

# Gauging the effectiveness of central bank forward guidance

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*The views expressed in the following do not necessarily represent the views of the ECB or the Eurosystem*

# What the paper is about

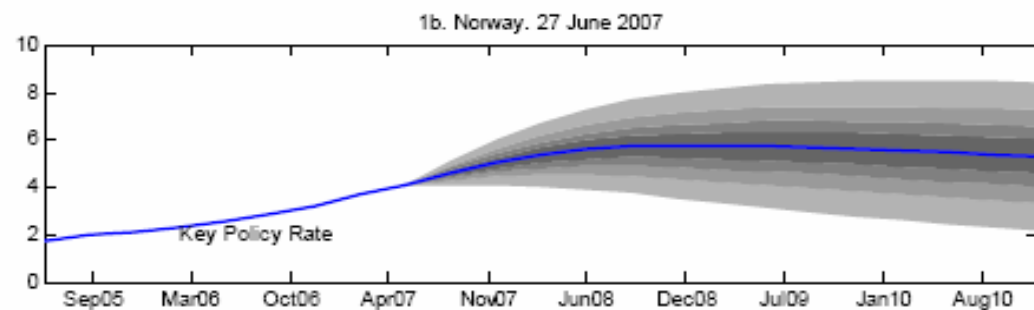
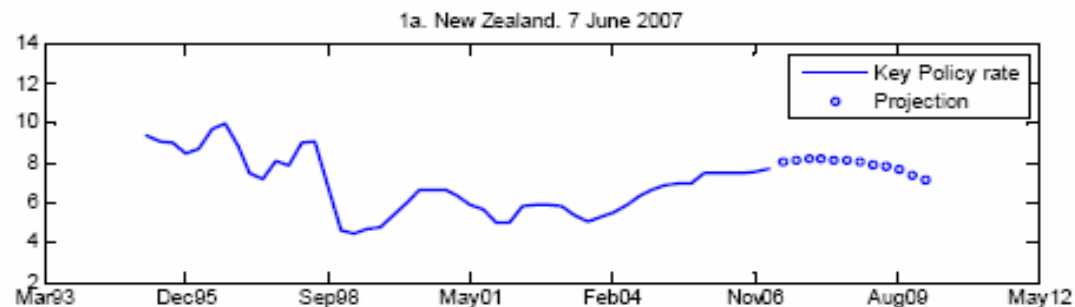
- Assessing the effects of publication of an own interest rate path forecast by the central bank
- Important topic in the debate about the further development of inflation targeting (Svensson, 2007)
- Practised by only few central banks (RBNZ since 1997, Norges Bank since 2005, Riksbank since 2007, Central Bank of Iceland since 2007, Czech National Bank since 2008)

# A central banks' own interest rate path: What does it mean?

- Central bank constructs together with other macro forecasts an own conditional forecast of the future interest rate path based on econometric analysis and judgment
- Key criterion: Inflation forecast “looks good”
- Published together with other macro forecasts in the regular report
  - RBNZ: 4 times a year in the Monetary Policy Statement
  - Norges Bank: 3 times a year in the Monetary Policy Report
  - Riksbank: 6 times a year in the Monetary Policy Report and the Monetary Policy Update

