

Øystein Olsen: Integrating financial stability and monetary policy analysis

Speech by Mr Øystein Olsen, Governor of Norges Bank (Central Bank of Norway), at the Systemic Risk Centre, London School of Economics, London, 27 April 2015.

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Please note that the text below may differ slightly from the actual presentation.

Accompanying charts can be found at the end of the speech or on the Norges Bank's [website](#).

Thank you for the opportunity to talk to you here at the Systemic Risk Centre this evening. The Centre is bringing forward research and applied knowledge in a subject that has now become a key issue in central banking.

In the aftermath of the 2008–09 financial crisis, central banks and academia have put systemic risk and the interlinkages between monetary and financial stability high on the agenda. The crisis showed that keeping inflation low and stable was not sufficient to prevent imbalances in the financial system. It also showed that, left alone, the financial system is prone to excessive risk-taking. And we were reminded of how costly a financial crisis can be. Another lesson, more specific to central banks, is that there are synergies to be gained from closer integration of financial stability and monetary policy analysis.

A clearer macroprudential dimension has now been incorporated into banking regulation. Examples of this new orientation are the introduction of a systemic risk buffer and a time-varying countercyclical capital buffer for banks. The new macroprudential toolkit is being accompanied by higher permanent capital requirements and new regulations on banks' capital structure. The aim is to make the financial sector more resilient to shocks and to prevent or mitigate the build-up of systemic risk.

As the new regulatory regime has been introduced, another dimension has been added to the discussion. The question being asked is the following: do reformed banking regulation and the new macroprudential instruments relieve monetary policy of any responsibility for financial stability?

A good starting point for the discussion is Tinbergen's basic principles, which state that a wider set of policy instruments makes it possible to achieve a wider set of objectives and that each instrument should be assigned to the objective it can achieve most effectively.¹ The comparative advantage of monetary policy is to control inflation and smooth fluctuations in output and employment. The first line of defence against shocks in the financial system is, on the other hand, regulation and monitoring of financial institutions. Macroprudential policy is part of this defence.

We should also bear in mind that experience of the new regulatory regime and the macroprudential toolkit is still limited. It is too early to assess the effectiveness of the new instruments. On the other hand, we do know that interest rates affect house prices and debt. This suggests that monetary policy should take into account the risk of financial imbalances.

Chart: Unemployment, inflation, house prices and household debt ratio in Norway, the UK, the US and the euro area

Norges Bank has in periods kept the interest rate somewhat higher than implied by medium-term inflation and output gap considerations. In other words, we have been "leaning against

¹ Tinbergen, J. (1952): *On the theory of economic policy*, North-Holland Publishing Company, 2nd edition.

the wind". Norway is a large exporter of petroleum, and our economy has benefitted from 15 years of high oil prices. Unemployment has been low and consumer price inflation close to the 2.5 percent inflation target. At the same time, house prices have been rising sharply, and household debt is at a historically high level. Hence, our monetary policy trade-offs have in recent years differed from those of our trading partners.

Before I return to the interlinkages between financial stability and monetary policy, let me describe some elements of macroprudential policy in Norway.

Banking regulation has recently been reformed in Norway in accordance with Basel III and directives issued by the European Union. Capital requirements have been increased and the countercyclical capital buffer has been introduced. Norges Bank is responsible for conducting analyses and providing advice on the level of the countercyclical capital buffer for banks. The responsibility for the final decision on the buffer level lies with the Ministry of Finance. The current decision requires Norwegian banks to hold a countercyclical capital buffer as from July this year. The banks have also increased their capital levels over the past few years. As a result, the financial system in Norway is now more resilient to shocks.

An accountable and credible macroprudential policy must be based on an understanding of how systemic risk arises. The academic research on macroprudential policy issues is growing, but is still at an early stage. Some conclusions seem, however, to be robust. Many studies single out rapid credit growth in particular as a symptom of rising systemic risk. This is in line with the recommendations from the Basel Committee and the EU, which state that decisions on the countercyclical capital buffer should be based on the credit gap.

Chart: Basis for advice on the countercyclical capital buffer: key indicators

In preparing its advice on the buffer decision, Norges Bank adds three other variables as key indicators. The three variables are, as shown in the chart: house prices, commercial property prices and banks' wholesale funding ratio.

Together, the four indicators contain a considerable amount of information about how cyclical systemic risk evolves.

