

# Experiences of the financial crisis

*Governor Svein Gjedrem*

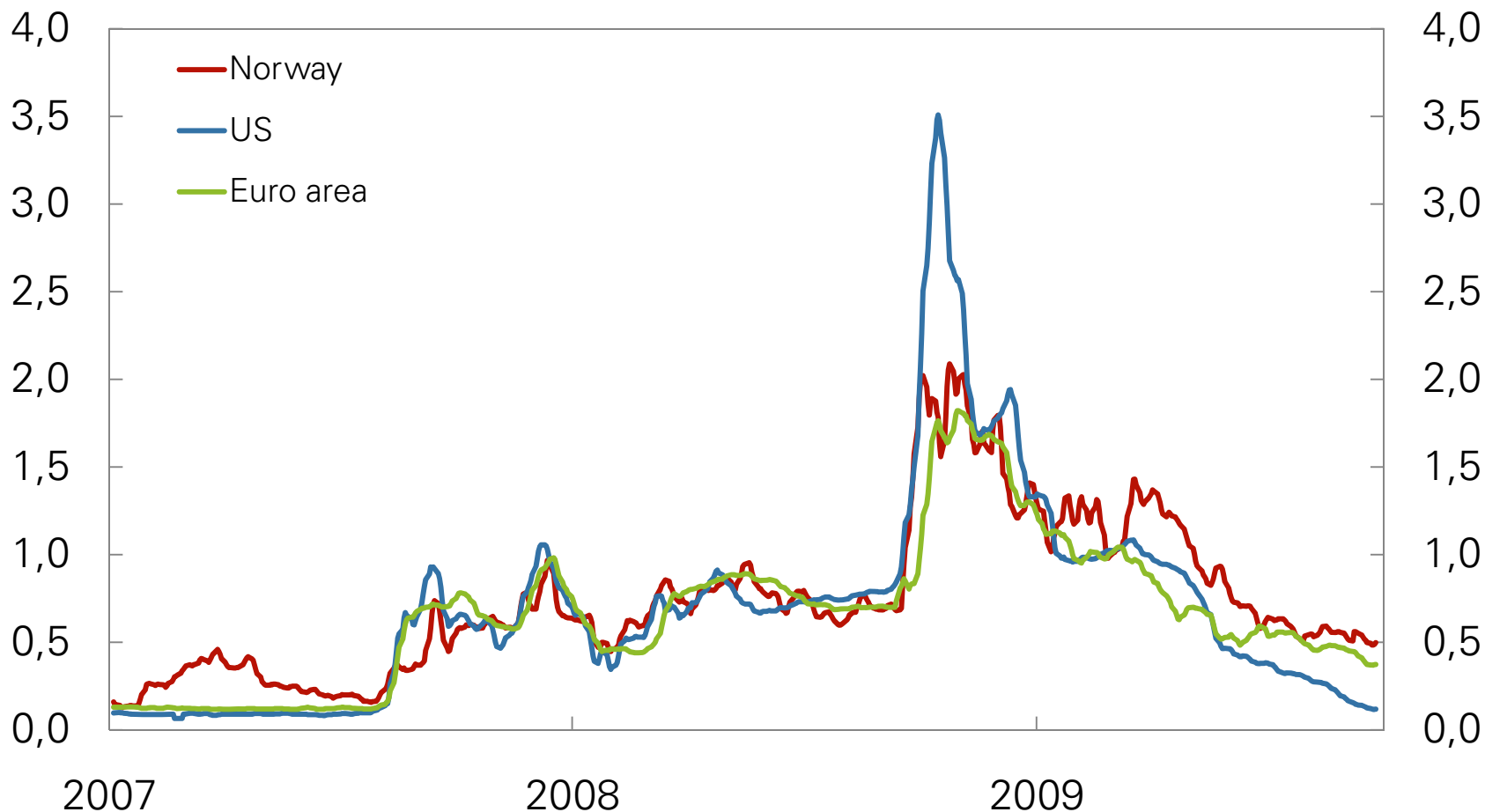
*Centre for Monetary Economics (CME)/BI  
Norwegian School of Management*

