Quantitative vs Qualitative Forward Guidance: Does It Matter?

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No consensus yet on optimal form of forward guidance

"The large variation in communication strategies across central banks suggests that a consensus has yet to emerge on what constitutes an optimal communication strategy."

Blinder et al. (2008, JEL)

Forward guidance

- *Qualitative* statements on the policy outlook

- Full publication of an *quantitative* interest rate forecast

- Time or state dependent policy outlook

Open questions

- Are quantitative and qualitative forward guidance different?

- Do the markets derive similar/same "guidance" from both?

- Does quantitative forward guidance lead to market 'over-reaction'?

We use a *quasi-experiment* that

- Exploits the difference in the information content of MPS and OCR Review releases by the RBNZ

  – Treatment/control

- Tests if markets infer some 'forward guidance' from both set of announcements/information

- Tests if the effects of forward guidance (if there are any) on asset prices are similar on MPS, and OCR Review days

- Attempts to separate out the effects of words (statements) from the numbers (forecasts)

.. and find that

- It is important to separate out the effects of "words" from "numbers"

- Markets infer similar "forward guidance" from both form of communications

- Communication is important but the exact form of it is not

- Markets do not over-react to the quantitative forward guidance

- More specifically, in RBNZ's case yield curve move by same amount

Previous empirics on interest rate forecasts - effectiveness

- Archer (2005) '*market reactions to the publication of the RBNZs forward interest rate tracks are limited*'

- Moessner and Nelson (2008), Detmers and Nautz (2010), Ferrero and Secchi (2009)

$$f_n(t) - f_n(t-1) = c + b(f_n^{CB}(t) - E_{t-1}f_n^{CB}(t)) + \varepsilon_t,$$

b = 0.17 - 0.22

- Norway and Sweden: Brubakk *et al* (2017)

Strong effects from publishing interest rate forecasts

Problems with existing studies

1. Only analyse "treated" group (announcement days that includes interest rate forecasts)

   Sample selection bias? Heckman (1981)

2. Ignores potential guidance on announcement days without interest rate forecasts – OCR Reviews

3. Don't control for other guidance in the statements on announcement days with interest rate forecasts - MPS

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    - In NZ ½ of policy announcements – OCR Reviews

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29 October 2009 – OCR Review

- RBNZ kept short term interest rates at 2.5 percent

- This was expected by the markets. The surprise component of the announcement was only 2 bp

- But 1- and 2-year swap yields fell by 18 and 20bp respectively on the day – significant effect on future path

- *In contrast to current market pricing, we see no urgency to begin withdrawing monetary policy stimulus, and we expect to keep the OCR at the current level until the second half of 2010".*

25 July 2013 – OCR Review

- RBNZ kept short term interest rates at 2.5 percent

- This was expected by the markets

- But 1-, 2- and 3-year swap yields increased by 10 and 11 and 12bp respectively on the day

- Again, OCR Reviews can move the forward path

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6 December 2006 - MPS

"*Looking ahead, our projections and risk assessment suggest that* a firmer monetary policy stance could still be required to maintain downward pressure on inflation in the medium term*. Further tightening cannot therefore be ruled out. This will depend on economic outcomes and in particular the emerging trends in housing and domestic demand indicators.* Any easing of policy must remain some considerable way off."

- How much is interest rate forecast? How much is statement?

Treatment and Control

Treatment and Control

Monetary Policy Statements	Official Cash Rate (OCR) Review
At 9 am	At 9 am
4 times a year	4 times a year (3 since 2016)
Statement	Statement

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Interest rate forecasts	

Identification

- Daily changes in yields around announcement days - Kuttner (2001), Bernanke and Kuttner (2005), Gürkaynak et al (2005)

    - Ensures that monetary policy exogenous

    - Surprise changes in yields are uncorrelated

    - Random nature and size of surprises ensures

Empirical strategy

- Follow Gürkaynak et al (2005) and formally test for number of factors that characterise financial markets' response to monetary policy announcements

  (Cragg and Donald 1997 rank test)

- Rotate these factors to give structural interpretation

  Is there a forward guidance element on OCR Review days?

- Estimate their effects on asset prices

  Are they similar on MPS and OCR Review samples?

