveness of the new tools. At the same time, a number of central banks are facing a demanding challenge with regard to the practical implementation of policy: how can the economy be brought back on track without laying the basis for new imbalances?

My presentation today will focus on financial imbalances and systemic risk. I would like to offer you some insight into some of the issues and analyses in the interface between monetary policy and financial stability that we are now working on at Norges Bank.

Macroprudential regulation and financial imbalances

Macroprudential regulation of banks must be based on an understanding of how systemic risk arises. This understanding has been brought a step further since the financial crisis. There is a growing academic literature on the basis for macroprudential regulation. One of the main themes is how systemic risk can arise in the interaction between the financial sector and the real economy. Research is at an early stage, and so far no specific framework stands out. Some conclusions seem, however, to be robust across the various approaches. Many studies single out rapid credit growth in particular as a symptom of rising systemic risk.

The theoretical literature is based on the principle that credit is a good. Borrowing enables households to smooth consumption over the life cycle and businesses to finance investments, thus promoting prosperity.

But the literature also shows that debt can lead to vulnerability. Risk can be priced too low as a result of market failures of various kinds. Mispricing can contribute to excessive debt and the build-up of financial imbalances. Regulations that counteract credit swings may lead to fewer and less severe economic downturns.

Chart: Rapid credit growth leads to deeper downturns

The relationship between debt and systemic risk also finds support in many empirical studies. This chart shows the results of a study conducted by Jordà, Schularick and Taylor on downturns in 14 advanced economies, including Norway.[1] The study covers the period from 1870 to 2008. The chart illustrates two important findings. First, the financial crises are both deeper and more prolonged than other economic downturns. We see that the fall in GDP is larger and it takes longer for it to return to the pre-crisis level than in a normal downturn. Second, the more rapid credit growth has been before the crisis, the more pronounced is the downturn.

Norges Bank has also examined whether credit growth, together with other variables, has shown a systematic pattern ahead of financial crises. Pronounced credit growth has often coincided with a rapid rise in real estate prices and a higher share of bank lending financed by wholesale funding. These variables are included in the set of key indicators on which Norges Bank bases its advice to the Ministry of Finance concerning the countercyclical capital buffer for banks.

The analysis is based on data for 16 OECD countries covering the period from 1970 to 2013.[2] As the dating of financial crises is uncertain, the dates of the financial crises have been set based on international studies. The dataset covers a total of 27 crises, of which 11 are associated with the financial crisis in 2008.

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[1] Jordá, Oscar, Moritz Schularick and Alan M. Taylor (2013): "When Credit Bites Back", Journal of Money, Credit and Banking, 2013, 45 (2), 3–28.

[2] The analysis will be documented in a forthcoming Norges Bank Staff Memo by Anundsen et al. (2014).

Chart: Developments around financial crises

First, let us examine how the indicators develop in the last four years preceding a financial crisis and the first four years following the crisis. The charts show developments in the four indicators in these periods compared with developments in normal periods. As shown, all the indicators rose markedly prior to financial crises in the 16 countries.

We have used the data set to develop an empirical model for estimating crisis probabilities. The key indicators are included as explanatory variables in the model. The model – a logit-type model – predicts a binary outcome. The binary variable takes a value of one when the economy is in a pre-crisis period and the value zero otherwise. The model-based prediction can be interpreted as the probability that the economy is in a pre-crisis period. We have defined this period as one to three years prior to the crisis.

A large number of model specifications using various combinations of the explanatory variables have been tested. The indicators are incorporated in growth form or as deviations from estimated long-term trends. The empirical results as a whole support our choice of key indicators of financial imbalances. Household and corporate credit, house prices and banks' wholesale funding ratio are statistically significant in the models and contribute to raising the estimated probability of a crisis. In addition, the results indicate that a low equity ratio in the banking sector can be an early warning of future instability.

Chart: Early warning models for financial crises

The chart shows estimated crisis probabilities for Norway based on various combinations of explanatory variables and trend estimation methods. A clear pattern is that crisis probabilities increased markedly in the years ahead of the banking crisis in 1988–1993 and ahead of the financial crisis in 2008–2009. Both of these periods featured rapid growth in credit and real estate prices, combined with a surge in banks' wholesale funding ratio. The chart shows that the estimated crisis probabilities have declined since the financial crisis, although the spread between the predictions from different variants of the model is considerable.