*30 September 2009*

# Money market premiums<sup>1)</sup>

5-day moving average. Percentage points

4 January 2007 – 25 September 2009

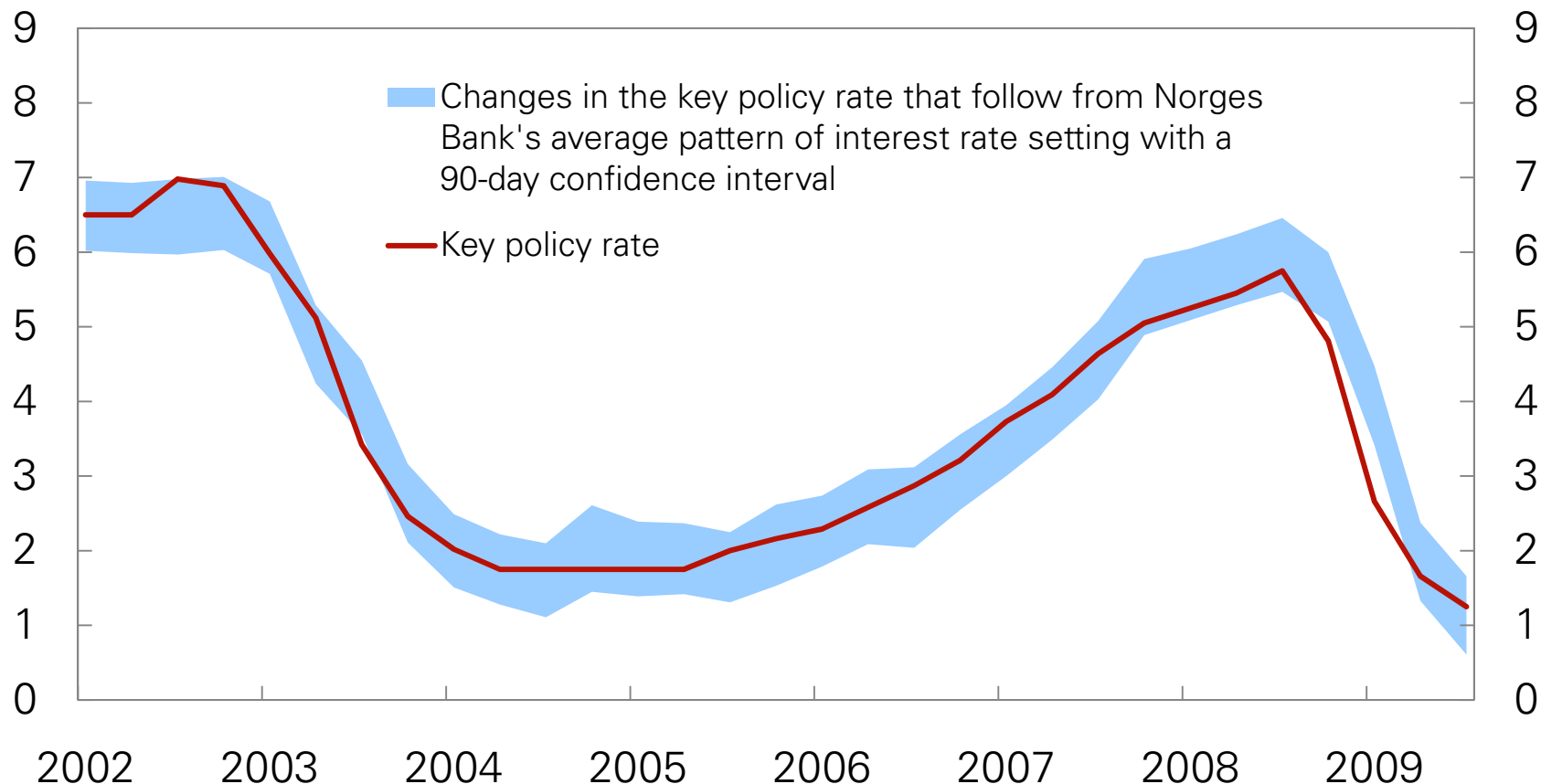


<sup>1)</sup> Difference between three-month money market rates and expected key rates. Expected key rates are derived from Overnight Index Swap (OIS) rates

Sources: Bloomberg, Thomson Reuters and Norges Bank

# Key policy rate and Norges Bank's average pattern in interest rate setting<sup>1)</sup>

Per cent. 2002 Q1 – 2009 Q3



<sup>1)</sup> 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

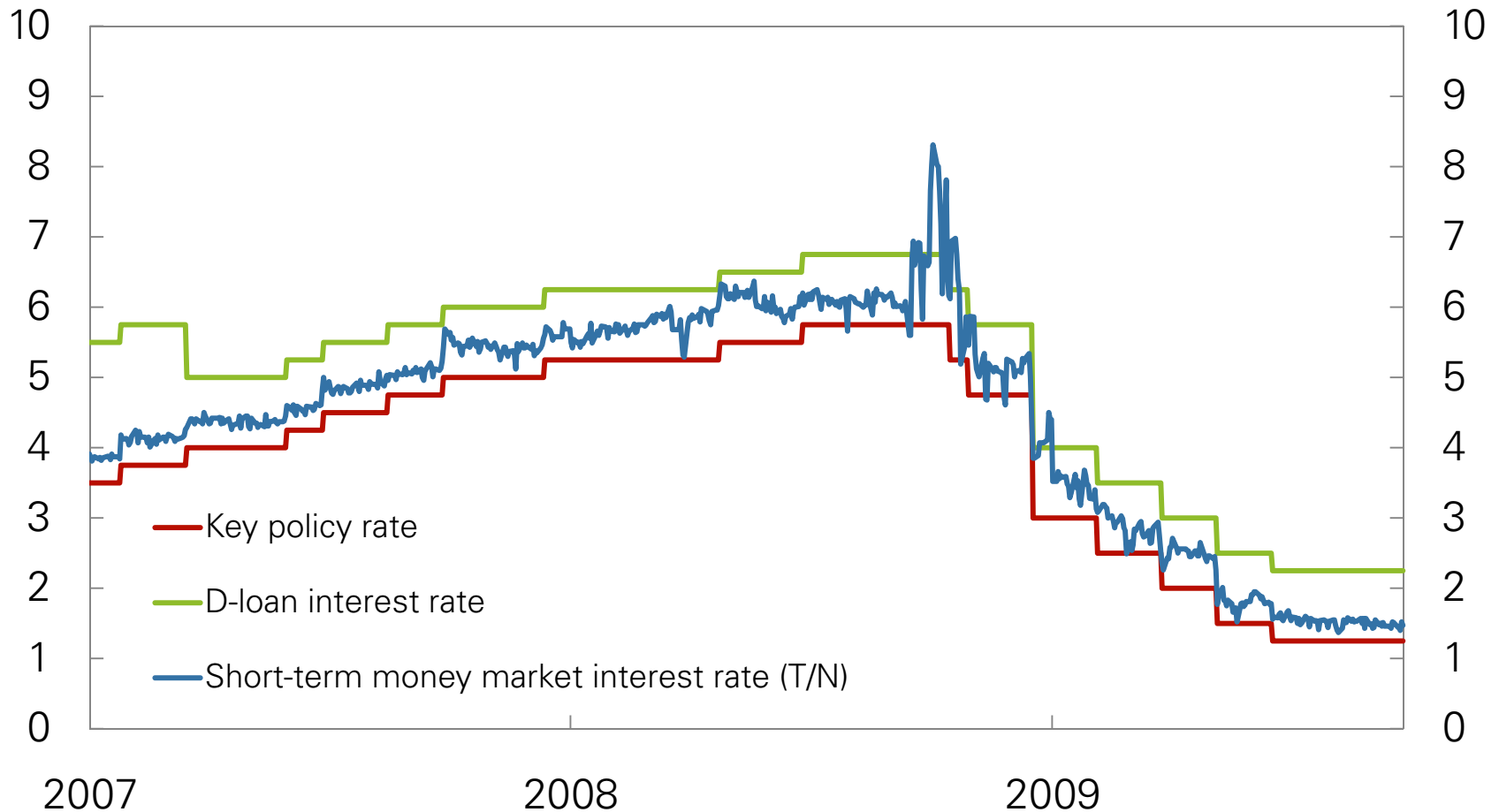
	US	UK	Europe	Norway
Easing of collateral requirements	✓	✓	✓	✓
Long-term liquidity provision	✓	✓	✓	✓ F-loans (2- and 3-year) NOK 35 bn
Lending/exchange of securities	✓	✓		✓ Swap arrangement NOK 225 bn
Purchase of private debt	✓	✓	✓	✓ Government Bond Fund NOK 6 bn
Purchase of government bonds	✓	✓		