Chart: Early warning models for financial crises

A number of studies have indicated that credit growth, real estate prices and banks' wholesale funding ratio show a systematic pattern ahead of financial crises. At Norges Bank, we have examined data from 16 OECD countries to see whether such a systematic pattern exists.² We have developed empirical models for estimating the probability of a crisis. The model-based predictions can be interpreted as the probability that the economy is in a pre-crisis period. The chart shows estimated crisis probabilities for the US, Spain, Norway and the UK. The band reflects various combinations of explanatory variables and trend estimation methods.³ The dataset covers the period from 1970 to 2013, with a total of 27 events defined as crises, of which 11 are associated with the financial turmoil in 2008–2009.

As you can see from the chart, the estimated probability of a crisis increased markedly in the years ahead of the financial crisis in 2008–2009, although the UK is the exception in that context. Crisis probabilities also increased in the US ahead of the US Savings and Loan crisis, in the UK ahead of the UK's small-bank crisis and in Norway ahead of the banking crisis in the late 1980s and early 1990s. All these episodes featured rapid growth in credit and rising real estate prices.

² See Anundsen, A.K., F. Hansen, K. Gerdrup and K. Kragh-Sørensen (2014): «Bubbles and crises: The role of house prices and credit», *Norges Bank Working Papers* 14/2014.

³ The indicators are incorporated in growth form or as deviations from estimated long-term trends.

The empirical results 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 clearly influence the estimated probability of a crisis. The results also indicate that a low equity ratio in the banking sector can be an early warning of future instability.

While indicators and empirical models can provide support in the assessment of financial imbalances, they can of course only go so far. Their ability to produce a precise estimate of systemic risk is limited. No two financial crises are alike, and the financial system is constantly evolving. In addition, the assessment of systemic risk must include an analysis of the consequence of a crisis. Assessments of systemic risk are therefore always based on judgement.

The primary aim of the countercyclical capital buffer is to make banks more robust. The buffer may to some extent also dampen the build-up of financial imbalances. However, its impact on markets will depend on how banks increase capital ratios. Roughly speaking, banks have two options at their disposal: they can 1) increase equity capital or 2) reduce risk-weighted assets.

Chart: Increased capital requirements in Norway

Over the past few years, in order to meet the new requirements, the six largest Norwegian banks taken together have almost doubled their capital adequacy ratio, measured by Common Equity Tier 1 capital. This is primarily the result of a significant increase in capital.⁴ Retained earnings contributed the most, and banks widened their lending spreads in 2013. Equity issues have been of minor importance.

The second option I mentioned involves improving capital ratios by reducing risk-weighted assets. Rather than slowing lending, Norwegian banks have reduced their risk-weighted assets through lower risk weights and changes in the composition of their lending portfolios. Lending has increased more in the residential mortgage market, which features lower risk weights than in the corporate lending market.

Norwegian banks' adjustment strategies remind us that macroprudential policy can influence economic activity through various channels, and thus have an effect on price stability, the main objective of monetary policy. Macroprudential policy could also have an impact on the transmission mechanism of monetary policy. For instance, if new regulations reduce households' ability to borrow against home equity, the credit channel of monetary policy is likely to become weaker.

Monetary policy, for its part, can be one of several factors contributing to a build-up of financial imbalances. We have learned again that long periods of low interest rates can increase the risk that debt and asset prices will reach unsustainable levels. And, as we have witnessed, low interest rates tend to prompt financial market participants to intensify their search for yields from high-risk assets.

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

Indeed, monetary and macroprudential policy instruments can work in the same direction. If the economy is booming, with rising inflation prospects and the risk of a build-up of financial imbalances, a simultaneous tightening of both monetary policy and a macroprudential tool – the countercyclical capital buffer – can underpin the objectives of both policies. Likewise, a

⁴ Winje, H. and L.T. Turtveit (2014): "Norwegian banks' adjustment to higher capital requirements", *Norges Bank Staff Memo* 14/2014.

pronounced economic downturn with increased bank losses can be addressed by lowering both the key policy rate and the capital buffer.

In other situations, it may be appropriate to reduce the key policy rate while at the same time *raising* the level of the capital buffer. If, for instance, there are prospects that inflation will become too low at the same time as debt and house prices are rising rapidly, the key policy rate will be reduced, in line with its primary task of maintaining a nominal anchor for the economy. Unwarranted negative effects on financial stability of lower interest rates could in this case be counteracted by raising the level of the countercyclical buffer.

Macroprudential policy and stricter banking regulation help to reduce systemic risk, but we cannot act on the assumption that tighter regulation alone will suffice to prevent future crises. Monetary policy, on the other hand, has well-documented effects on house prices and debt.

