



# Model uncertainty and monetary policy at the Riksbank

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Bank of Korea Conference, May 2008

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## Flexible inflation targeting

- Stabilize inflation around the inflation target (2%/yr)
- Stabilize resource utilization
- Loss function

- Period loss function ( $\lambda > 0$ )

$$L_t = (\pi_t - \pi^*)^2 + \lambda(y_t - \bar{y}_t)^2$$

- Intertemporal loss function

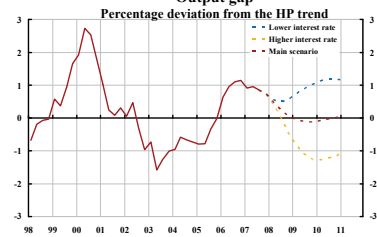
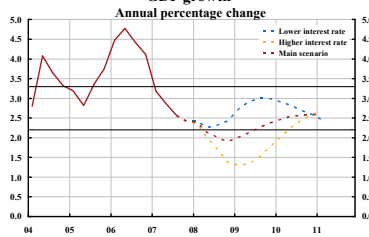
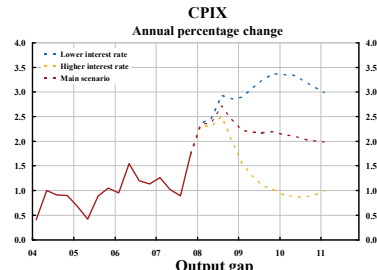
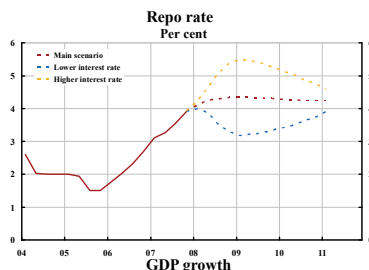
$$E_t \sum_{\tau=0}^{\infty} (1-\delta)\delta^\tau L_{t+\tau}$$

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# Flexible inflation targeting

- “Forecast targeting:” Choose the interest-rate path so that the resulting forecast for inflation and resource utilization “looks good”
- “Looks good:” Inflation approximately at 2% and resource utilization at normal 2-3 years ahead, or inflation approaching target and resource utilization approaching normal level at appropriate pace
- Riksbank: “Well-balanced” monetary policy
- “Optimal” monetary policy

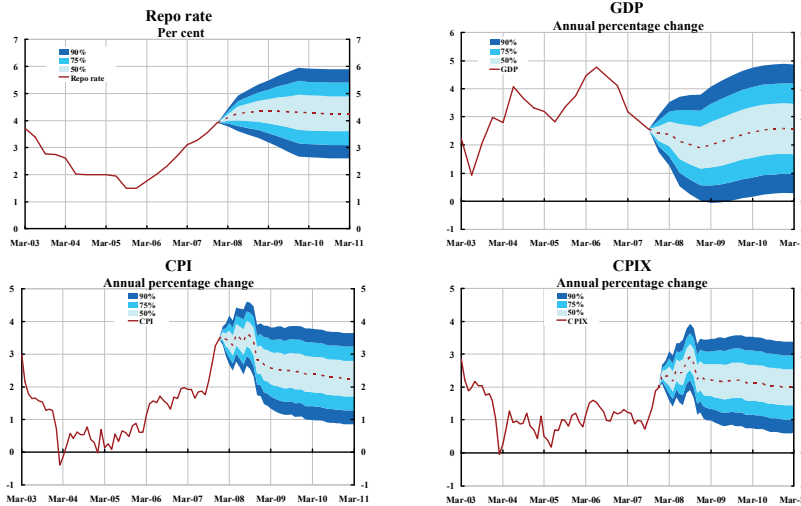
# Alternative interest-rate paths and forecasts, February 2008



# Forecasts are uncertain

- Probability distribution
  - Mean
  - Uncertainty interval
- Depends on available information
- Revised when new information is received
- "Forecast, not a promise!"

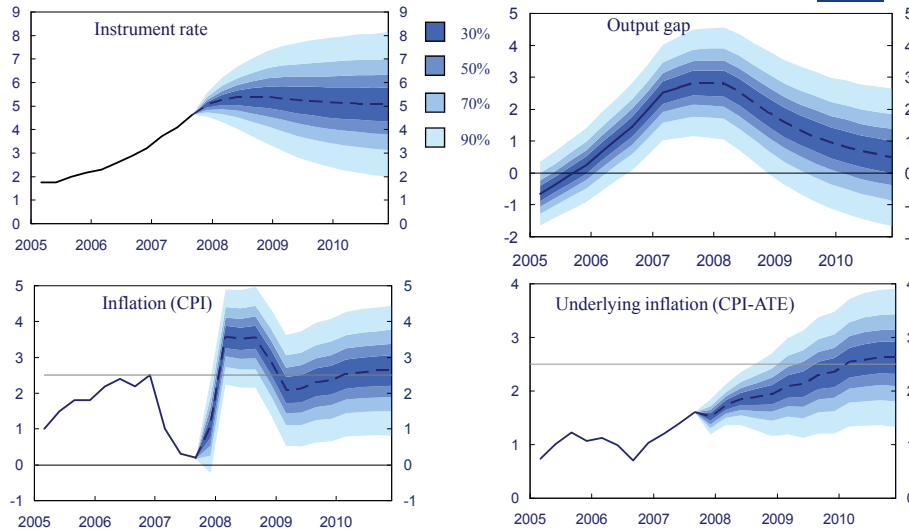
## Mean value with uncertainty interval, February 2008