# Central banks' own interest rate forecasts: What do they look like?

Fig 1: Key policy rate and interest rate path for New Zealand, Norway and Sweden



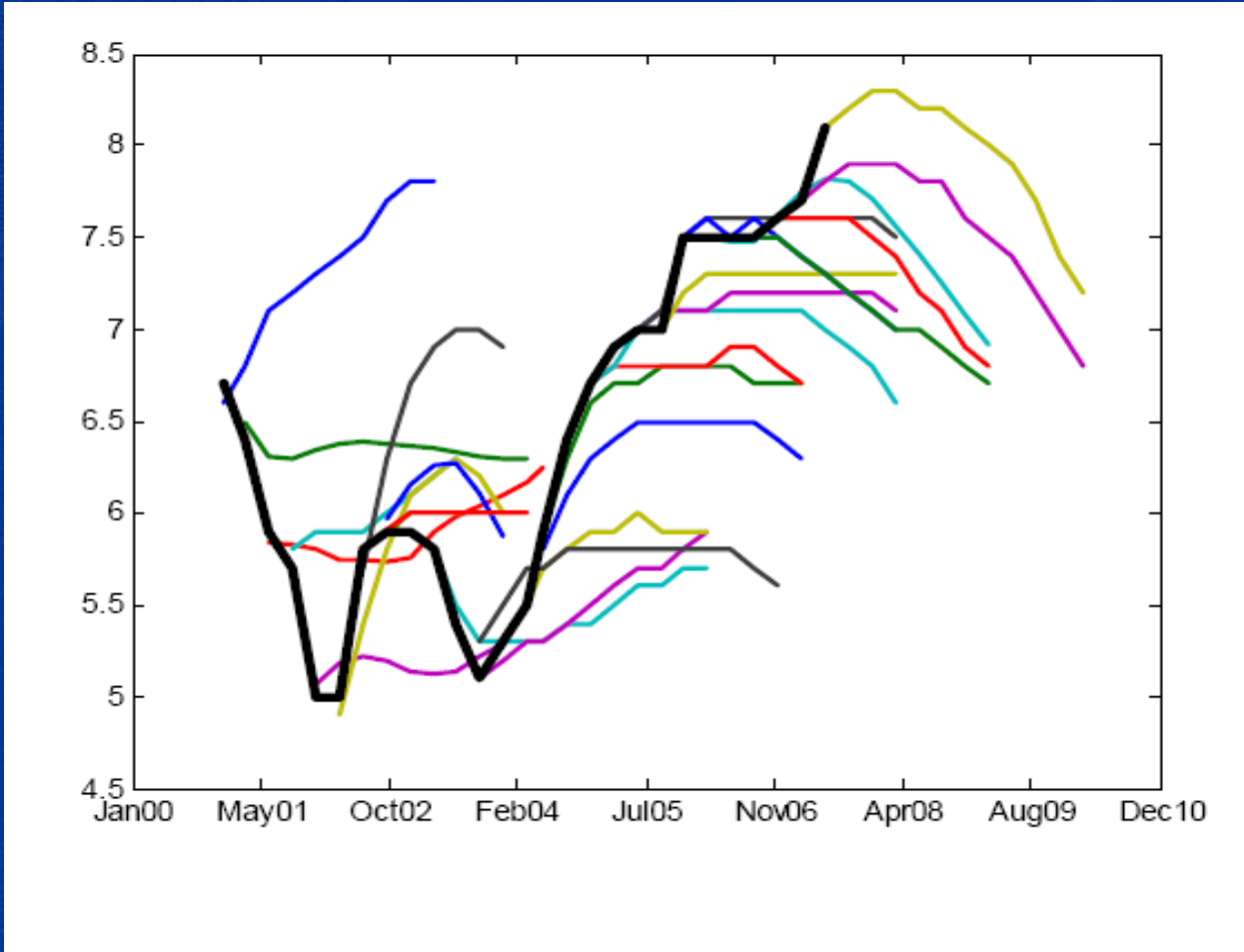
## Scope of the paper

- Review pros and cons of publishing own interest rate path
- Formulate testable hypotheses for the incremental effect of publishing an own path (controlling as far as possible for other key aspects of policy framework) and come up with empirical evidence
  - Very hard and complicated by data availability problems
  - ...but first paper trying to do that