Data

- Daily changes, on announcement days, in

  - One-month bank bill yields
  - Bank bill futures one to four quarters ahead
    - For robustness, Overnight Indexed Swap (OIS) rates shorter 2003 – 2017 sample
  - Interest rate swaps 1, 2, 3, 4, 5, 7 and 10 yr, and 5y/5y forward interest rate swap

- Separate MPS, and OCR Review samples, and combined full sample

Estimating Factors

Matrix of asset price responses X is well described by a factor model with a small number of factors

$$\underbrace{X}_{TxN} = \underbrace{F}_{Txk} \underbrace{\Lambda}_{kxN} + \underbrace{\varepsilon}_{TxN}$$

MPS and OCR Review sub-samples

Cragg and Donald (1997) Rank test

	MPS				OCR		
H_0:	χ^2	df	p-value	H_0:	χ^2	df	p-value
0 v 1	42.55	10	0.00001	0 v 1	37.3	10	0.0005
	(18.3)				(18.3)		
1 v 2	14.68	5	0.011	1 v 2	13.46	5	0.019
	(11.07)				(11.07)		
2 v 3	1.92	1	0.164	2 v 3	1.12	1	0.289
	(3.84)				(3.84)		

Note: Test is from Cragg and Donald (1997) and tests the null hypothesis of N_{h0} factors against the alternative of $N > N_{h0}$ factors. Futures data comprise of future one-, two-, three-, and four-quarter-ahead Bank Bill rates. Same test for the swap yields, and the Overnight Indexed Swaps (OIS) albeit with a much shorter sample yield the same result. Results for these are available upon request.

Combined full sample

Cragg and Donald (1997) Rank test

H_0	Full Sample χ^2	df	p-value
0 v 1	52.18	10	0
	(18.3)		
1 v 2	16.18	5	0.006
	(11.07)		
2 v 3	1.07	1	0.3
	(3.84)		

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Two factor model

- All samples are characterised by two factors
- The statistical factors are 'rotated' to give the second factor an interpretation of "forward guidance/path factor"
  - Jump/Timing factor – Kuttner (2001) surprise
  - Path/Forward guidance factor (Bernanke et al (2004), Gürkaynak *et al* (2005)
- OCR Review days HAVE a forward guidance factor

Descriptive of interest rate changes

	MPS							**OCR Review**					
	1y	**2y**	**3y**	**4y**	**5y**	**10y**		**1y**	**2y**	**3y**	**4y**	**5y**	**10y**
A/mean	7	7	6	6	5	4		6	6	6	6	5	5
max	27	25	21	20	19	16		28	25	23	19	17	13
std	6	6	5	5	4	4		6	6	5	5	5	4

$$y = c + d + \alpha_1 Jump_M + \alpha_2 Path_M + \beta_1 Jump_O + \beta_2 Path_O + \varepsilon$$

y	*change in a yield on announcement day*
d	*dummy for MPS days*
Jump	*Jump factor*
Path	*Path factor*
M	*MPS events*
O	*OCR Review events*

$$y = c + d + \alpha_1 Jump_M + \alpha_2 Path_M + \beta_1 Jump_O + \beta_2 Path_O + \varepsilon$$

	1-year swap	2-year swap	3-year swap	4-year swap	5-year swap	10-year swap	5y5y forward
c	-1.204***	-1.301	-1.203	-1.120	-1.046	-0.720	-0.787
	(0.214)	(0.587)	(0.416)	(0.431)	(0.440)	(0.535)	(0.672)
d	1.368**	1.335*	1.264	0.922	0.729	0.281	-0.132
	(0.643)	(0.822)	(0.783)	(0.746)	(0.740)	(0.798)	(1.072)
α_1	0.824***	0.653***	0.585***	0.487***	0.409***	0.201***	0.073
	(0.063)	(0.069)	(0.076)	(0.071)	(0.071)	(0.065)	(0.106)
α_2	0.255***	0.353***	0.333***	0.315***	0.284***	0.202***	0.126***
	(0.098)	(0.056)	(0.100)	(0.092)	(0.087)	(0.072)	(0.049)
β_1	0.995***	0.962***	0.845***	0.753***	0.664***	0.440***	0.265**
	(0.045)	(0.082)	(0.076)	(0.077)	(0.081)	(0.071)	(0.118)
β_2	0.247***	0.315***	0.294***	0.263***	0.239***	0.167**	0.148*
	(0.024)	(0.046)	(0.031)	(0.032)	(0.034)	(0.039)	(0.086)
Adj. R^2	0.79	0.68	0.66	0.63	0.55	0.32	0.09
$\alpha_2 = \beta_2$	✓	✓	✓	✓	✓	✓	✓

Note: Coefficients are the least squares coefficients with daily changes in yields. *, ** and *** denote significance at 10%, 5% and 1% respectively. Huber-White standard errors are given in brackets.