# Financial events and measures in 2008

15 Sep	<b>Lehman Brothers</b> bankruptcy – money markets collapse
15 Sep	<b>More liquidity</b> – increased supply through F-loans
16 Sep	<b>Exchange rate swaps</b> supply USD for NOK – money markets reactivated
17 Sep	<b>AIG emergency loan</b>
24 Sep	<b>Monetary policy meeting</b> – widespread uncertainty
25 Sep	<b>Washington Mutual</b> into receivership – bond markets collapse Longer loans – 3-month F-loan
29 Sep	<b>Credit arrangement with Federal Reserve</b> – loan of up to USD 15bn
6 Oct	<b>Easing of collateral requirements</b> Submission proposing <b>swap arrangement</b> sent to Ministry of Finance
8 Oct	<b>Exchange rate swaps</b> supply NOK for EUR and USD
10 Oct	<b>Loans for smaller banks</b> – 6-month F-loan
15 Oct	<b>Key policy rate</b> reduced by 50bp
20 Oct	<b>Longer loans for all banks</b> - 6-month F-loan
24 Oct	<b>Swap arrangement</b> – Starting decision
29 Oct	<b>Key policy rate</b> reduced by 50bp
14 Nov	<b>Swap arrangement</b> – circular <b>Longer loans for small banks</b> – 2-year F-loan
24 Nov	<b>Swap arrangement</b> – first auction held
27 Nov	<b>Swap arrangement</b> – submission with adjustment proposal sent to Ministry of Finance
28 Nov	<b>Ministry of Finance</b> adjusts <b>swap arrangement</b>
17 Dec	<b>Key policy rate</b> reduced by 175bp
18 Dec	Submission to Ministry of Finance proposing government supply of Tier 1 capital
22 Dec	<b>Swap arrangement</b> – 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

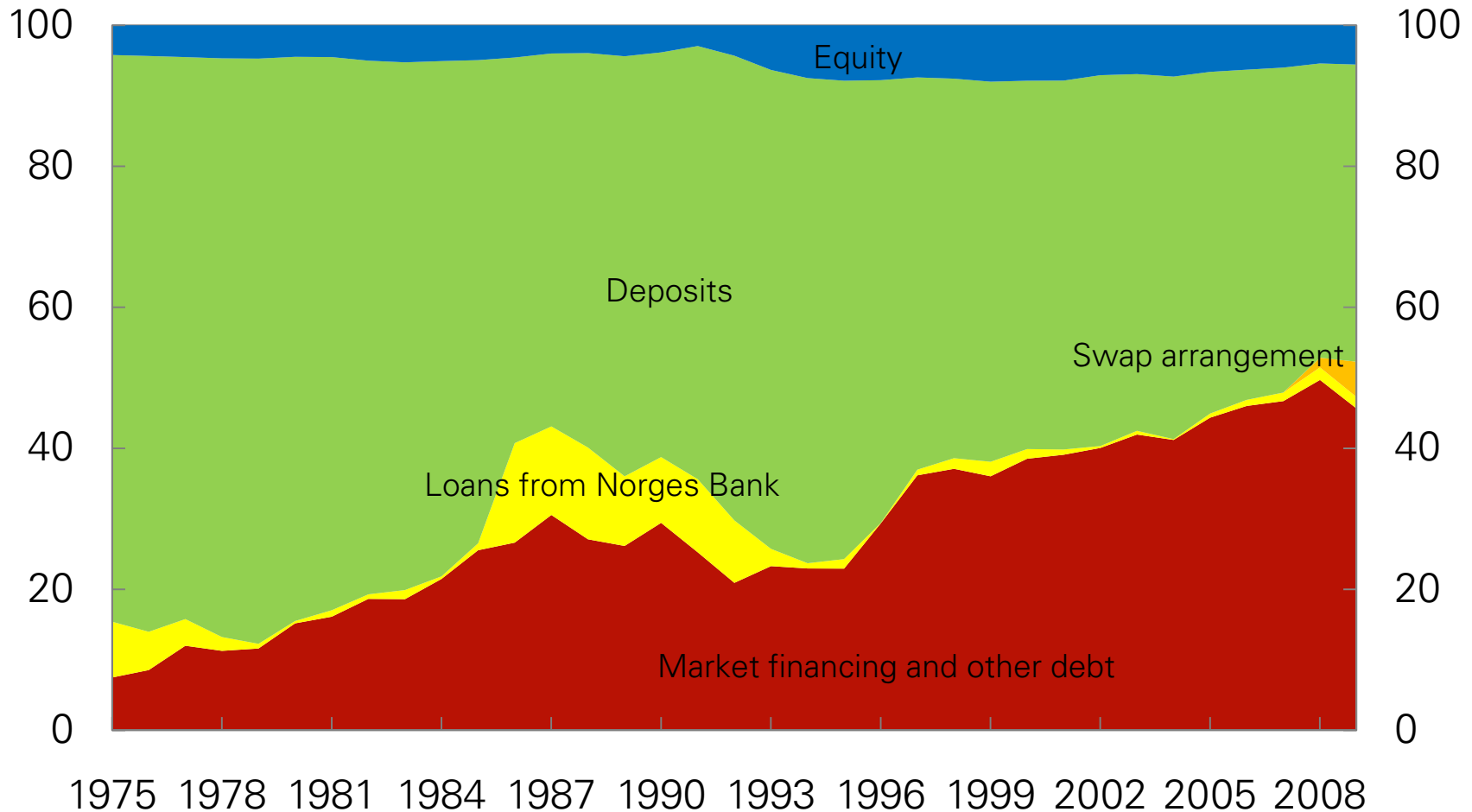
Per cent. Daily figures. 2 January 2007 – 25 September 2009



