Experiences of the financial crisis

Governor Svein Gjedrem

Centre for Monetary Economics (CME)/BI
Norwegian School of Management
30 September 2009
Money market premiums\(^1\)

5-day moving average. Percentage points

\(^1\) Difference between three-month money market rates and expected key rates. Expected key rates are derived from Overnight Index Swap (OIS) rates.

Sources: Bloomberg, Thomson Reuters and Norges Bank
Changes in the key policy rate that follow from Norges Bank’s average pattern of interest rate setting with a 90-day confidence interval

1) Changes in the key policy rate are explained by developments in inflation, mainland GDP growth, wage growth and key rates among trading partners. See Staff Memo 2008/3 for further elaboration

Source: Norges Bank
”To avert panic, central banks should lend early and freely (without limit), to solvent firms, against good collateral, and at ”high rates”.”

”Lombard Street: A description of the Money Market”.  
*Walter Bagehot (1873)*
### Extraordinary measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>US</th>
<th>UK</th>
<th>Europe</th>
<th>Norway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easing of collateral requirements</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Long-term liquidity provision</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>F-loans (2- and 3-year)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOK 35 bn</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Lending/exchange of securities</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swap arrangement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOK 225 bn</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Purchase of private debt</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Government Bond Fund</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOK 6 bn</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase of government bonds</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Financial events and measures in 2008

15 Sep  Lehman Brothers bankruptcy – money markets collapse
15 Sep  More liquidity – increased supply through F-loans
16 Sep  Exchange rate swaps supply USD for NOK – money markets reactivated
17 Sep  AIG emergency loan
24 Sep  Monetary policy meeting – widespread uncertainty
25 Sep  Washington Mutual into receivership – bond markets collapse

Longer loans – 3-month F-loan

29 Sep  Credit arrangement with Federal Reserve – loan of up to USD 15bn
6 Oct   Easing of collateral requirements
        Submission proposing swap arrangement sent to Ministry of Finance
8 Oct   Exchange rate swaps supply NOK for EUR and USD
10 Oct  Loans for smaller banks – 6-month F-loan
15 Oct  Key policy rate reduced by 50bp
20 Oct  Longer loans for all banks – 6-month F-loan
24 Oct  Swap arrangement – Storting decision
29 Oct  Key policy rate reduced by 50bp
14 Nov  Swap arrangement – circular
        Longer loans for small banks – 2-year F-loan
24 Nov  Swap arrangement – first auction held
27 Nov  Swap arrangement – submission with adjustment proposal sent to Ministry of Finance
28 Nov  Ministry of Finance adjusts swap arrangement
17 Dec  Key policy rate reduced by 175bp
18 Dec  Submission to Ministry of Finance proposing government supply of Tier 1 capital
22 Dec  Swap arrangement – submission proposing extension of term from 3 to 5 years sent to Ministry of Finance
Key policy rate and short-term money market rate in Norway

Source: Thomson Reuters
Funding sources, Norwegian banks\textsuperscript{1)}
In per cent of total assets. 1975 – 2009\textsuperscript{2)}

Sources: Klovland (2007), Matre (1992), Statistics Norway and Norges Bank

\textsuperscript{1)} Including savings and commercial banks
\textsuperscript{2)} Including Q1 and Q2
Central bank balance sheets

Sources: Thomson Reuters and Norges Bank

1) Sum assets excluding investments in the Government Pension Fund - Global
Bond spreads\(^1\) and three-month money market spread\(^2\)

Basis points. Week 1 2007 – Week 39 2009

Sources: DnB NOR Markets, Thomson Reuters and Norges Bank

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\(^1\)Spreads compared with swap rates
\(^2\)Spreads compared with projected key policy rate
Bond issues in Norway
All VPS-registered issues. In billions of NOK

- Finance companies and mortgage companies
- Banks
- Non-financials

Source: Stamdata

1) Up to and including 28 September in 2008 and 2009

Source: Norges Bank
Bank liquidity
In billions of NOK. Daily figures. 1 January 2007 – 25 September 2009

Source: Norges Bank
Bank liquidity
In billions of NOK. Daily figures. 1 January 2007 – 31 December 2009

Projection

Source: Norges Bank

Projection from 28 September 2009

Source: Norges Bank
Bank liquidity
In billions of NOK. Daily figures. 1 January 2007 – 31 December 2009

Norges Bank's liquidity supply
Structural liquidity
Bank deposits in Norges Bank

Projection

Source: Norges Bank

Projection from 28 September 2009
“One of us (Akerlof) remembers a dinner conversation a few years ago. During the housing boom a distant relative from Norway – by marriage by marriage by marriage, known only from a brief encounter at a family wedding – had reportedly bought a house in Trondheim, for more than $1 million. That seemed like a lot of money – perhaps not for New York, Tokyo, London, San Francisco, Berlin, or even for Oslo – but certainly for Trondheim, up the Norwegian coast, on the edge of settlement, and vying for the title of world’s most northern city. Nor was it a mansion. This thought remained quietly parked in Akerlof’s brain, classified along with other observations that property values were high in Scandinavia.”

“Animal Spirits
How Human Psychology Drives the Economy, and Why It Matters for Global Capitalism”

George A. Akerlof and Robert J. Shiller
“Recently Akerlof told his co-author, Shiller, that he had been wondering if he should have given more thought to the Trondheim story. We discussed the matter. This seems to be a mental lapse, accepting this story of the high price as nothing more than an insignificant oddity. On the contrary, Akerlof should have seen it as an incongruity requiring active thought, to be resolved within the context of a larger view of the markets.”

“Animal Spirits
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*George A. Akerlof and Robert J. Shiller*
Flexible inflation targeting in theory

1. The central bank sets the interest rate with the aim of minimising a **loss function**
   - Loss = (deviation from inflation target)$^2 + \lambda \times$ (output gap)$^2$

2. The central bank follows a **reaction function** in interest rate setting
   - Key policy rate = function of all factors that influence inflation and the output gap in the model

The Taylor rule is a model-independent reaction function
- Key policy rate =
  constant term + 1.5 × inflation gap + 0.5 × output gap
From the Regulation on Monetary Policy

- Monetary policy shall be aimed at stability in the Norwegian krone's national and international value, contributing to stable expectations concerning exchange rate developments. At the same time, monetary policy shall underpin fiscal policy by contributing to stable developments in output and employment.

- The operational target of monetary policy shall be annual consumer price inflation of approximately 2.5 per cent over time.
Bank equity capital\(^1\)
In per cent of total assets. 1875 – 2009\(^2\)

Source: Klovland (2007), Statistics Norway and Norges Bank

\(^1\)Including savings and commercial banks
\(^2\)Including Q1 and Q2
Unemployment\textsuperscript{1)}
Per cent. Seasonally adjusted.
January 1992 – August 2009\textsuperscript{3)}

\textsuperscript{1)}LFS unemployment, registered, and registered unemployed and on labour market programmes.
\textsuperscript{2)}Chain-linked old and new series in 1997.
\textsuperscript{3)}LFS unemployment includes figures to end-July 2009
Sources: Statistics Norway and NAV

Inflation
10-year moving average\textsuperscript{1)} and variation\textsuperscript{2)} i CPI\textsuperscript{3)}.
Per cent 1980 – 2009

\textsuperscript{1)}The moving average is calculated 7 years back and 2 years ahead.
\textsuperscript{2)}The blue band around the CPI is the variation in the CPI adjusted for tax changes and excluding energy products in the average period, measured by +/- one standard deviation.
\textsuperscript{3)}Projections for 2009 - 2011 are based on projections in MPR 2/09
Sources: Statistics Norway and Norges Bank
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