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More on results

- Recall the b= 0.17 - 0.22 coefficient from earlier literature
- Our coefficients are very similar : BUT on both treatment and control samples

- There is no systematic difference on MPS days

- Exchange rate also responds to both factors (Detmers, Karagedikli and Moessner forthcoming)
  - Consistent with Gali (2017) theoretical model

Robustness

- We use an alternative measure of forward guidance
  - Use 1m and 12 m bill yield to separate out Jump and Path

- Use another quasi-experiment:
  - 2 factors for Reserve Bank of Australia – no quantitative forecasts
  - Responses of NZ-AU dollar to two the RBNZ and RBA forward guidance factors
  - Cannot reject they are the same – 2%

Conclusions

- RBNZ announcements provides a rare T/C quasi-experiments that enables us:

- Separating out effects of qualitative and quantitative guidance

- Our treatment/control approach suggests markets have been able to infer a similar degree of forward guidance from both types of RBNZ communications

- Previous studies without a control group over-estimated the effects of "forecasts"

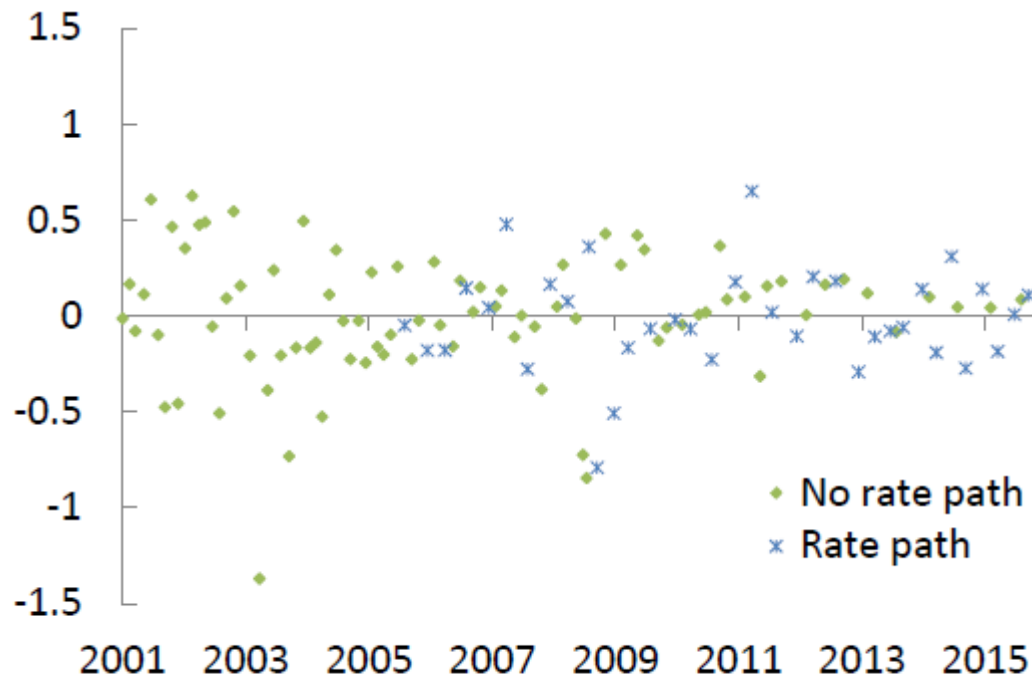- There is no evidence of market overreaction by the markets to a published interest rate path