Thus, monetary policy deliberations at Norges Bank give weight to mitigating the risk of a build-up of financial imbalances. By taking financial stability considerations into account, we seek better, more stable outcomes for inflation and output in the longer run.

A simple analytical framework can serve to illustrate this point.

Chart: Framework

Consider a central bank with a flexible inflation targeting regime. This means that the central bank gives weight to fluctuations in output as well as to inflation. The expected future paths for inflation and output are included in the loss function.

Let us now include a variable that captures the transmission of financial market instability to the wider economy. In this stylised model, the variable, called z_t , enters the aggregate demand function.

To simplify, we assume that there are only two states with respect to financial stability: either normal times with well-functioning financial markets or a situation of financial market stress (cf. the α parameter). If instability in financial markets emerges (i.e. α equals 1), the impact on the real economy will depend on the level of the financial imbalances.

Within this framework, the risk of financial instability is endogenous, and monetary policy can influence this risk. A higher risk of instability can depress expected growth and inflation. When the central bank assesses the future path of inflation and output, it therefore has an incentive to dampen the build-up of financial imbalances. In this way, the central bank can contribute to a smoother expected path for inflation, output and employment over time.

Let us now introduce an economic situation that is not unlike the one experienced in Norway in recent years: interest rates abroad decline and there are prospects that they will remain low for a long period. This results in a widening of the differential between interest rates at home and abroad, leading to an exchange rate appreciation. This in turn could lead to lower inflation and economic activity. The central bank's response is to lower the policy rate.

Chart: Financial stress does not arise

As a starting point for our model exercise, let us first assume that neither the central bank nor other economic agents recognise that financial stress could arise. The blue lines in the panel show the path for the policy rate, the output gap, inflation and the financial imbalances in this case. Capacity utilisation increases and inflation returns to target. However, the low interest rate level leads to an increase in the financial imbalances.

Let us return to the extended model, and assume that the central bank recognises that financial stress could arise further out and takes into account the possible impact of financial imbalances on inflation and output. This scenario is represented by the red lines. The policy rate is still reduced, but to a lesser extent. In this scenario, it takes longer for inflation to move up to target. The policy stance also results in a somewhat weaker increase in activity.

At the same time, the slightly higher policy rate contributes to mitigating the build-up of financial imbalances. So far, we have assumed that financial stress has not occurred. Hence, we have not reaped the benefits of the “leaning against the wind” strategy.

Now, let us see what occurs if financial stress does arise further out.

Chart: Financial stress arises

The red lines in the panel again show a scenario where the central bank does take into account the possible effect of monetary policy on financial stress. 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 benefit gained 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.

This framework is highly stylised. In the actual implementation of monetary policy we are faced with a number of difficulties. First, developments in debt and house prices depend on a number of factors in addition to the interest rate. Second, both the costs and the benefits of leaning against the wind are uncertain. What we do know, however, is that the economic consequences of a financial crisis are so serious that an insurance premium is worth paying.

Let me now return to the Norwegian economy and to the trade-offs in recent interest rate setting in Norway.

As I said earlier, the key policy rate in Norway has in recent years been kept slightly higher than implied by medium-term outlook for inflation and output, in order to mitigate the risk of a build-up of financial imbalances.

However, through last autumn, oil prices fell sharply and the growth outlook for the Norwegian economy weakened. Against this background, Norges Bank cut the key policy rate by 0.25 percentage point to 1.25 percent in December last year. Weight was given to countering the risk of a pronounced downturn in the Norwegian economy. Financial stability considerations were not taken off the table, but a new risk had entered the scene.

Through the following winter months, developments in the Norwegian economy were broadly in line with expectations. The effects of the fall in oil prices on the real economy had been relatively small. Inflation remained close to 2.5 percent and unemployment was stable. At the same time, house prices continued to rise rapidly. Therefore, balancing of the different kinds of risks – the risk of a pronounced downturn in the economy versus the risk of a build-up of financial imbalances – shifted slightly from December. An overall assessment led Norges Bank to keep the key policy rate unchanged at 1.25 percent at the monetary policy meeting in March. However, we also communicated an intention to lower the key policy rate if developments in the economy ahead proved to be broadly as projected.