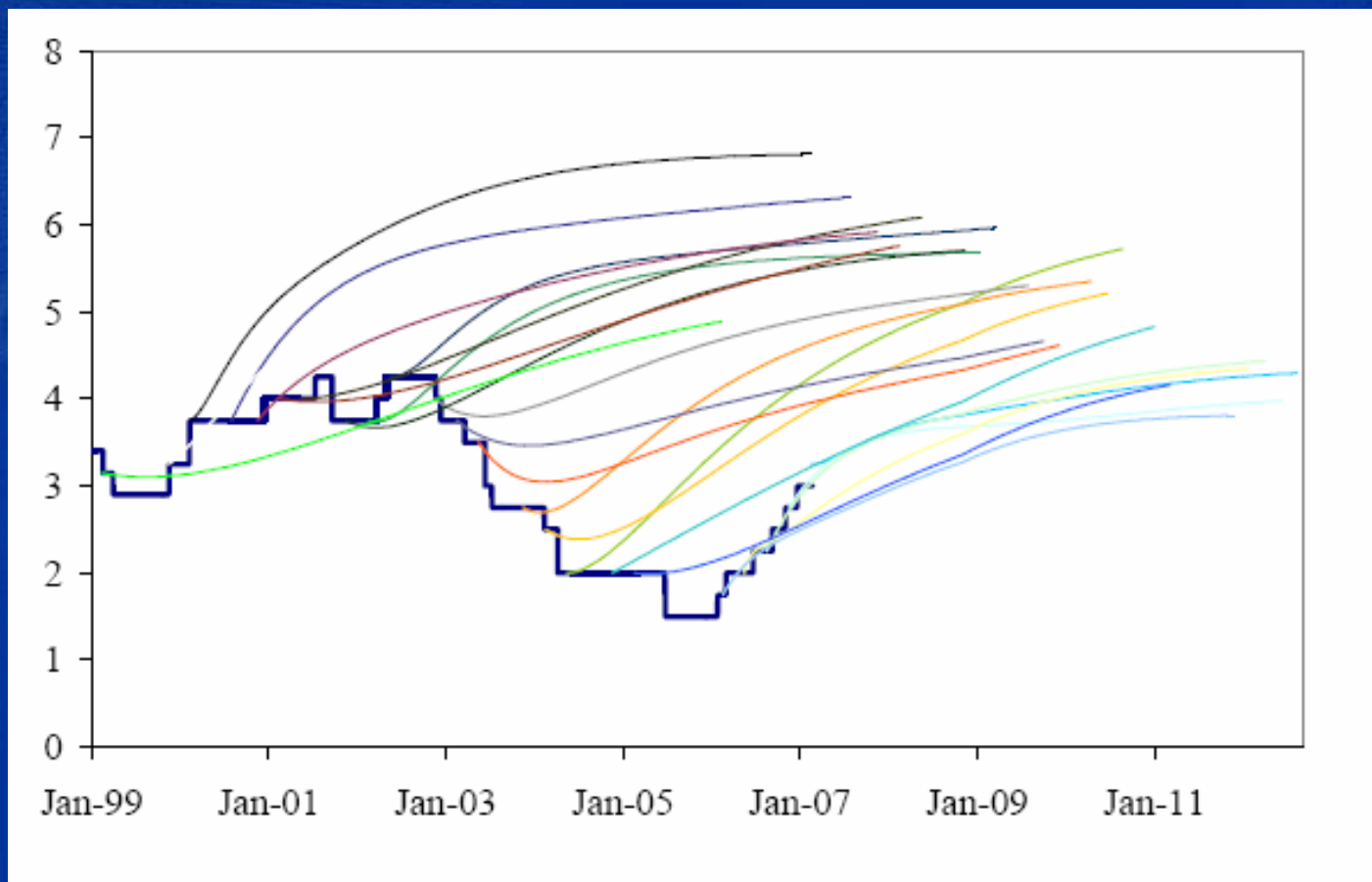
## The cons

1. Potentially difficult for a monetary policy committee to agree on an entire future path of policy rates (Goodhart 2001)
2. Potential criticism of pre-empting markets when market expectations align with the path and potential criticism of credibility problems when they don't
3. Forecast may be misunderstood as unconditional commitment and therefore potentially credibility problems when ex-post path differs from forecast

# RBNZ's own interest rate forecasts



# Market-based interest rate forecasts in Sweden



# The pros

1. Avoiding problems associated with interest rate path derived from market interest rates (MIR) or constant interest rate path (CIR) in construction of macro forecasts
  - CB's view on future monetary policy appropriately reflected in its own macroeconomic forecasts
2. Possibly more forward-looking internal discussions in the monetary policy committee
3. Enhanced capability to steer market expectations by being more transparent about envisaged future path of policy rates

