Theory meets practice: What have I learned doing inflation targeting?

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Conference on "Inflation targeting twenty years on," Norges Bank, June 11-12, 2009

Flexible inflation targeting

- Stabilize both inflation around target and resource utilization around normal
- "Forecast targeting": Choose policy-rate path so forecast for inflation and real economy "looks good"
- "Looks good": Inflation goes to target and resource utilization goes to normal at appropriate pace
- Riksbank: "Well balanced" policy
- Set policy rate and publish and justify forecast of policy rate, inflation, and real economy

Flexible inflation targeting

- More formally: Choose policy-rate path so as to minimize quadratic forecast loss function

$$\sum_{\tau=0}^{\infty}(\pi_{t+\tau,t}-\pi^*)^2+\lambda\sum_{\tau=0}^{\infty}(y_{t+\tau,t}-\bar{y}_{t+\tau,t})^2$$

$\pi_{t+\tau,t}-\pi^*$ mean inflation gap forecast

$y_{t+\tau,t}-\bar{y}_{t+\tau,t}$ mean output gap forecast

λ constant relative weight on output-gap stabilization

Transmission mechanism, not obvious?

- Monetary policy affects inflation and real economy through effects on private-sector expectations about inflation, future interest rates, and the real economy
- Expectations about future interest rates (whole repo-rate path) matters, not current repo rate
- Real interest rates matter, not nominal ones
- Expected repo-rate path matters, not published
- Not obvious to everyone

Characteristics of optimal policy, not obvious

- Linear models, quadratic loss: Inflation approaches target and resource utilization approaches normal gradually (exponentially, asymptotically)
- Equilibrium solution

$$\begin{aligned}\pi_t-\pi^* &= \textstyle\sum_j A_j\mu_j^t;\quad 1>|\mu_1|\geq|\mu_2|\geq\ldots\\ y_t-\bar{y}_t &= \textstyle\sum_j B_j\mu_j^t\end{aligned}$$

- Fixed horizon ("normally reach inflation target within two years") not appropriate
- Gap to target at any horizon depends on initial gap

Characteristics of optimal policy, not obvious

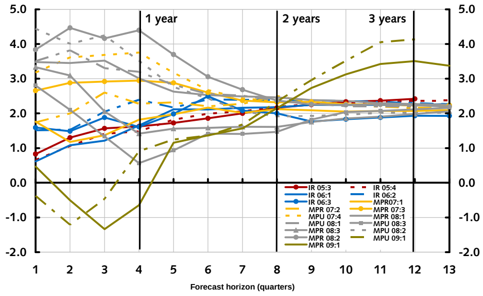
- "Half-time" more appropriate (Schmidt-Hebbel)

$$|\mu_1|^H=\frac{1}{2},\quad H=-\frac{\ln 2}{\ln|\mu_1|}$$

- Riksbank practice: Inflation target not reached within two years

CPI forecasts, 2005-2009

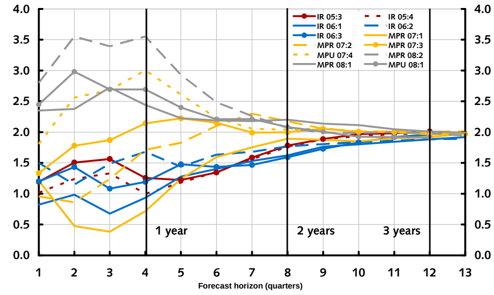
Annual percentage change



Source: The Riksbank

CPIX forecasts, 2005-2008

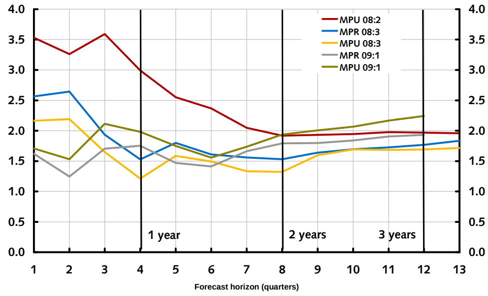
Annual percentage change



Source: The Riksbank

CPIF forecasts, 2008-2009

Annual percentage change



Source: The Riksbank

Characteristics of optimal policy, not obvious

- Riksbank phrases now mixed: “within two years”, “in a couple of years”, “in a few years”
- Other IT central banks: “Medium term”