The relationship between the indicators and the probability of a crisis in the model is not linear. The greater the magnitude of the financial imbalances at the outset, the more pronounced the effect of an increase in credit growth or house price inflation will be. We have seen that financial imbalances often wind down in connection with crises. The ratio of household debt to GDP fell markedly in Norway in the wake of the 1990s banking crisis and it has fallen in countries such as Spain, the UK and the US after the financial crisis in 2008. In Norway, household debt has continued to grow faster than income, which may indicate that the vulnerabilities that built up prior to the crisis are still present.

An assessment of systemic risk must include an analysis of both the probability and consequence of a crisis. If the costs associated with a crisis are sufficiently large, systemic risk can be considerable even if the probability of a crisis seems small. As underlined in the theoretical literature, the economy can be vulnerable to substantial deleveraging when debt is at a high level. Previous economic downturns provide confirmation of this. The costs of a crisis may then be substantial.

The empirical models can provide support when we assess financial imbalances and whether a crisis is emerging. At the same time, humility is required and we must recognise that our ability to provide a precise estimate of systemic risk is limited. No two financial crises are alike, and the financial system is constantly evolving. There are many sources of systemic risk and new ones may emerge – not least when new regulations are introduced. We must be prepared for possible changes in the predictive power of the indicators. Norges Bank will therefore always have to exercise professional judgment in its assessment of systemic risk.

The aim of macroprudential regulation is to strengthen the resilience of the financial system and dampen the build-up of financial imbalances. The purpose of the countercyclical capital buffer is primarily to increase banks' resilience to loan losses in a future downturn. If the

buffer functions as intended, banks will tighten lending to a lesser extent in a downturn than would otherwise be the case. In addition, the buffer may to some extent dampen high credit growth during an upturn.

The buffer rate will be increased when financial imbalances are building up or have built up, thus bolstering resilience when we need it most. The countercyclical capital buffer can thereby have an impact on both the probability and the costs of a crisis. The buffer may thus also reduce fluctuations in the economy.

We are now in a phase where banks are facing a number of new capital requirements. Banks can choose to adapt to the higher capital requirements by, for example, increasing lending margins or by tightening lending. Thus, higher capital requirements could curb economic activity in the short term. As the new requirements are phased in, the buffer will have to be adjusted to the economic situation and other requirements applying to banks.

This does not mean that the countercyclical capital buffer should be changed frequently in pace with normal cyclical fluctuations. Once the buffer has been built up, the costs of maintaining capital levels will probably be low. The buffer rate should not be reduced automatically even if there are signs that financial imbalances are receding. This is in line with the international guidelines for the countercyclical buffer.

The countercyclical capital buffer is only one of the elements in the new international regulatory framework for banks. The European Systemic Risk Board (ESRB) provides, among other things, for sector-specific capital requirements and limits on loan-to-income and loan-to-value ratios.[3] In New Zealand, the authorities have introduced limits on banks' share of high LVR residential mortgage lending.[4] The requirements will be eased when the assessment indicates that imbalances in the housing market have receded. Similar measures have been introduced in the UK.

Views on how actively this type of instrument should be used vary both among researchers and international fora. In particular, the question of whether frequent changes are appropriate has been raised. As I mentioned earlier, high and rapidly rising credit has historically been associated with more frequent and deeper financial crises. This would imply that there are substantial gains to be made from introducing measures to dampen credit swings. On the other hand, it has been pointed out that experience of using these instruments is limited and that their effectiveness is still an open question. A policy in the direction of fine-tuning credit may in addition dampen key market mechanisms that contribute to channelling credit to where it can obtain the highest return. A highly ambitious use of the instruments also places considerable demands on the level of coordination.

In Norway, shortcomings in banking regulation have in recent years been addressed primarily by means of structural measures. The permanent capital requirements for banks have been increased. In early summer this year, the Ministry of Finance designated three banks as systemically important and will be subject to additional capital requirements. In addition, Finanstilsynet (Financial Supervisory Authority of Norway) has tightened requirements for banks' internal risk models, which will contribute to increasing the equity banks will have to hold against residential mortgage loans than was the case earlier. Liquidity reserve requirements for banks will probably also be introduced in 2015. These are important structural measures that will all contribute to reinforcing the resilience of the banking system.

In the view of Norges Bank, we neither can nor should have the ambition to fine-tune credit developments in pace with normal business cycle fluctuations. However, if systemic risk in the Norwegian economy increases, further measures may also be introduced here. It would

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[3] ESRB (2014): "The ESRB Handbook on Operationalising Macro-prudential Policy in the Banking Sector" (published 3 March 2014).

[4] http://www.rbnz.govt.nz/financial_stability/loan-to-value_ratio.

then be appropriate for Norges Bank to assess the level of the countercyclical capital buffer. The buffer can be increased – and to above 2.5 percent if necessary.