## Main pro: Enhanced steering of expectations

- New Keynesian paradigm: Central Banking as Management of Expectations (Woodford, 2005)
- Stressed as key aspect of publishing own interest rate path by central bankers
  - “Monetary policy works mainly through expectations and is only effective if the central bank is able to influence interest rate expectations.” (Gjedrem, March 2006)
  - “[T]he primary reason for publishing one’s own interest rate forecast is that it makes it easier for the central bank to steer expectations.” (Rosenberg, January 2007)

# Enhanced steering of expectations: What does it mean?

1. Enhanced predictability of monetary policy, i.e. avoidance of policy surprises and reduced financial market volatility
2. Better signalling of commitment to maintain price stability → better anchoring of long-term inflation expectations
3. Enhanced leverage over medium and longer-term interest rates

# Enhanced steering of expectations: Testable hypotheses

## 1. Enhanced predictability

→ smaller monetary policy surprises, i.e. smaller deviations between the prior market expectation and outcome of a policy rate decision

## 2. Better anchoring of long-term inflation expectations

→ lower responsiveness of longer-term interest rates to news

## 3. Enhanced leverage over longer-term interest rates

→ stronger influence of monetary policy on longer term yields

## How to test the hypotheses?

Problem: Ability to steer expectations determined by overall monetary policy framework, in particular price stability orientation and overall transparency in the policy conduct

- Very difficult to isolate the incremental effect of publishing an own path on the ability to steer expectations
- Need for appropriate benchmark
- Approach taken here: compare central bank that publishes interest rate forecast with another one that does not but otherwise operates under similar framework (inflation targeter, similar degree of transparency)

# Two comparative analyses

## 1. RBNZ compared to Riksbank 1999:3 – 2007:1

→ Both CBs inflation targeters and highly transparent (Dincer/Eichengreen 2007, Eijffinger/Geraats 2007), main difference is that RBNZ published path and Riksbank not over this period

## 2. Norges Bank 2001:3 – 2005:10 compared to Norges Bank 2005:11 – 2007:6

→ Norges Bank adopted inflation targeting in March 2001 and started to publish and interest rate path in November 2005

# Monetary policy surprises

- Monetary policy surprises derived based on market data following Gürkaynak (2005), Gürkaynak et al. (2007)
- Target surprise (unexpected change in current level of policy rates) calculated based on change in one-month money market rates

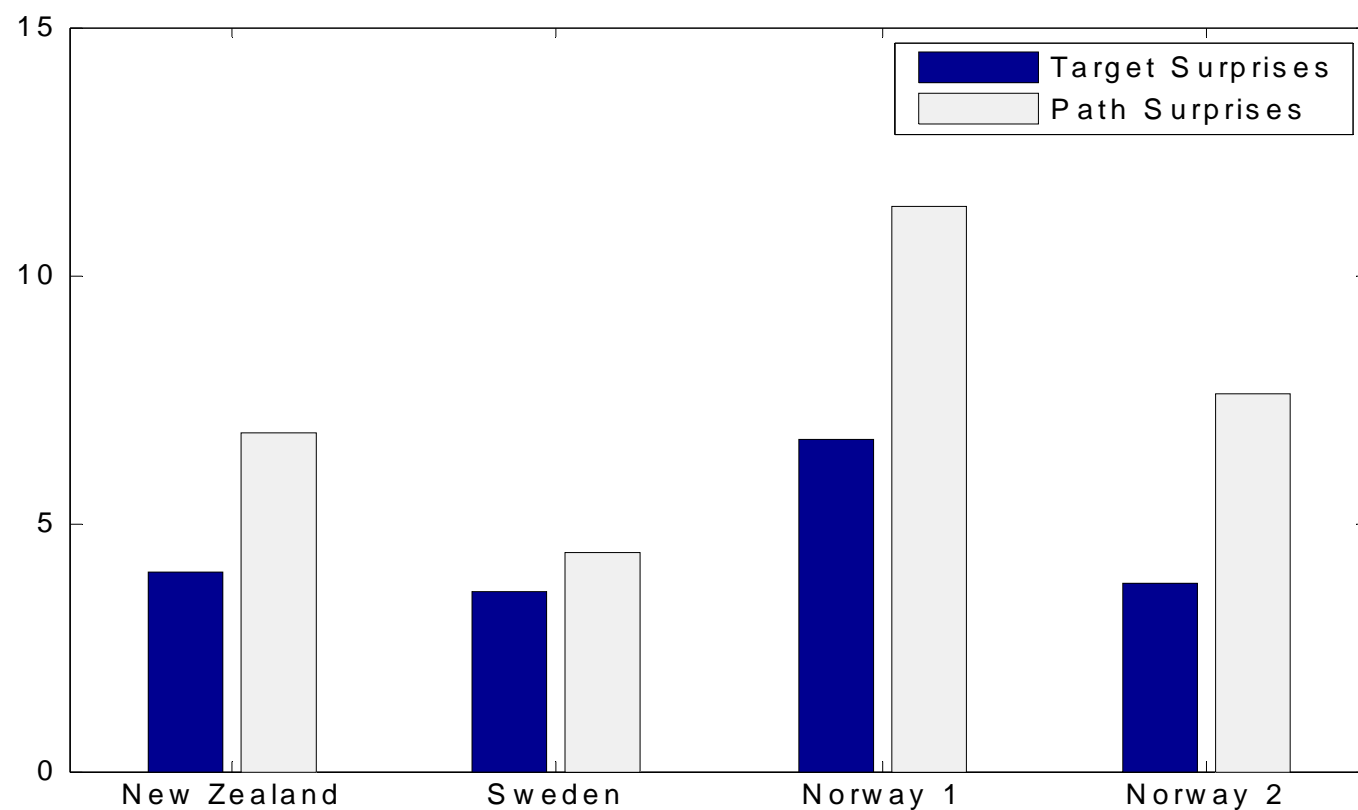
$$TS_t = \frac{i_{t+1}^{1M} - i_t^{1M}}{\sigma}$$