Extra Slides

(d) Sweden - path factor
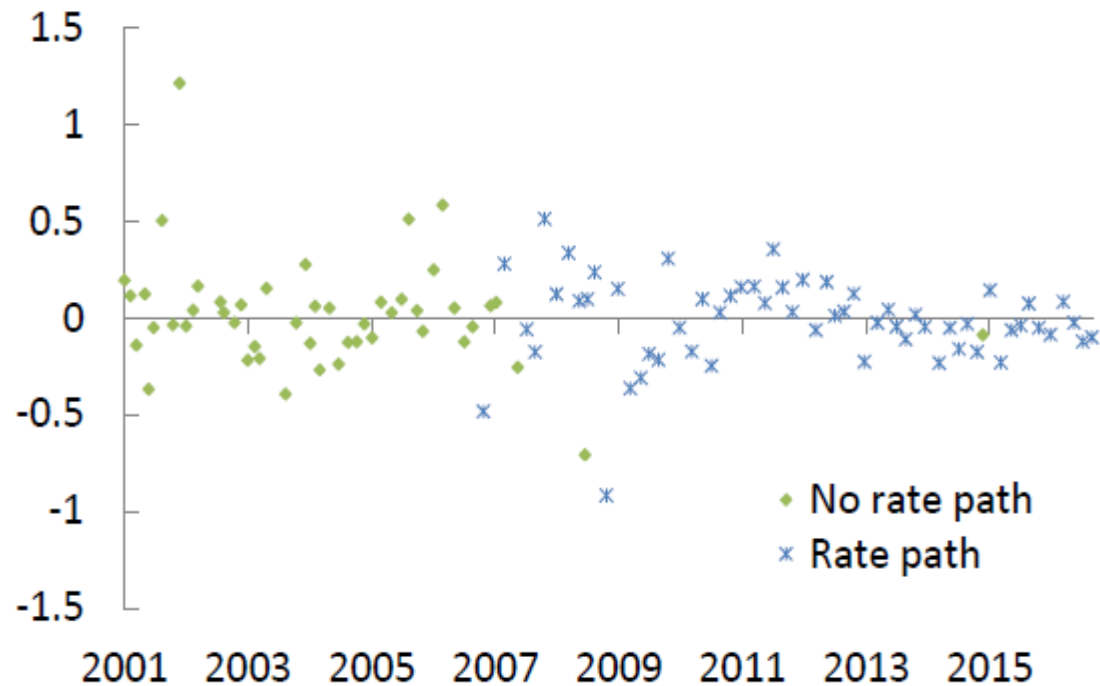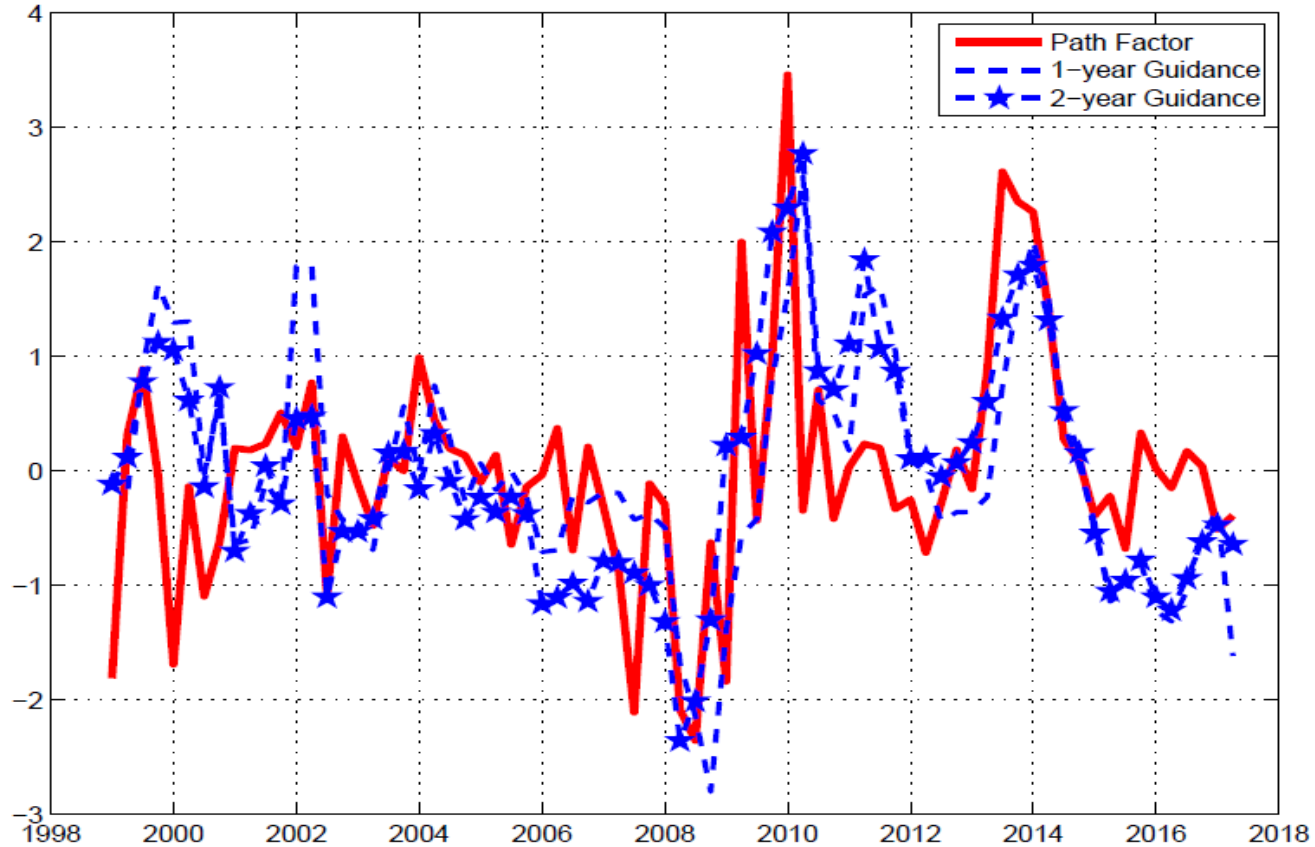
(b) Norway - path factor