Loss function, not obvious

- Ongoing discussion about loss function or not
- Examples of arguments:
- “Monetary-policy objectives too complex for loss function”
- “Aggregate measure of resource utilization not meaningful, several measures needed”
- “λ should depend on the circumstances”
- Norges Bank seems to be ahead

Measurement of resource utilization, complicated

- Stabilizing resource utilization requires measures of resource utilization
- Which measure? Output gap, which potential output?
- “Aggregate measure of resource utilization not meaningful, several measures needed”
- Conceptual and estimation problems, not solved, not yet agreement
- Progress slower than I would like
- Norges Bank seems to be ahead

Transparency, not controversial

- Improve private-sector information, reduce uncertainty
- More effective external scrutiny and evaluation: Improve central-bank incentives
- Strengthen democratic accountability
- Riksbank
  - High transparency ranking in academic literature
  - Explicit communication policy

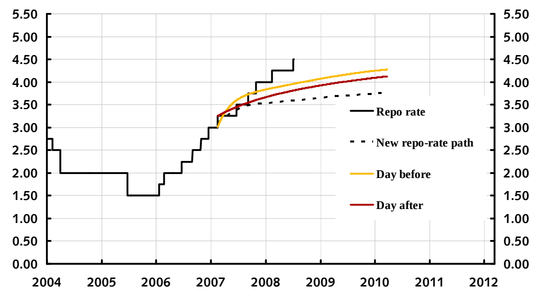
Publishing policy-rate paths

- RBNZ 97, Norges Bank 05, Riksbank 07, Sedlabanki Islands 07, CNB 08
- Why so few?

Management of policy-rate expectations

- Riksbank publishes and explains forecast of repo rate, inflation and real economy
- What is the Riksbank's record in managing interest-rate expectations?
- Compare repo-rate path to market expectations (adjusted implied forward rates) before and after announcement

Repo-rate path and market forward rates
February 2007



Note:

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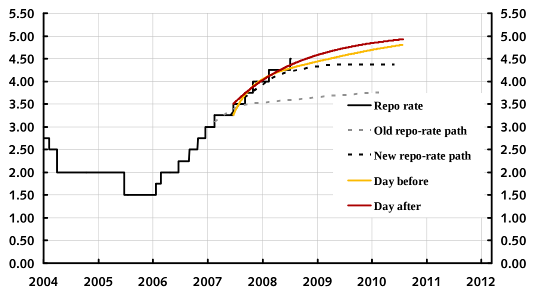
Repo-rate path and market forward rates
June 2007



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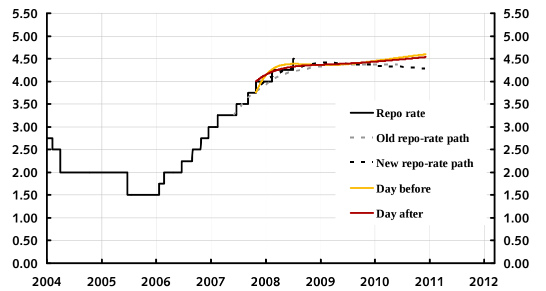
Repo-rate path and market forward rates
October 2007



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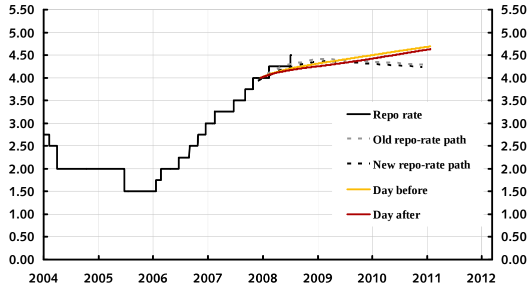
Repo-rate path and market forward rates
December 2007