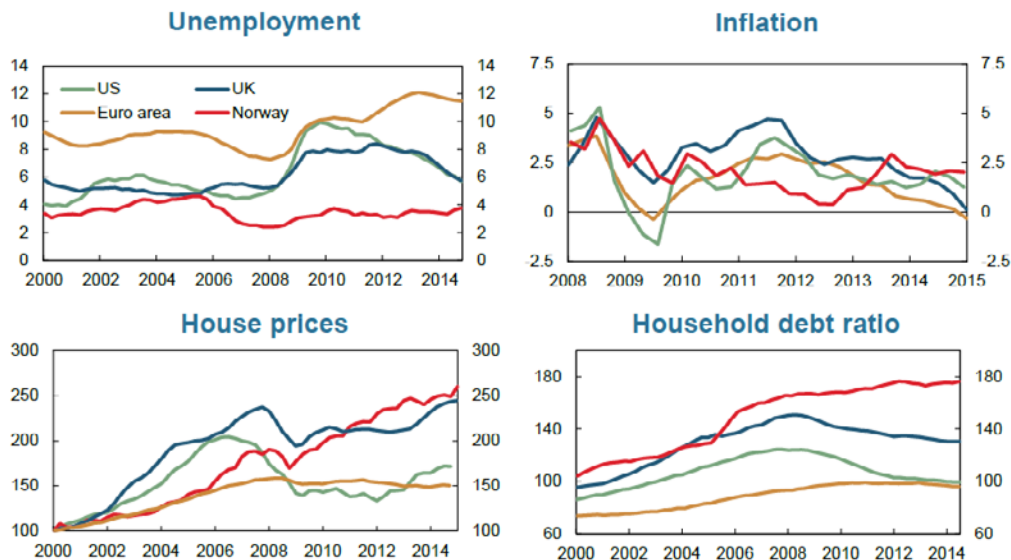
At the same time, Norges Bank advised the Ministry of Finance to keep the countercyclical buffer unchanged at 1 percent. Norges Bank added, however, that if house prices continued to rise rapidly and credit growth increased, it would be appropriate to advise the Ministry to raise the level of the countercyclical capital buffer effective from summer 2016.

In my introduction, I posed a question: do reformed banking regulation and the new macroprudential instruments relieve monetary policy of any responsibility for financial stability?

So let me conclude.

While increased capital requirements and macroprudential policy can strengthen banks' solidity and mitigate the build-up of imbalances, we cannot proceed under the assumption that new regulations alone will eliminate the risk of financial instability. A robust monetary policy should therefore take into account the risk of a build-up of financial imbalances. Monetary policy could then contribute to more stable economic developments over time.

At the same time, monetary policy must not be overburdened. Banking regulation and supervision must be the first line of defence against shocks to the financial system. When assessing the monetary policy trade-offs, central banks must pursue the primary objective of monetary policy – low and stable inflation.

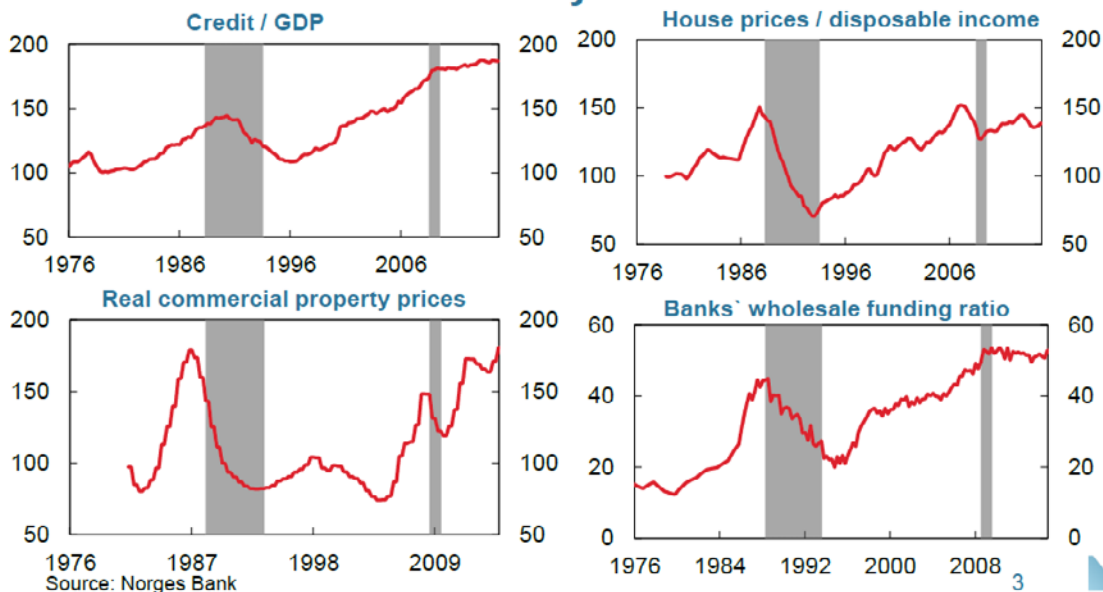


Sources: Thomson Reuters and Norges Bank

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Basis for advice on CCB: key indicators