Source: Thomson Reuters

# Funding sources, Norwegian banks<sup>1)</sup>

In per cent of total assets. 1975 – 2009<sup>2)</sup>



<sup>1)</sup>Including savings and commercial banks

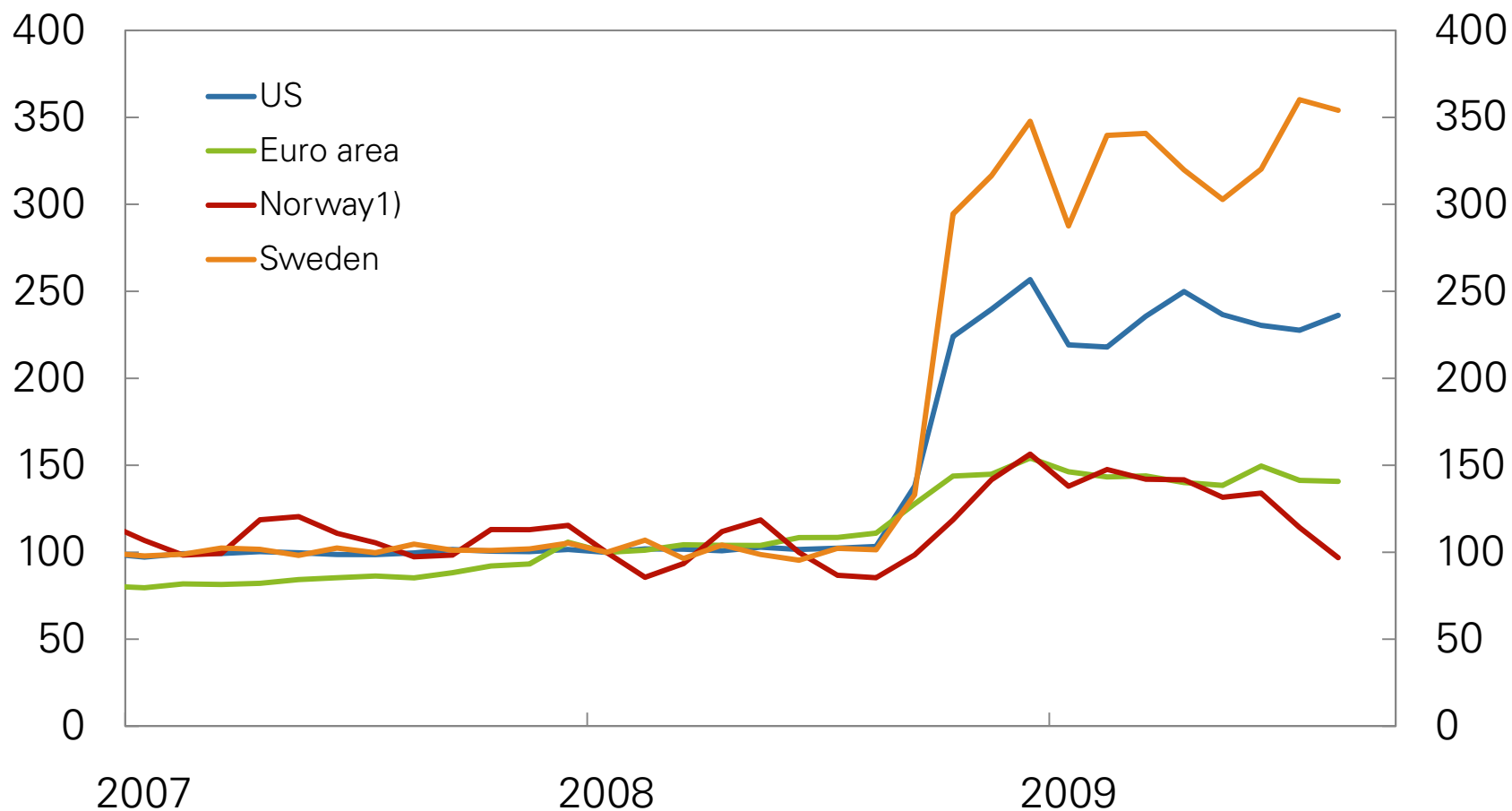
<sup>2)</sup>Including Q1 and Q2

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



# Central bank balance sheets

Index. January 2008 = 100. January 2007 – August 2009

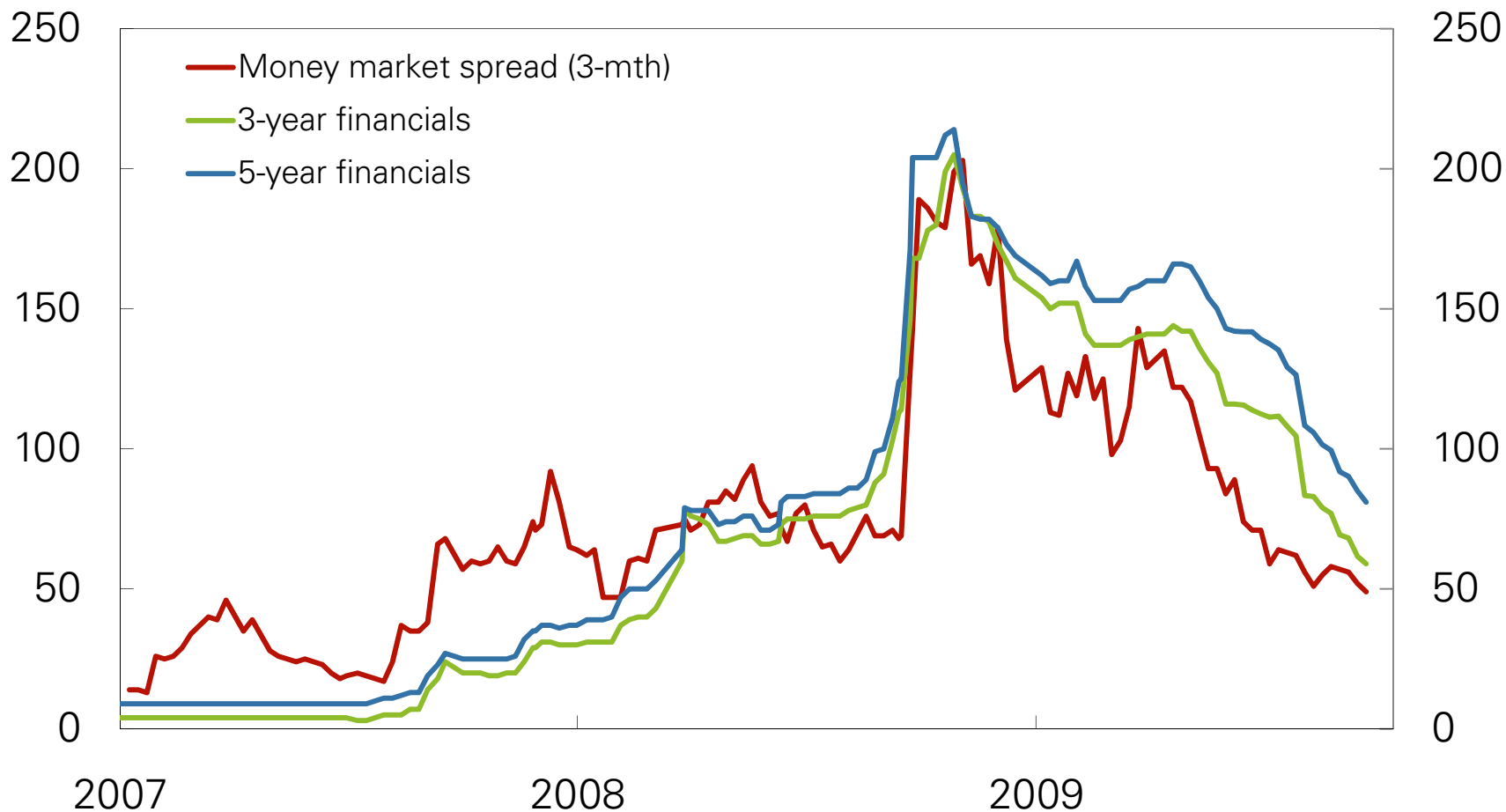


<sup>1)</sup>Sum assets excluding investments in the Government Pension Fund - Global

