



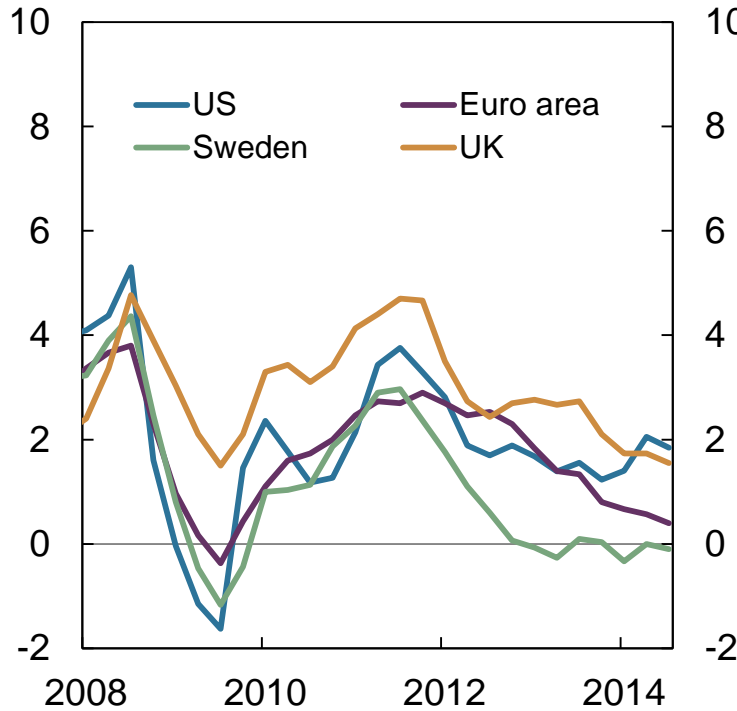
FINANCIAL IMBALANCES— HOW CAN THEY BE COUNTERACTED?