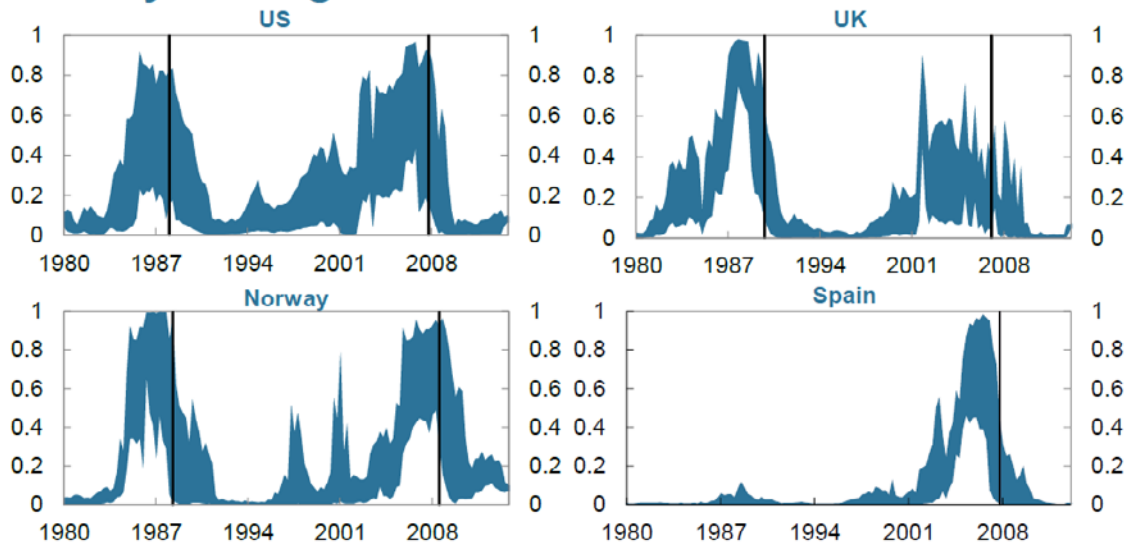


Source: Norges Bank

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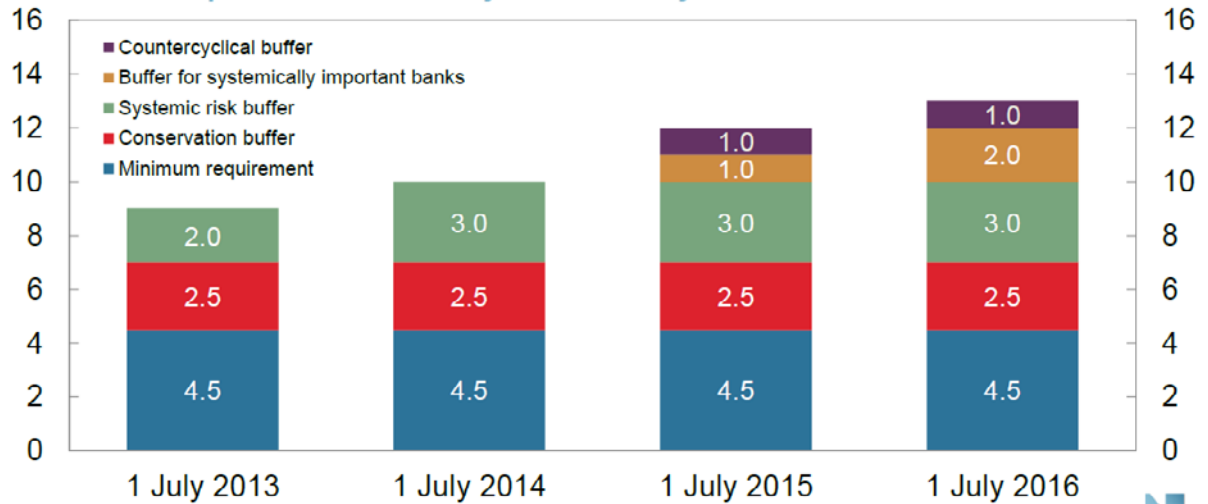
Early warning models for financial crises