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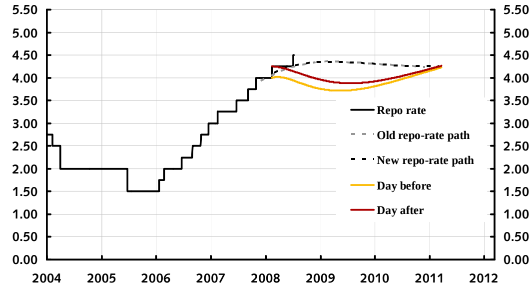
Repo-rate path and market forward rates
February 2008



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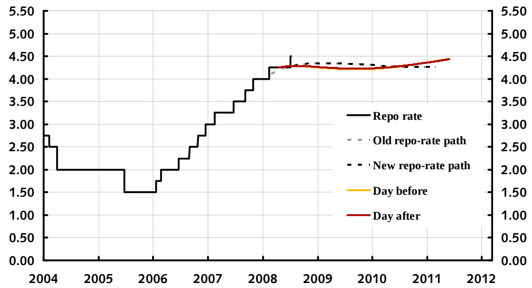
Repo-rate path and market forward rates
April 2008



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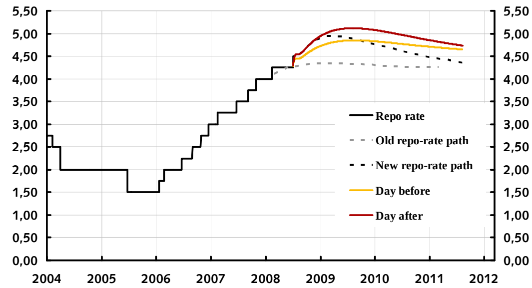
Repo-rate path and market forward rates
July 2008



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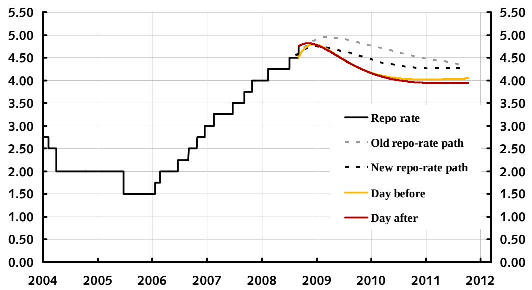
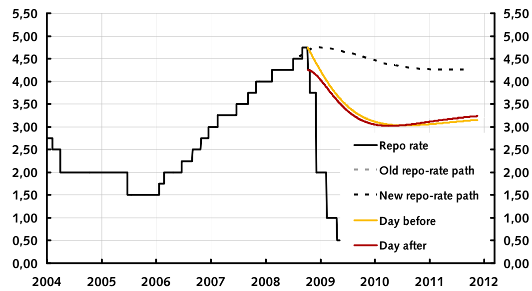
Repo-rate path and market forward rates
September 2008



Repo-rate path and market forward rates
October 8, 2008



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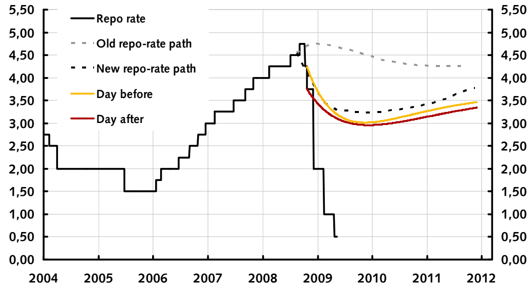
Repo-rate path and market forward rates
October 23, 2008



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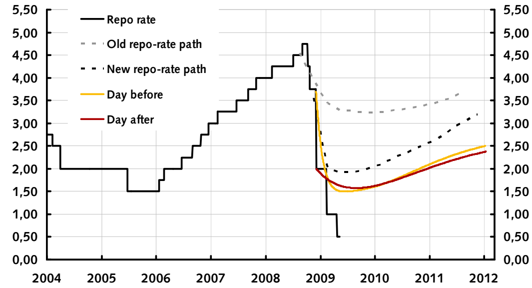
Repo-rate path and market forward rates
December 4, 2008