Monetary policy and financial imbalances

The regulation and supervision of financial institutions represent the first line of defence against shocks to the financial system. Macroprudential regulation is part of that defence framework. The task of monetary policy is to steer inflation and smooth fluctuations in output and employment.

Even though the objectives and the instruments are different, monetary policy and macroprudential regulation cannot be viewed as separate.

As I mentioned earlier, banks may adapt to an increase in the countercyclical capital buffer level by raising lending margins, which may dampen economic activity and in the next round inflation. In isolation, higher capital requirements may therefore pull in the direction of a lower key policy rate. New regulations may also affect the interest rate transmission mechanism. The interest rate works through different channels, such as the house price channel. A lower key policy rate may lead to higher house prices via lower lending rates. This may, in turn, have a positive impact on consumption. If the ability to borrow against home equity is reduced, the house price channel will become weaker.

Monetary policy, for its part, can be one of several factors that lead to a build-up of financial imbalances. History has shown that long periods of low interest rates can increase the risk that debt and asset prices reach unsustainable levels. Expectations of low interest rates may become entrenched among banks and borrowers when interest rates remain low for a long period. This may result in rapidly rising house prices. With low interest rates and rising house prices, banks may apply more lenient credit terms. We have also witnessed that low interest rates can prompt financial market participants to search for higher yields from alternative and often risky assets.

Macroprudential regulation and monetary policy will often pull in the same direction. If the economy is booming, with rising inflation prospects and the risk of a build-up of financial imbalances, a tightening of monetary policy and capital requirements can underpin both objectives at the same time. Likewise, a pronounced downturn with increased banks losses can be addressed by lowering both the key policy rate and capital requirements. But in some situations, it may be appropriate to reduce the key policy rate at the same time as the capital requirements are tightened. If there are prospects that inflation will become too low at the same time as debt and house prices are rising, the key policy rate's main task is to ensure that inflation is again brought up towards the target.

Several economic policy instruments makes it easier to achieve several objectives at the same time. Stricter banking regulation helps reduce systemic risk, but we cannot act on the assumption that tighter regulation alone will suffice to prevent future crises. There is considerable uncertainty with respect to potential shocks that may hit the economy in the future. Turbulence can arise abruptly and from unexpected events. Hence, it is important to guard against particularly adverse outcomes.[5]

In recent years, Norges Bank has chosen to keep the key policy rate at a level that has consistently been a little higher than implied by medium-term inflation and output considerations. Financial stability considerations have played a role, without asset prices or debt having an independent role as target variables. The goal has been to achieve an improved path for inflation, output and employment over time. Let me explain further.

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[5] See Adrian, T. and N. Liang (2014): "Monetary Policy, Financial Conditions, and Financial Stability", Federal Reserve Bank of New York Staff Report No. 690, for a further discussion.

Given our choice of the level for the key policy rate, the deviation from the inflation target will be somewhat larger and economic developments somewhat weaker in the short term than would otherwise have been the case. This cost can be regarded as an insurance premium against future adverse outcomes. The gains that we can achieve are that a downturn will be less pronounced should the economy be exposed to negative shocks. In addition, we can reduce the probability that imbalances trigger a crisis. The expected path for inflation and output becomes more stable.

The size of the gains is uncertain. Developments in debt and house prices depend on a number of factors in addition to the interest rate. The extent to which the interest rate influences the build-up of imbalances may thus change from one situation to another. Even in retrospect it will be difficult to measure the gains. The size of the insurance premium will also vary. When inflation has strayed far from the target, the prospect of a further deviation will be given more weight than when inflation is close to the target.

It is generally agreed among central banks that monetary policy must in certain situations take into account the risk of a build-up of financial imbalances. At the same time, Norges Bank has been one of few central banks where this consideration has played a clear role in interest rate setting in recent years. This is probably ascribable to cyclical divergence more so than a divergence in assessments and response patterns.

In recent years, many of our trading partners have pursued an accommodative monetary policy with the aim of preventing the downturn from becoming deeper and longer and staving off falling inflation expectations. In the euro area and the US, low interest rates have probably contributed to improving the balance sheets of banks, households and firms. Financial stability considerations have thus pulled in the same direction as inflation and employment considerations. This may change as the economic outlook changes.

As the Chair of the Federal Reserve, Janet L. Yellen, put it:

> *"There may be times when an adjustment in monetary policy may be appropriate to ameliorate emerging risk to financial stability."*[6]

The quote reflects to a large extent the assessments we have made in Norway in recent years. In order to illustrate this, we can construct a simple analytical framework.