Sources: Thomson Reuters and Norges Bank

# Bond spreads<sup>1)</sup> and three-month money market spread<sup>2)</sup>

Basis points. Week 1 2007 – Week 39 2009



<sup>1)</sup>Spreads compared with swap rates

<sup>2)</sup>Spreads compared with projected key policy rate

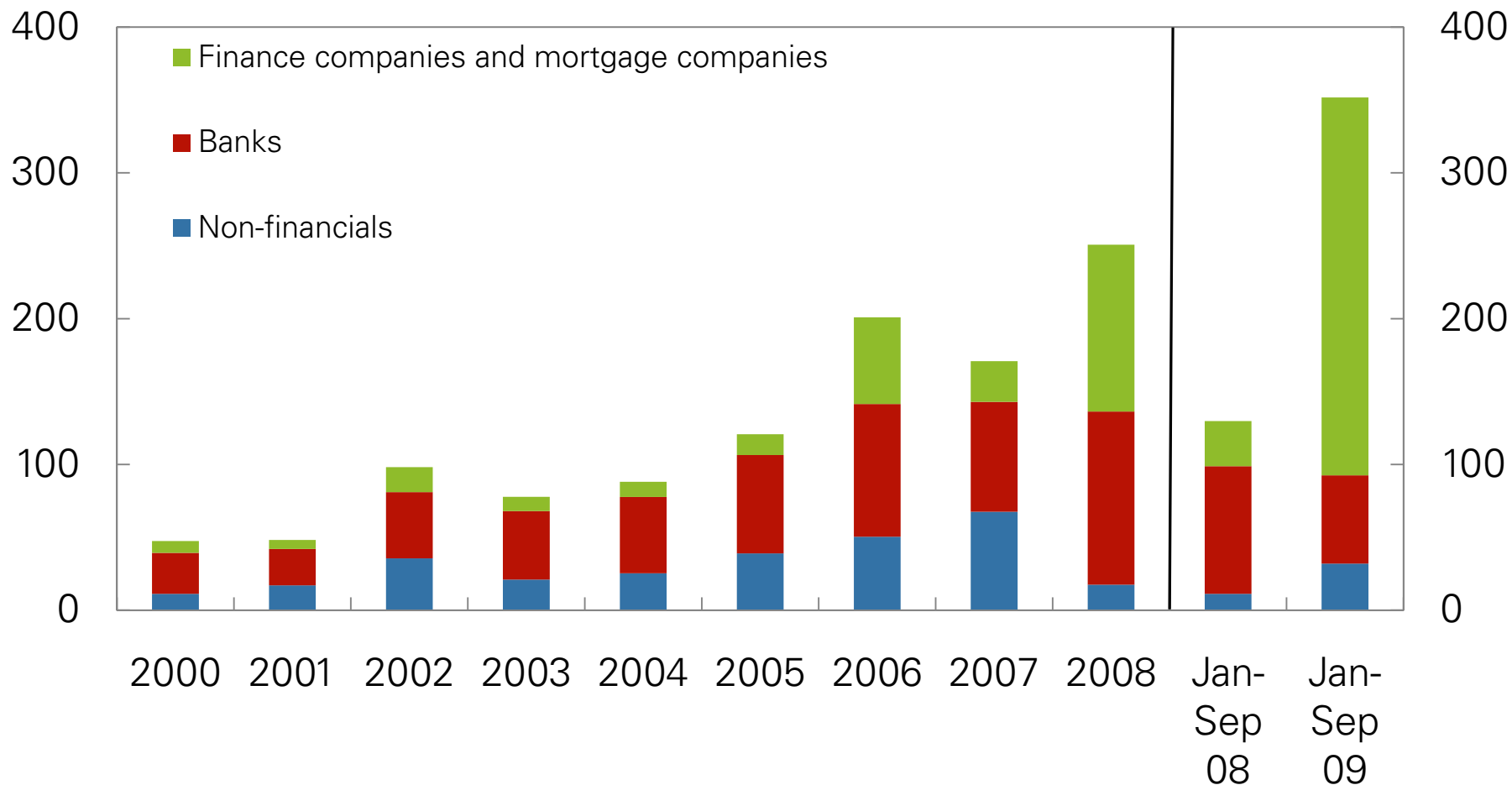
Sources: DnB NOR Markets, Thomson Reuters and Norges Bank