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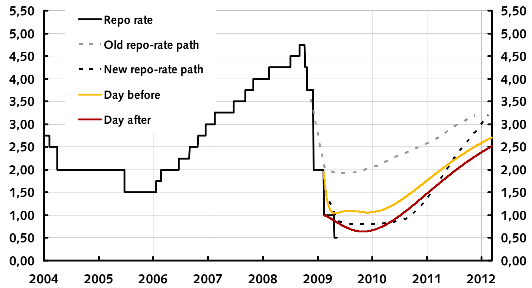
Repo-rate path and market forward rates
Februari 11, 2009



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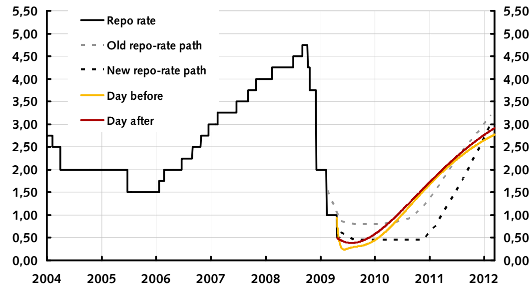
Repo-rate path and market forward rates
April 21, 2009



Note: Source:

Management of policy-rate expectations

- Pretty good, but not a complete success
- Repo-rate path taken more seriously over time
- "Forecast, not a promise"
- Good credibility in February 2009, but low in April 2009
- Then "effective/actual" monetary policy much tighter than "published/intended"

Management of policy-rate expectations

If longer period of low policy rate *credible*:

1. Higher inflation and inflation expectations
2. Lower real interest rate
3. Higher resource utilization/lower unemployment
4. Weaker currency

- More expansionary monetary-policy package

Why current lack of credibility?

- Why repo-rate expectations > 0.50%?
- Inconsistent communication
  - “0.50% may be minimum”
  - “Repo rate may be increased earlier”
  - Implies mean repo-rate > 0.50%
- Credible mean requires consistent probability distribution (Executive Board’s own)
- Problem of too tight monetary policy not obvious to everyone

What can be done to improve credibility?

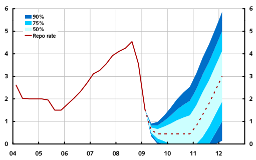
To keep policy-rate expectations down:

- Lending at policy rate at longer maturities (more direct than buying government bonds)
- Acknowledge that the effective lower bound is soft, not hard, and may be negative
- If cashless economy: Nothing special with zero
- Cash: Effective yield negative!

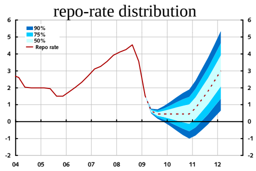
What can be done to improve credibility?

- Publish uncertainty intervals consistent with mean policy-rate path

Published repo-rate distribution



One example of consistent repo-rate distribution



- Better with ambiguity about ZLB?

The exchange rate, controversial

- One of the risks at ZLB: Too strong currency
- Normally, strong or weak currency countered by higher or lower policy-rate path
- At ZLB, not lower policy-rate path
- Previously, too weak currency often the problem; now, too strong currency the problem
- Requires rethinking about the exchange rate
- Not easily accepted by everyone

The exchange rate, controversial

- If too strong currency, use FX interventions (Switzerland)
- Not beggar-thy-neighbor: Instead inherent part of expansionary monetary policy
- Not accepted by everyone

Conclusions: What have I learned?

- Conventional wisdom in academics, teaching, and research not necessarily conventional wisdom among policymakers and staff
- “Knowledge gap” relative to frontier of teaching/research/publishing
- “Intellectual inertia/conservatism”
- Considerable diversity of views, less common ground
- Diversity good, if knowledge-based
- Needed: More discussion and education about both principles and practice of monetary policy

Conclusions: What have I learned?

- Recently dramatic changes in environment: Financial crisis, deteriorating real economy, ZLB. Requires substantial rethinking
- Six policy meetings per year very appropriate, but two months little time for substantial rethinking

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Conclusions: What have I learned?

- Problem: Staff overworked, too few
- More resources/staff needed for time for discussion, education, research, thinking
- Research not only in designated research department but also in policy departments
- Staff should regularly teach policymakers
- Education of policymakers: First at appointment and then reoccurring

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