- Path surprise (unexpected change in envisaged future path of policy rates) calculated as

$$\Delta IFR_t = \alpha + \beta TS_t + PS_t$$

# Predictability

→ Comparisons inconclusive



# Anchoring of inflation expectations

- Assessed based on responsiveness of long-term bond yields and far-ahead forward rates to monetary policy news and other macro news (e.g. data releases on inflation and economic activity)
- Low responsiveness would signal well anchored inflation expectations (Gürkaynak et al. 2007)
- Further decomposition of long-term bond yields into real rate component and inflation compensation (Beechey/Wright 2008) not possible due to unavailability of consistent runs of indexed bonds

# Anchoring of inflation expectations

$$\Delta r_t = \alpha + \beta \Delta r_{t-1} + \gamma_1 TS_t + \gamma_2 PS_t + \Phi X_t + \epsilon_t$$

- Dependent variables: 5-year and 10 bond yield, Five-year ahead forward rates in five years time
- $X$  is a matrix containing US, euro area and national macroeconomic surprises (derived from surveys)
- Estimated via EGARCH to account for time-varying volatility and non-normality of errors (Ehrmann/Fratzscher 2007)

# Anchoring of inflation expectations

Panel A: New Zealand

	Five Mean	Ten Mean	Five year Forward Mean
lag	-0.01	-0.02	-0.03 *
Target Surprise	3.43 ***	2.22 ***	0.94
Path Surprise	4.42 ***	3.56 ***	2.57 ***
NZ cpi	2.43 **	1.78 ***	1.49
NZ rsa	1.17 **	0.79	0.50
NZ unempl	-9.68 ***	-7.68 ***	-3.45
US cpi	0.33	0.40	0.51
US rsa	0.85	0.68	0.39
US nfp	2.01 ***	2.42 ***	2.63 ***
US ISM	1.55 ***	1.86 ***	1.79 ***

Panel B: Sweden

	Five Mean	Ten Mean	Five year Forward Mean
lag	0.04 **	0.03 **	0.03
Target Surprise	1.73 ***	1.08 *	0.53
Path Surprise	2.16 ***	1.84 ***	1.41 **
SW cpi	2.31 ***	1.20 ***	0.25
SE rsa	0.59	0.29	0.02
SW unempl	-0.82 **	-0.64 *	-0.58
US cpi	0.37 **	0.29	0.25
US rsa	2.12 ***	1.79 ***	1.50 ***
US nfp	2.67 ***	2.41 ***	2.02 ***
US ISM	2.97 ***	1.71 ***	0.38
EA cpi	0.83 **	0.63	0.72 **
EA ifo	0.81 **	0.70 ***	0.54