# Bond issues in Norway

All VPS-registered issues. In billions of NOK

2000 – 2008. Period January – September 2008 and 2009<sup>1)</sup>

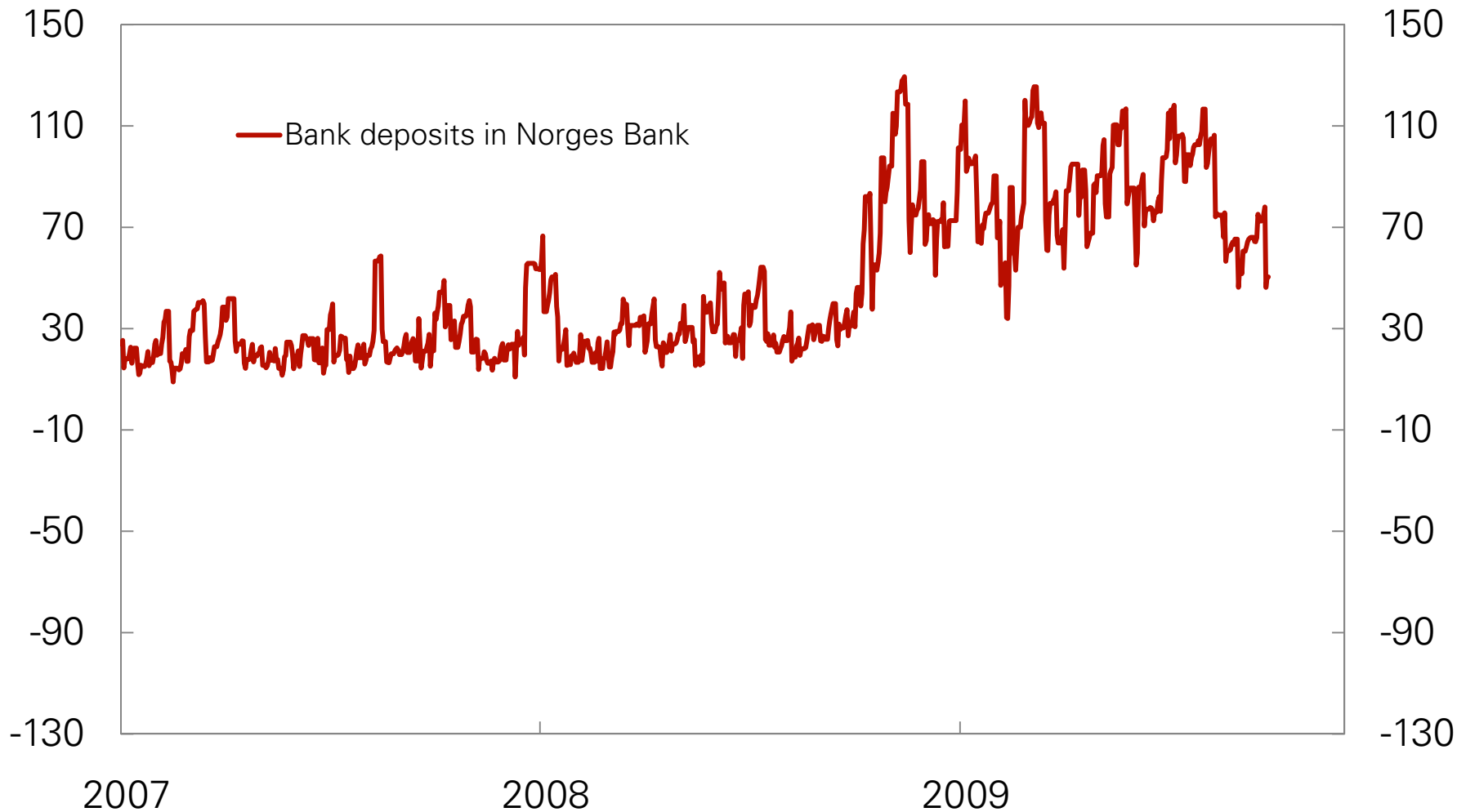


<sup>1)</sup>Up to and including 28 September in 2008 and 2009

Source: Stamdata

# Bank liquidity

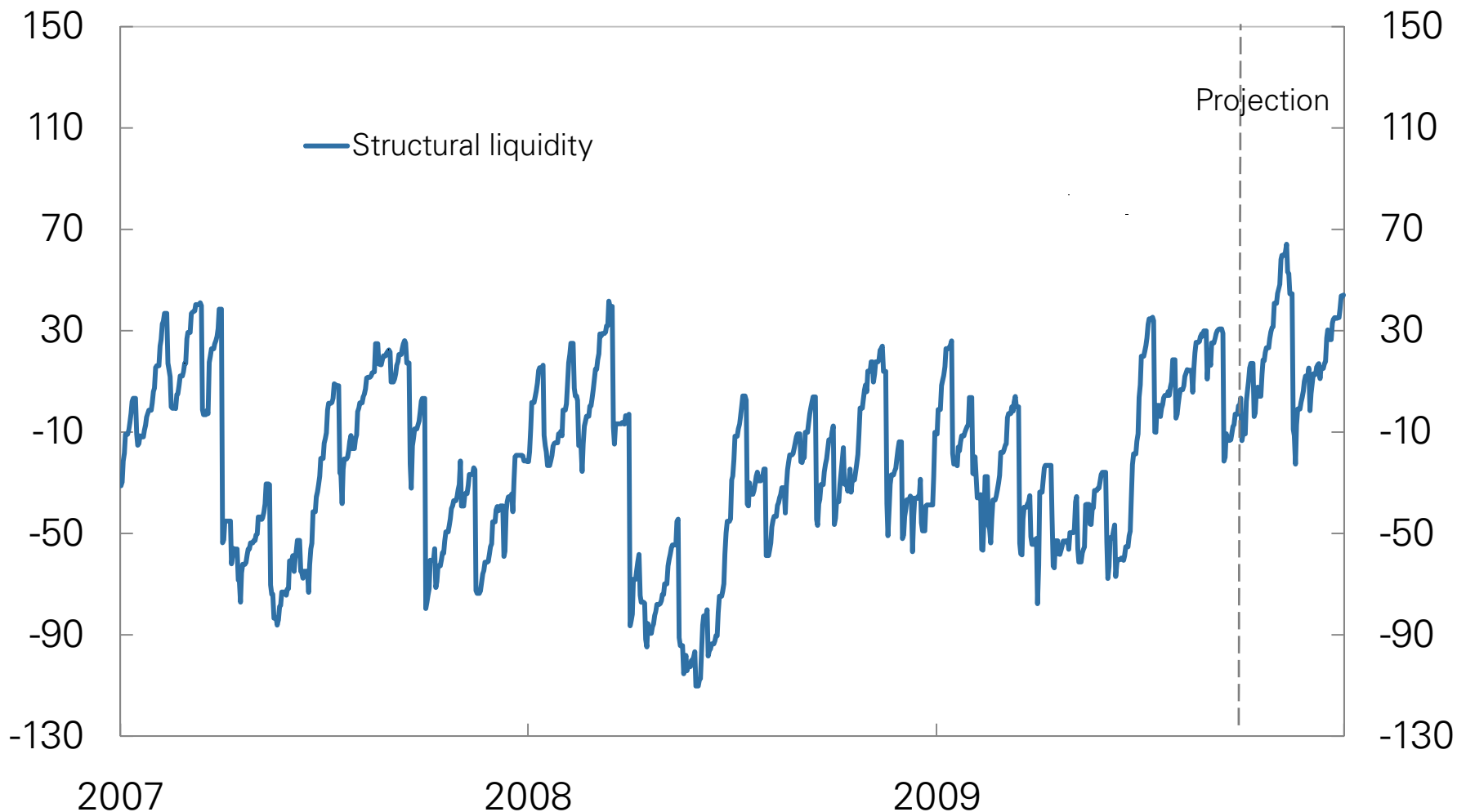
In billions of NOK. Daily figures. 1 January 2007 – 25 September 2009



Source: Norges Bank

# Bank liquidity

In billions of NOK. Daily figures. 1 January 2007 – 31 December 2009<sup>1)</sup>