3 Dec 2003– MPS
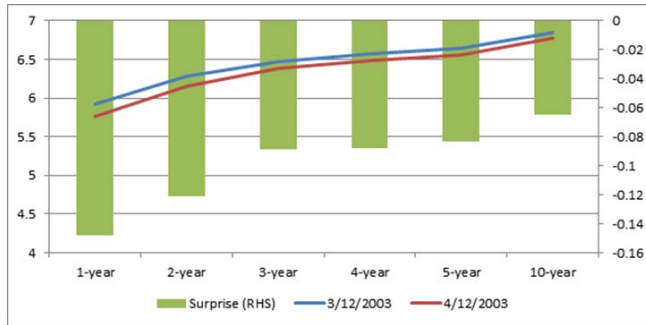
28 Jan 2004 – OCR Review

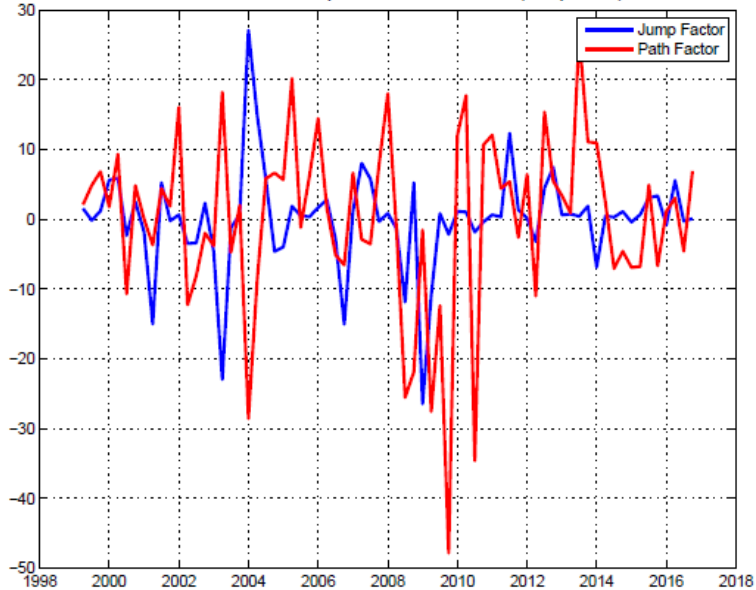RBNZ Forward Track Surprises vs Estimated Path Factor

OCR Review

MPS

OCR Review Jump and Path Factors (Surprises)

MPS Jump and Path Factors (Surprises)