Panel C1: Norway 2001 - 2005

	Five Mean	Ten Mean	Five year Forward Mean
lag	0.06 **	0.09 ***	-0.08 ***
Target Surprise	3.73 ***	2.00 ***	0.36
Path Surprise	5.74 ***	2.47 ***	-1.35
NO cpi	3.78 ***	1.84 ***	-0.10
NO rsa	0.46	0.32	0.39
NO unempl	-1.42	-0.03	1.40 *
US cpi	0.52	-0.62	-0.84
US rsa	1.56 *	1.55 **	1.93 ***
US nfp	1.90 ***	3.26 ***	4.42 ***
US ISM	1.82 ***	1.47 ***	0.51
EA cpi	-0.14	-0.69	-0.69
EA ifo	1.43 ***	0.92 **	0.76 **

Panel C2: Norway 2005 - 2007

	Five Mean	Ten Mean	Five year Forward Mean
lag	0.04 *	0.02	-0.20 ***
Target Surprise	4.19 ***	1.62	-0.36
Path Surprise	2.24 *	1.54 *	1.89
NO cpi	2.26 ***	1.75 ***	1.19
NO rsa	1.03	-0.99 *	-2.30 **
NO unempl	-1.29 ***	-1.94 ***	-2.68 ***
US cpi	-0.15	0.06	0.53
US rsa	1.30	0.95	0.63
US nfp	1.62 ***	0.77 **	-0.41
US ISM	-0.14	-0.83	-1.45
EA cpi	-0.67	0.77	1.14
EA ifo	0.41	0.54	0.45

- Few significant coefficients for the implied five-year forward interest rates -> well anchored long-term inflation expectations
- Comparison again inconclusive

# Leverage over longer-term rates

- Problem: Measures of market expectations of the central bank's own interest rate forecast do not exist
  - cannot back out surprises of the path
- But: we can assess whether effect of standard surprise measures is different when a path is published compared to forward guidance provided by macro projections without own path
  - forecasts always published on days of policy rate decisions

$$\Delta r_t = \alpha + \beta \Delta r_{t-1} + \gamma_1 TS_t + \gamma_2^P TS_t D_t^{fguid} + \gamma_3 PS_t + \gamma_4 PS_t D_t^{fguid} + \Phi X_t + \epsilon_t$$

# Anchoring of inflation expectations

<b>Panel A: New Zealand</b>			
	Five Mean	Ten Mean	Five year Forward Mean
Target Surprise	3.74 ***	2.99 ***	2.15 ***
Path Surprise	2.96 ***	2.45 ***	1.77 ***
Target Surprise DP	-0.65 ***	-1.85 ***	-2.98 ***
Path Surprise DP	2.27 **	1.63	1.17
Exclusion test	7.51 ***	5.14	2.65
<b>Panel B: Sweden</b>			
	Five Mean	Ten Mean	Five year Forward Mean
Target Surprise	1.71 ***	0.88 ***	0.08
Path Surprise	2.35 ***	1.79 ***	1.29 *
Target Surprise DR	0.12	0.33	0.56
Path Surprise DR	-0.47	0.01	0.10
Exclusion test	0.33	0.06	0.43

- Publication of path by RBNZ alters effects of policy surprises: smaller effect of target surprise, larger effect of path surprise
- No effect found for Riksbank's publication of report with macro forecasts