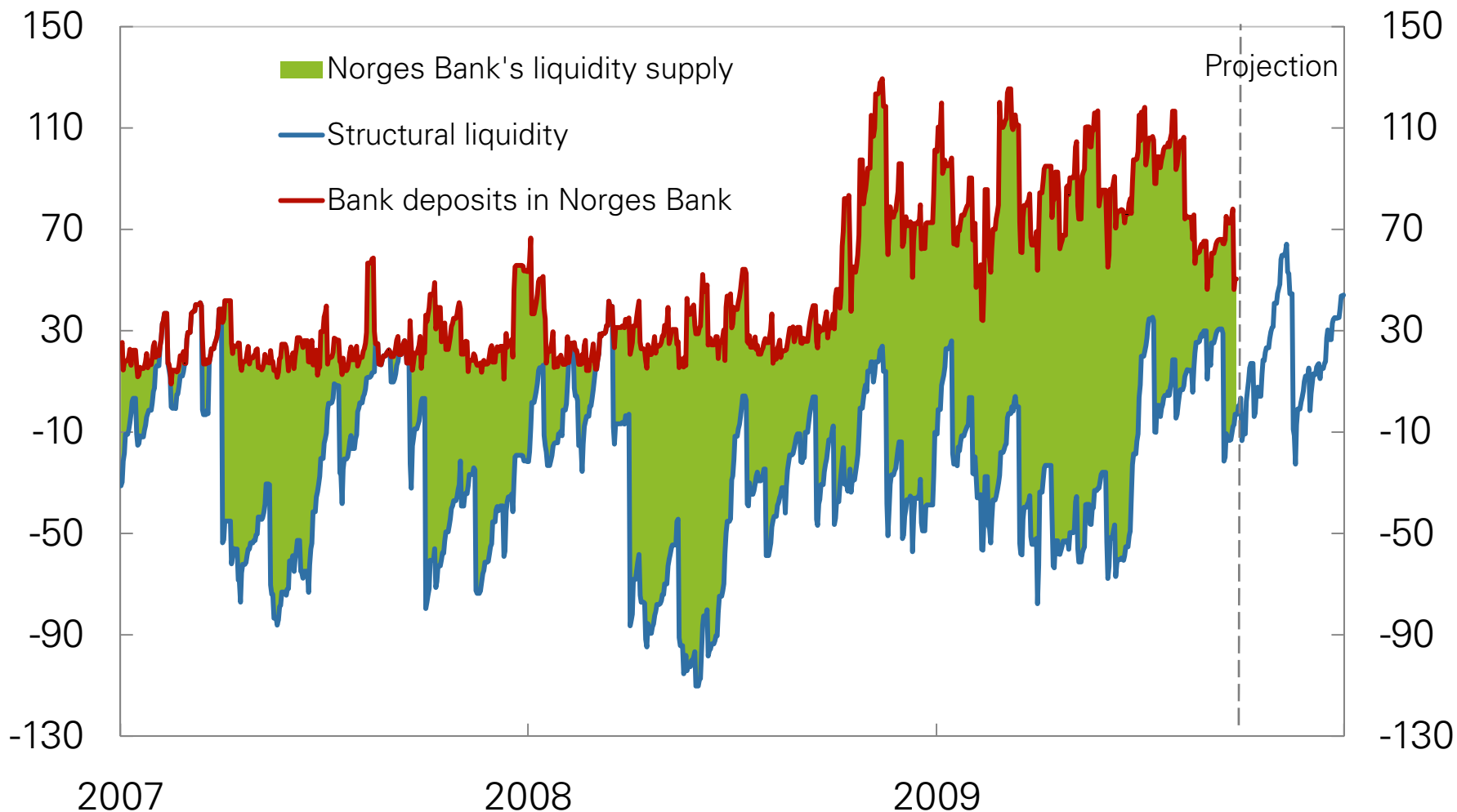


<sup>1)</sup>Projection from 28 September 2009

Source: Norges Bank

# Bank liquidity

In billions of NOK. Daily figures. 1 January 2007 – 31 December 2009<sup>1)</sup>



<sup>1)</sup>Projection from 28 September 2009

Source: Norges Bank

“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  
How Human Psychology Drives the Economy, and Why It  
Matters for Global Capitalism”  
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# Flexible inflation targeting in theory

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

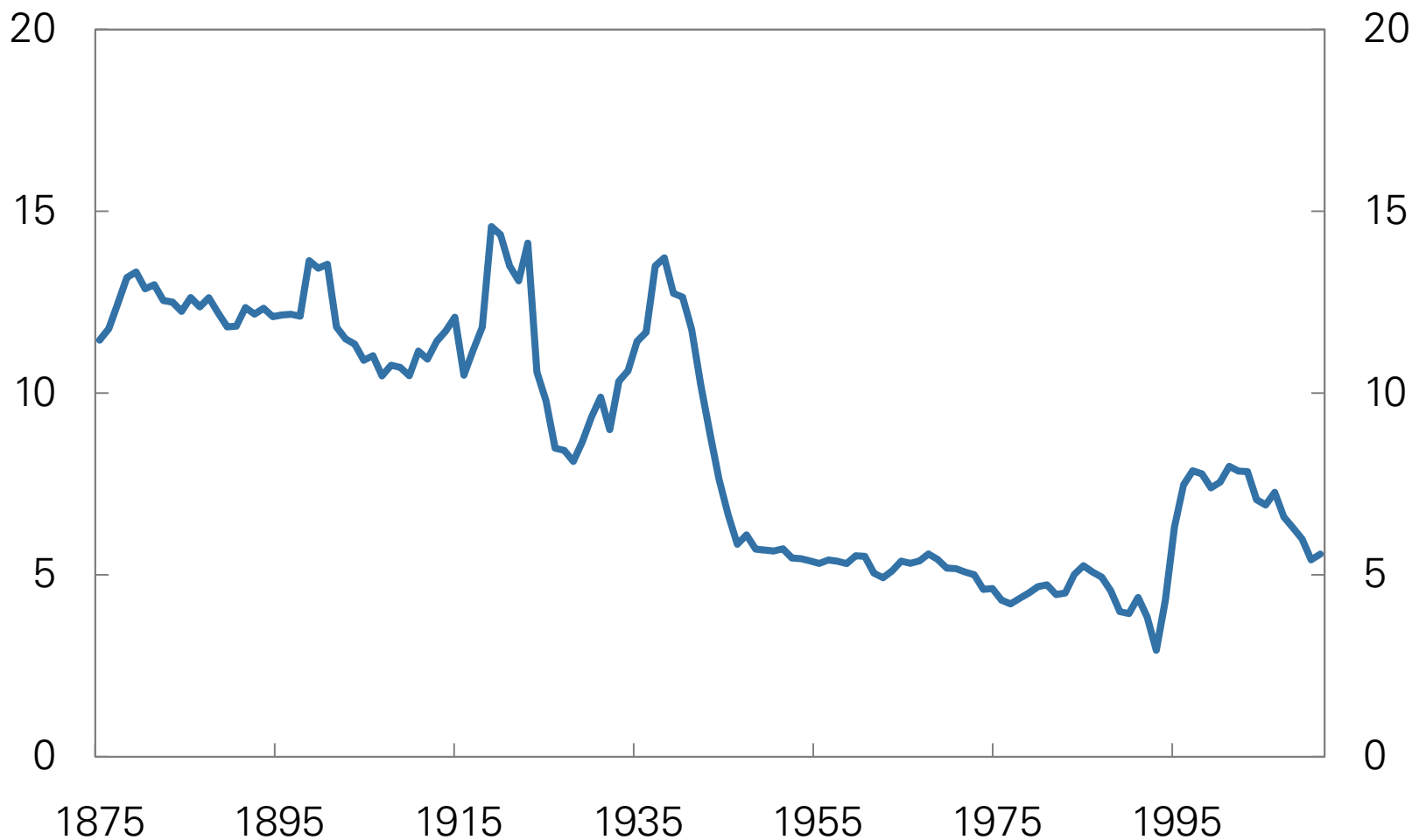
- Key policy rate =  
constant term + 1.5 x inflation gap + 0.5 x output gap