Chart: Framework

The point of departure is a central bank with a flexible inflation targeting regime. The central bank weighs deviation from the inflation target against deviations from potential output. The future paths for inflation and output are included in the assessment.

We have included a variable that captures the transmission of financial stress to the wider economy. This framework thus differs from the normal one presented in the monetary policy literature. In the stylised model, we have called this stress impulse zt.

First, the size of the effect on the real economy depends on the level of financial stress. For simplification, we assume that there are only two possible financial market states: either normal and calm times or a financial stress situation.

The consequences of the stress will depend on the level of the financial imbalances. As I indicated earlier, experience shows that a downturn will generally be more pronounced, the more financial imbalances have developed in advance. The imbalances also increase the likelihood of a stress situation.

Within this framework, monetary policy can influence the risk in the financial system. Increased risk of instability engenders lower expected future economic activity. When the

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[6] Janet L. Yellen (2014): "Monetary Policy and Financial Stability", (2. July 2014).

central bank assesses the future path of inflation and output, it has an incentive to dampen the build-up of financial imbalances.

Let me illustrate by means of this framework how a central bank can contribute to a smoother path for inflation, output and employment over time when it takes into account that financial imbalances may develop.

Chart: Financial stress does not arise

As a point of departure, let us look at a situation that is not unlike the one experienced in recent years: External interest rates fall and there are prospects that they will remain low for a long period. The decline in external interest rates results in a widening of the differential between Norwegian and external interest rates, leading to an appreciation of the krone exchange rate. This in turn may lead to lower inflation and economic activity and the central bank therefore wishes to lower the policy rate.

For reasons of comparison, let us first assume that neither the central bank nor other economic agents recognise that stress may arise. The blue lines in the panel show the path for the key policy rate, the output gap, inflation and financial imbalances obtained in this case. Capacity utilisation increases and inflation returns to the target. At the same time, the low interest rate level leads to an increase in financial imbalances in the economy.

If we use the framework I just described instead, the central bank will take into account the possible impact of financial imbalances on inflation and output and will therefore reduce the interest rate somewhat less. In this case, it takes longer for inflation to move up to the target. The policy stance also results in a somewhat weaker increase in activity. At the same time, the slightly higher interest rate contributes to dampening the build-up of financial imbalances. In this example, a higher interest rate does not provide any gains as the assumption so far is that financial stress does not arise.

Let us now see what occurs if financial stress arises after a period, with all else being equal to the first scenario.

Chart: Financial distress does arise

The purple lines in the panel again show a situation where the central bank has taken into account the possible effect of monetary policy on risk in the financial system. When financial turbulence occurs, the economic setback is less pronounced and less prolonged than if the central bank had not taken this risk into account in monetary policy, as illustrated by the blue lines. The gain achieved from keeping the interest rate somewhat higher in the short term is in this case a more stable path for inflation and output over time.

The interplay between the financial system and other areas of the economy is complex. This makes it demanding to predict the timing of crises and how they will arise. There is also considerable uncertainty linked to the consequences of a crisis on the wider economy. We may never achieve a fully precise understanding of these mechanisms. On the other hand, we cannot neglect the possible effects of monetary policy on the build-up of financial imbalances.

Norges Bank's modelling tools are continually being developed. Our model apparatus is also shaped by new insights about the functioning of the economy and how we can guard against the risk of financial stress. The aim is continuously to ensure that the models are the best possible support tools for monetary policy decisions. Formalising the framework along the lines I just presented can make it easier to recognise the line of reasoning and help clarify the choices we face.

But the ultimate assessment will always be a result of Norges Bank's professional judgement and incorporate knowledge and considerations that are insufficiently captured in our model. In this respect, the models are simply a tool.

Conclusion

Let me conclude.

In Norway, inflation has on average been somewhat below, but close to, 2.5 percent in recent years. Activity has been close to a normal level and unemployment has remained low. At the same time, house prices have risen sharply since the 1990s and household indebtedness is at a historically high level. Against this background, it has been appropriate to keep the key policy at the chosen level in order to dampen the build-up of financial imbalances.

When assessing various considerations, Norges Bankmust pursue the primary objective of monetary policy – low and stable inflation. If financial imbalances build up further, it will be appropriate to assess the level of the countercyclical capital buffer for banks. Banking regulation and supervision must be the first line of defence against shocks to the financial system. At the same time, we cannot proceed under the assumption that new regulations will eliminate the risk of financial stress. A robust monetary policy should therefore take into account the risk of financial instability. Monetary policy will then also contribute over time to stable economic developments in line with Norges Bank's mandate.