## Baseline scenario, Norges Bank, January 2008



Per cent, 2005:1 – 2010:4



Sources: Statistics Norway and Norges Bank 7

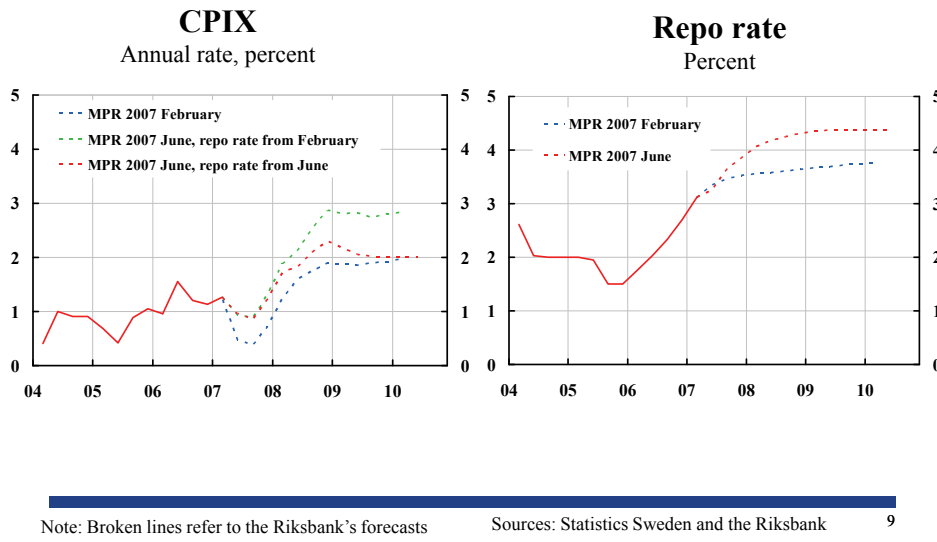
## Forecast targeting: Handling new information



- New information relevant only if it changes the forecast for inflation or resource utilization *for an unchanged interest-rate path*
- “Filter new information through the forecast”
- New info shifts forecasts for inflation and resource utilization up (down) with unchanged interest-rate path
- Shift interest-rate path up (down)

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# Forecast targeting: Handling new information



## Handling uncertainty

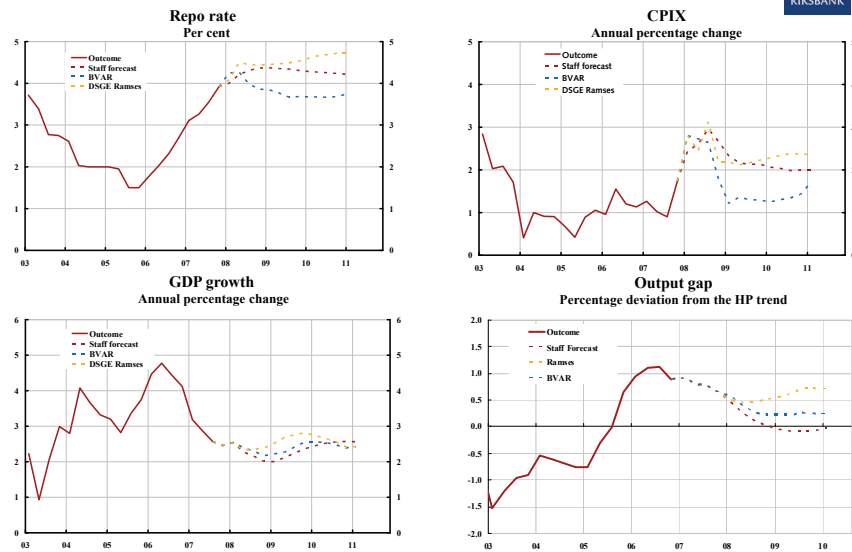


- Forecasts are mean forecasts, not mode
  - “Risk-adjusted”
  - Consistent with certainty equivalence: Known LQ model, additive uncertainty
  - Uncertainty intervals: Mainly to emphasize forecast uncertainty, do not affect policy
  - “Forecasts, not promises/commitments” (instrument-rate path)

## Handling *model* uncertainty

- *Informal* model averaging: Combination of forecasts from several models (DSGE model, Bayesian VAR, indicator models)
- Various judgmental adjustments (determination of inflation expectations, non-rational expectations)

## Model and staff forecasts, Feb 2008



## Handling *model* uncertainty

- *Informal* considerations in individual Board member motivations
  - Names in Board minutes
- Simulations for given instrument rule (including optimal instrument rule) with parameter and shock uncertainty to construct mean forecast and uncertainty intervals