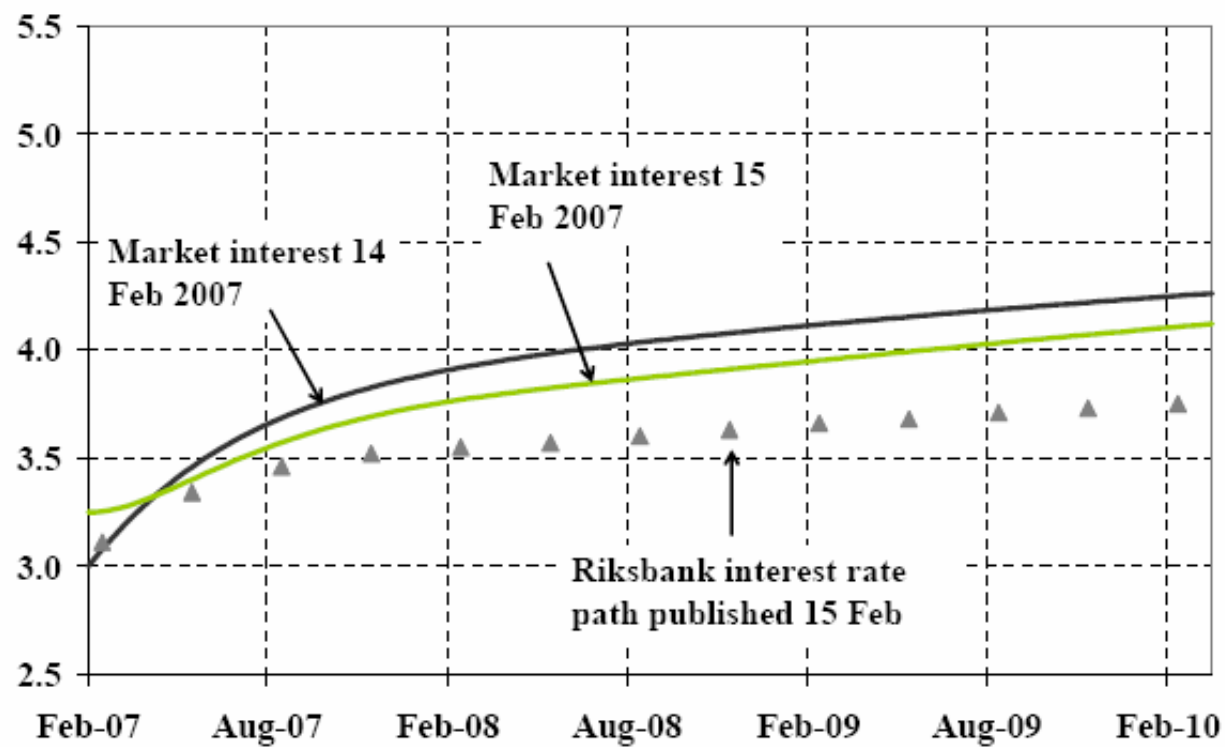
# Conclusions

Comparative analysis between the Riksbank, Norges Bank and Reserve Bank of New Zealand suggests:

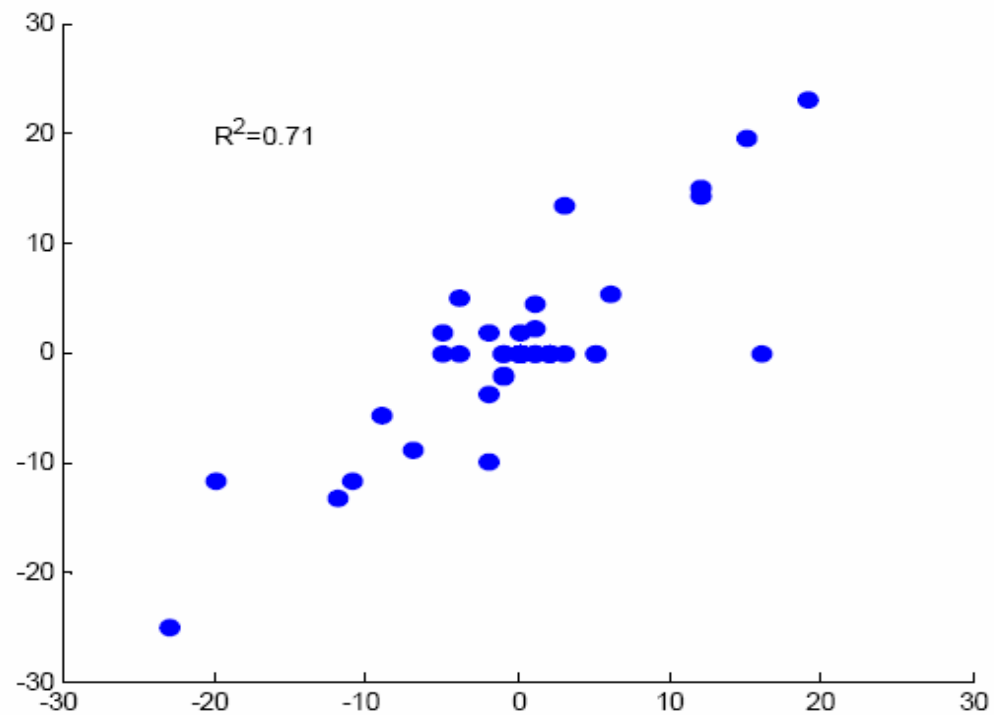
- Monetary policy decisions highly predictable and inflation expectations well anchored in all three economies
- Comparative analyses on the effect of publication of interest rate path inconclusive w.r.t. predictability/anchoring of expectations
  - no discernible difference in performance of RBNZ and Riksbank over 1999:3 – 2007:1
  - some evidence of better performance of Norges Bank since November 2005
- Some (weak) evidence that a publication of a path alters effect of monetary policy on longer-term interest rates