GOVERNOR ØYSTEIN OLSEN
30 SEPTEMBER 2014

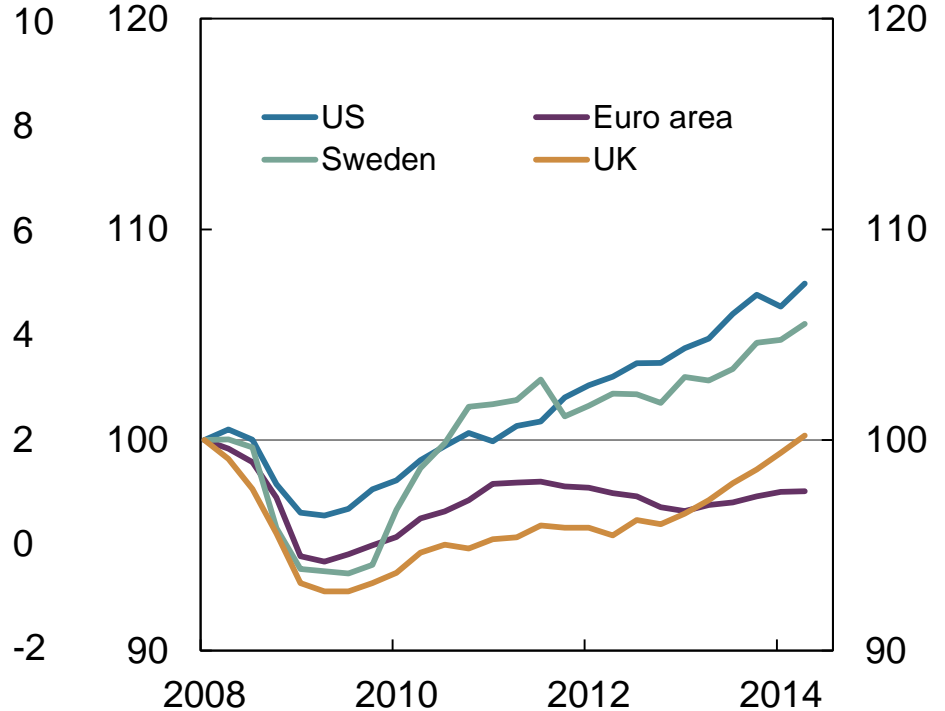


Inflation and GDP among our trading partners

Inflation. Percent



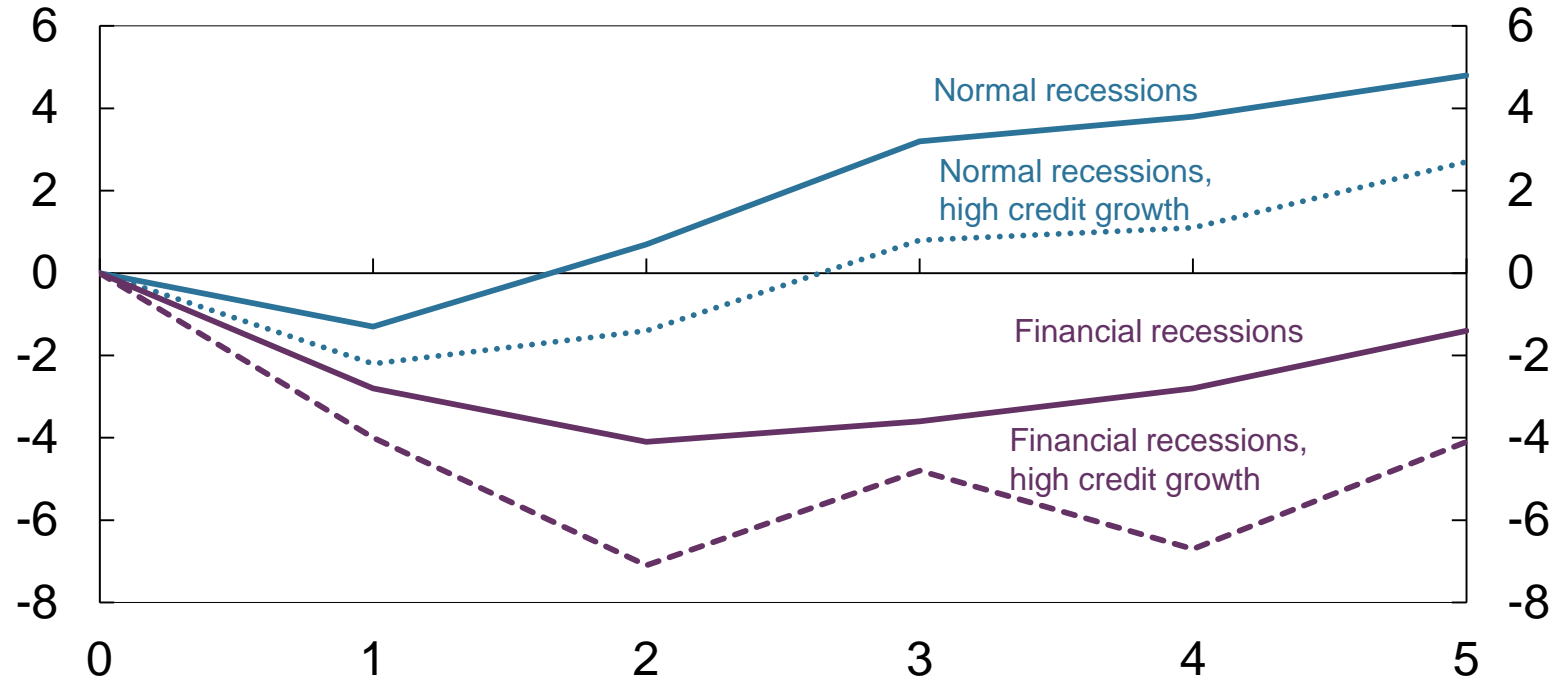
GDP. Index. 2008 Q1 = 100





Rapid credit growth results in deeper downturns

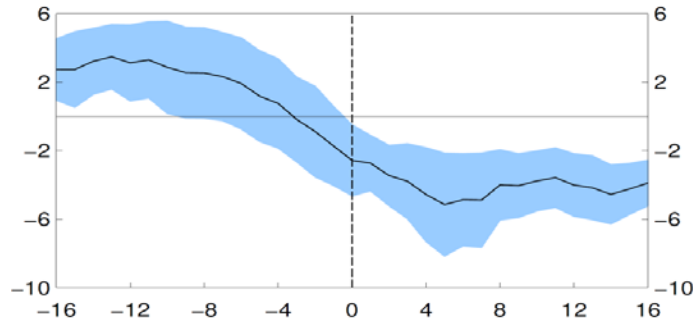
Real GDP per capita. Percent deviation from the start of the crisis