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Increased capital requirements in Norway

CET1 capital. Percent. 1 July 2013 – 1 July 2016



Sources: Ministry of Finance and Norges Bank

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Framework

Loss function, L:

$$L_0 = E_0 \sum_{t=0}^{\infty} \delta^t (\pi_t^2 + \lambda y_t^2)$$

where

π_t = inflation deviation from inflation target

y_t = output gap

Demand, y_t :

$$y_t = f(r_t, \dots) - z_t$$

Impulse from financial instability, z_t : $z_t = \beta \cdot z_{t-1} + \alpha \cdot FI_t$

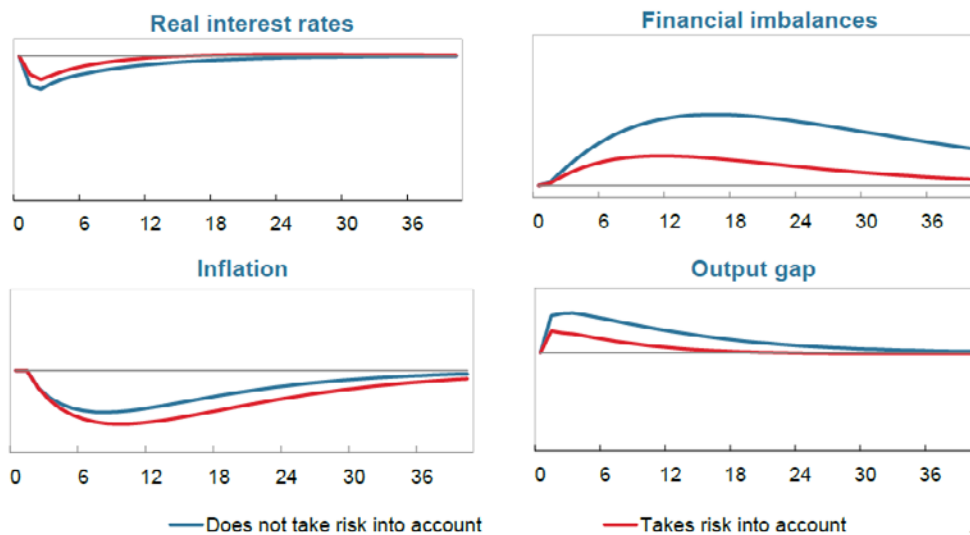
$$\alpha = \begin{cases} 0 & \text{if financial instability does not arise} \\ 1 & \text{if financial instability arises} \end{cases}$$

Level of financial imbalances, FI_t : $FI_t = g(r_t, \dots)$

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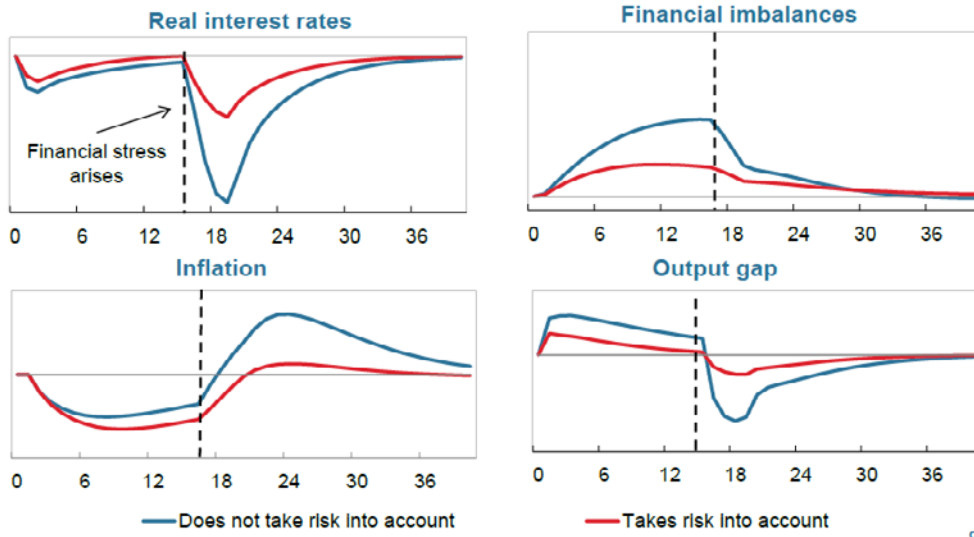
Financial stress does not arise



7



Financial stress arises



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