# Background slides

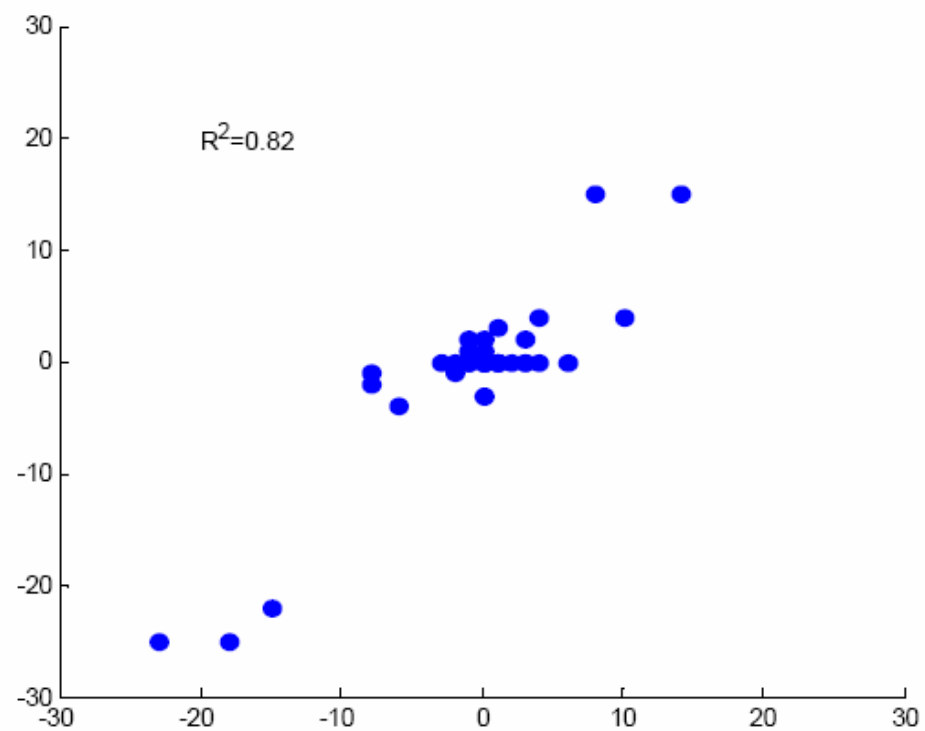
**Fig 4: Riksbank repo rate forecast and market expectations in February 2007 (in % p.a.)**



**Fig 5: Survey based (*y-axis*) and market based (*x-axis*) measures of monetary policy target surprises for New Zealand**  
(in basis points, April 2001 – June 2007)



**Fig 6: Survey based (*y-axis*) and market based (*x-axis*) measures of monetary policy target surprises for Norway**  
(in basis points, June 2003 – June 2007)



**Fig 7: Survey based (*y-axis*) and market based (*x-axis*) measures of monetary policy target surprises for Sweden**  
(in basis points, October 1999 – June 2007)