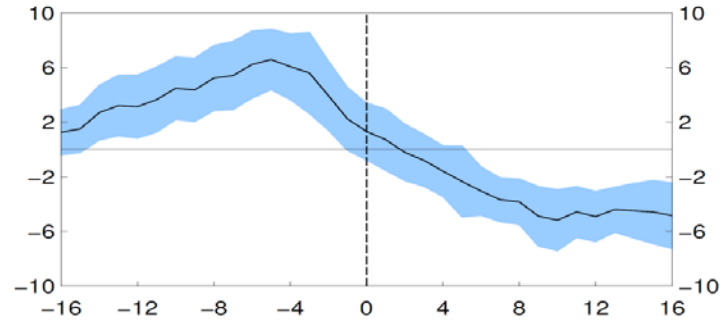
Developments around financial crises

Deviation from mean growth in normal times

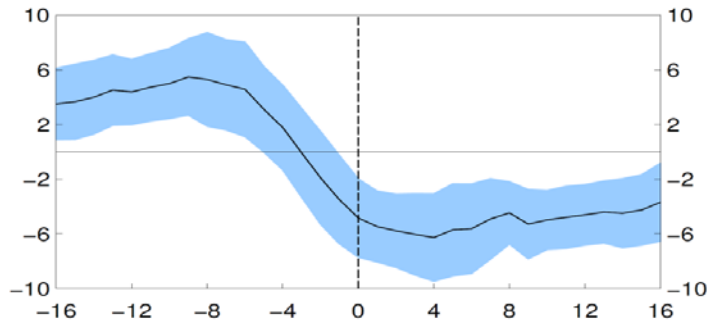
Credit to households



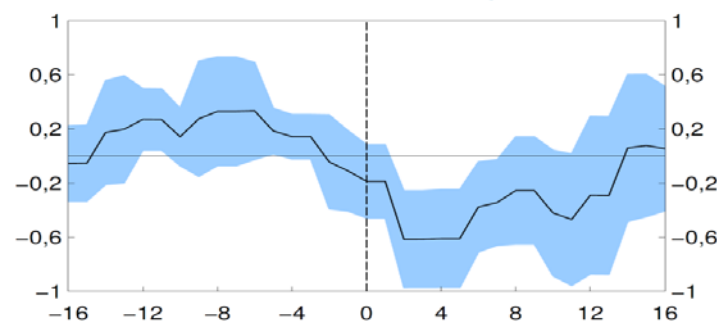
Credit to non-financial enterprises



House prices



Banks' wholesale funding ratio



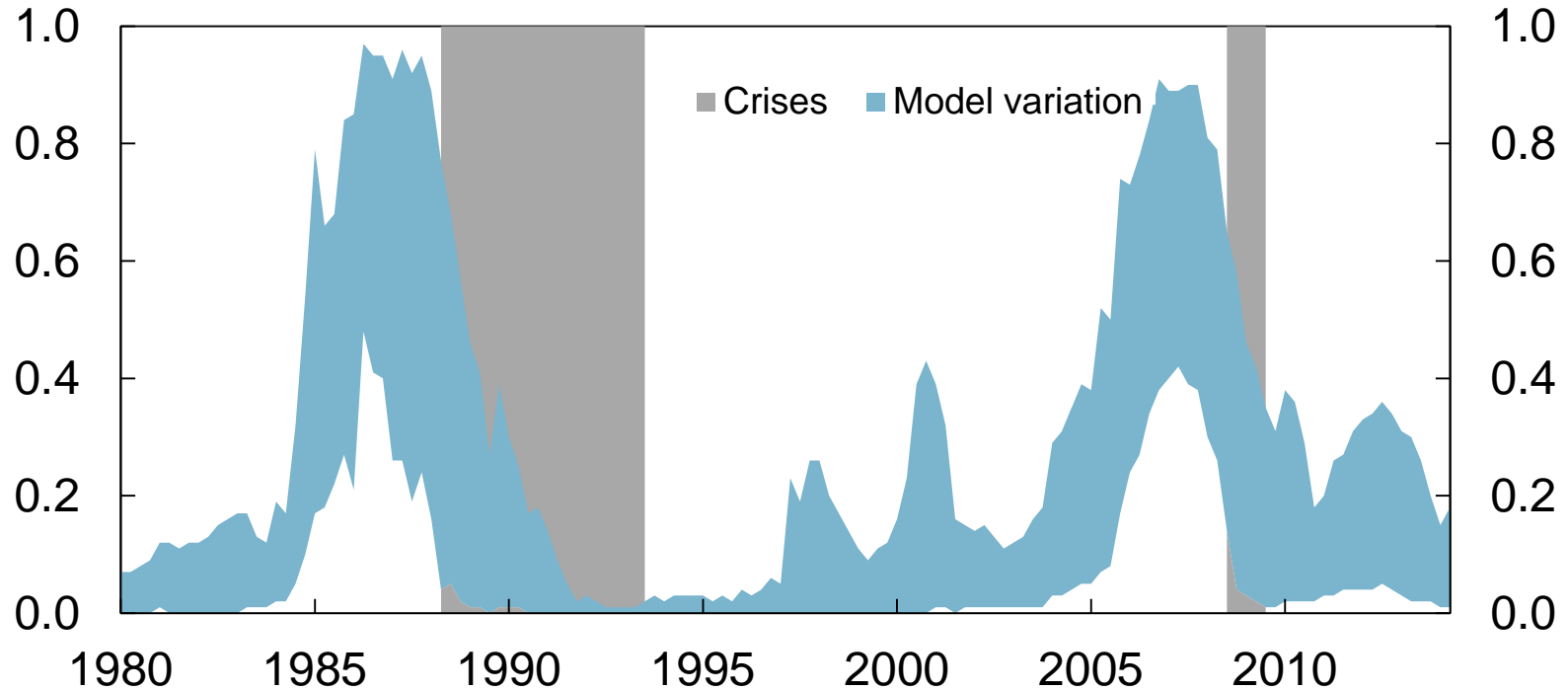
Source: Norges Bank





Early warning models of financial crises

Estimated probability of crisis for different model specifications



Framework

Loss function, L:

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

Demand, y_t :

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

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

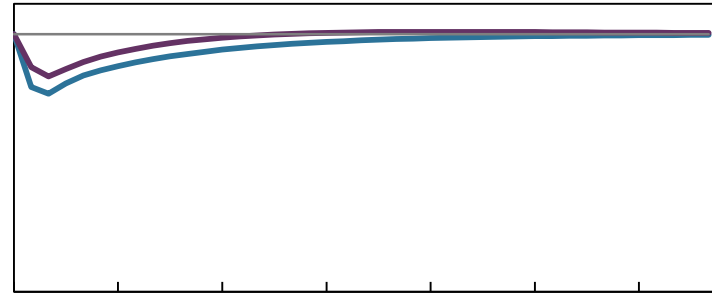
$$\alpha = \begin{cases} 0 & \text{if financial instability does not arise} \\ 1 & \text{if financial instability arises} \end{cases}$$