# 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<sup>1)</sup>

In per cent of total assets. 1875 – 2009<sup>2)</sup>



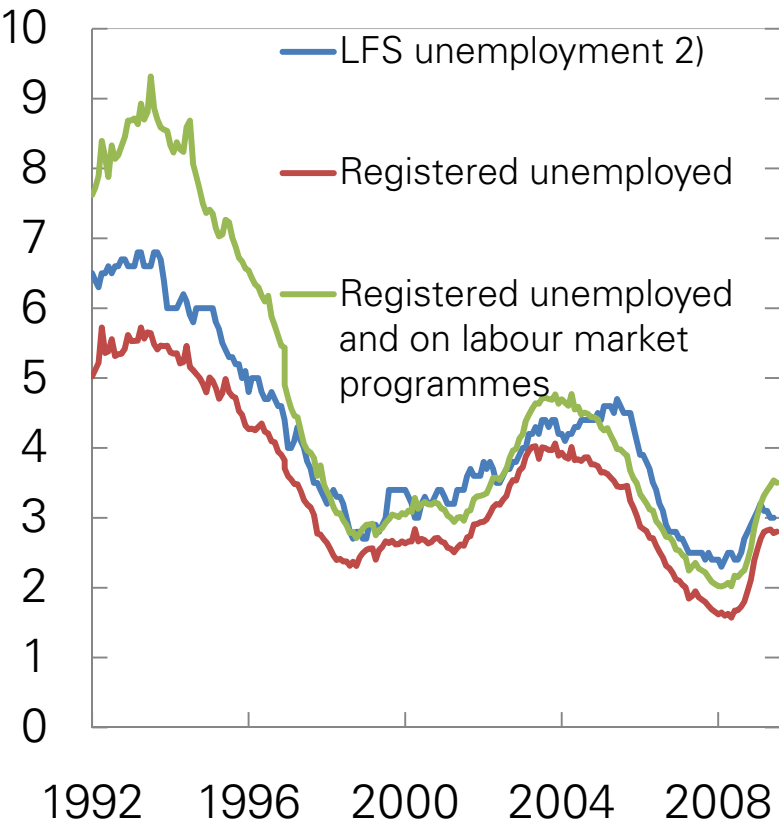
<sup>1)</sup>Including savings and commercial banks

<sup>2)</sup>Including Q1 and Q2

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

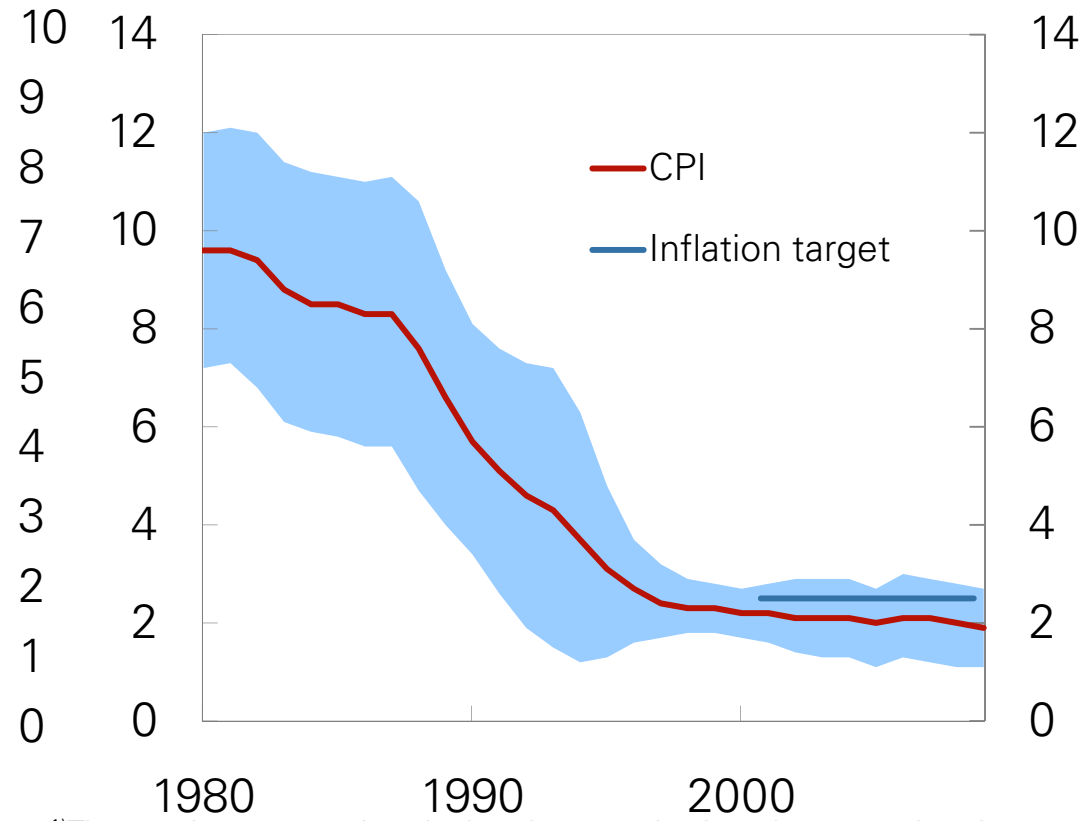
# Unemployment<sup>1)</sup>

Per cent. Seasonally adjusted.  
January 1992 – August 2009<sup>3)</sup>



# Inflation

10-year moving average<sup>1)</sup> and  
variation<sup>2)</sup> i CPI<sup>3)</sup>. Per cent  
1980 – 2009



<sup>1)</sup>LFS unemployment, registered, and registered unemployed and on labour market programmes.

<sup>2)</sup>Chain-linked old and new series in 1997.

<sup>3)</sup>LFS unemployment includes figures to end-July 2009

Sources: Statistics Norway and NAV

<sup>1)</sup>The moving average is calculated 7 years back and 2 years ahead  
<sup>2)</sup>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

<sup>3)</sup>Projections for 2009 - 2011 are based on projections in MPR 2/09  
Sources: Statistics Norway and Norges Bank

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