Level of financial imbalances FU_t : $\text{FU}_t = g(r_t, \dots)$



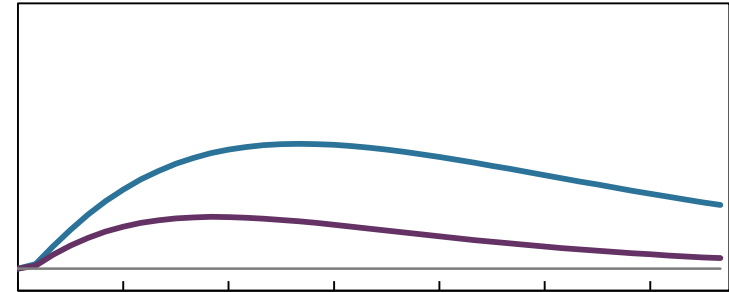
Financial distress does not arise

Real interest rates



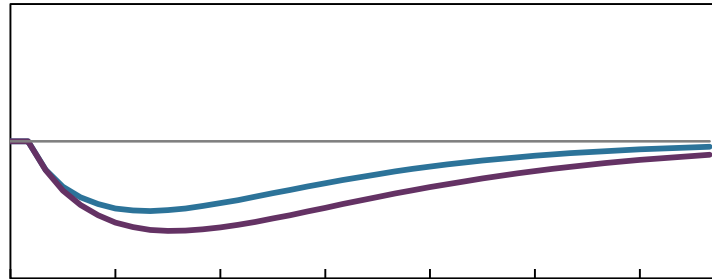
0 6 12 18 24 30 36

Financial imbalances



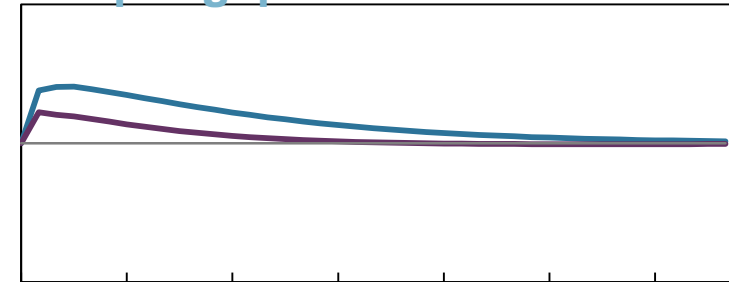
0 6 12 18 24 30 36

Inflation



0 6 12 18 24 30 36

Output gap



0 6 12 18 24 30 36

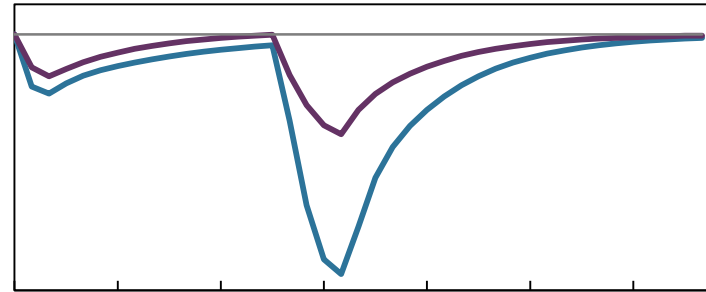
— Does not take risk into account

— Takes risk into account



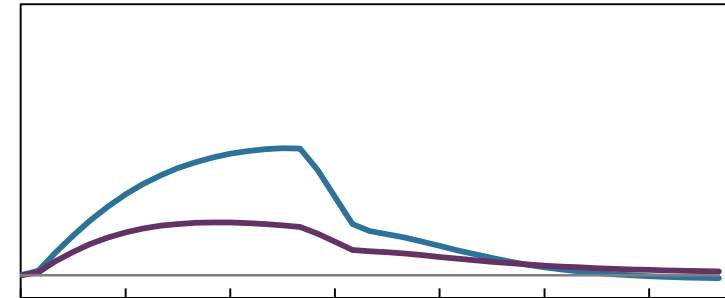
Financial stress does arise

Real interest rates



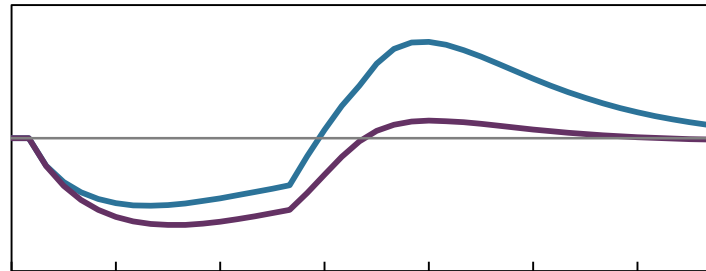
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Financial imbalances



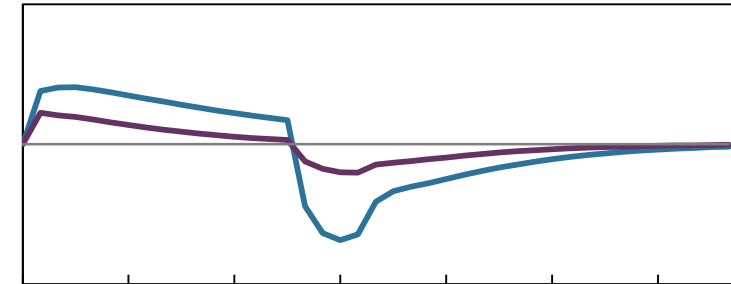
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